

# pushbutton

# Pushbutton Product Selection Guide

Pushbutton									
Series	ELUM	EP	ТР	E020	8020	E010	8060	8500	КМ
Switch Type	PCB Illuminated	Sub- miniature	Sub- miniature	Miniature	Miniature	Miniature	Miniature	Sub- miniature	Sub- miniature
Poles/Throws	SPDT	SPST, SPDT, DPST	SPST, SPDT, DPST	SPDT, DPDT	SPDT, DPDT, 3PDT, 4PDT	SPDT	SPDT, DPDT	SPST	SPST, SPDT
Max. Current	3.5 VA	1 Amp	1 Amp	1 Amp	1 Amp	4 Amps	6 Amps	3 Amps	1 Amp
Process Sealed		•		•		•			
Illuminated	•				•		•	•	
PCB Mount				1	1		I		
Thru-hole	•	•	•	•	•	•	•	•	•
Surface Mount	•	٠							
Panel Mount									
Wire Wrap						•	•		
Solder Lug			•		•	•	•	•	
Quick Connect							•		•
Page No.	A-4	A-9	A-15	A-21	A-29	A-46	A-52	A-62	A-67

Pushbutton	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		The second se	and the			- Maria
Series	8600	8700	GP	PN	РНВ	F	NE-18
Switch Type	Micro/ultra- miniature	Sub- miniature	Micro/ultra- miniature	Sub- miniature	Miniature	Miniature	Miniature
Poles/Throws	SPST	SPST	SPST, SPDT	SPDT, DPDT, 4PDT	DPDT, 4PDT	DPDT, 4PDT, 6PDT, 8PDT, 10PDT	DPST, DPDT Varied
Max. Current	500 mA	1 Amp	0.4 VA	200 mA	100 mA	500 mA	6 A
Process Sealed			•				
PCB Mount		1					
Thru-hole	•	•	•	•	•	•	•
Surface Mount			•				
Panel Mount							
Wire Wrap							
Solder Lug	•	•					
Quick Connect							
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Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

# Pushbutton Product Selection Guide

Pushbutton							a Res
Series	FP	AP	APB	NP	PNP	ATP	PBA
Switch Type	Micro/ultra- miniature	Sealed/ Industrial	Sealed/ Industrial	Sealed/ Industrial	Sealed/ Industrial	Panel Illuminated	PCB Illuminated
Poles/Throws	SPST, SPDT, DPST, DPDT	SPST	SPST	SPDT	SPST, SPDT	SPDT, DPDT	DPDT, 4PDT
Max. Current	0.4 VA	400mA	400mA	5 Amp	10mA / 3A / 5A	3A / 5A	0.3 / 1A
Process Sealed	•	•	•		٠		
PCB Mount						-	
Thru-hole	•	٠	•	•	•		•
Surface Mount							
Panel Mount							
Wire Leads		•	•	•	•	•	
Solder Lug		•	•	•	٠	•	
Quick Connect							
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Pushbutton		La la	Ŷ	<b>P</b>
Series	PS	PVA	KLS	PLP
Switch Type	Miniature	Miniature	PCB Illuminated	Panel Illuminated
Poles/Throws	SPST, DPDT	DPST, DPDT	SPST, DPDT	Pilot light, SPST, DPDT
Max. Current	0.1 / 1A 0.3 / 2A	100 mA	0.5A / 25Vdc 0.1A / 28Vdc	3A / 250Vac 1A / 30Vdc
Process Sealed			•	
PCB Mount				
Thru-hole	•	•	•	
Surface Mount				
Panel Mount				
Wire Leads	•			•
Solder Lug				•
Quick Connect				
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#### Features/Benefits

- SPDT (N.O. & N.C.)
- Low height above PCB
- Reliable self-cleaning contact
- Surface-mount or thru-hole PCB
- Standard or custom actuator
- Central LED illumination
- Latching or Momentary
- Long travel. Smooth feel
- RoHS compliant and compatible

#### Materials

#### Typical Applications

- Telecom network equipment
- Automotive electronics
- **Consumer electronics**
- Computer, server, modem, data storage
- Professional instrumentation, medical

Patent Numbers 6.974.924 B2 US EP1583118B1 Europe

**LEAD FREE** COMPATIBLE OPTION





#### **Operating Environment**

FIXED CONTACTS: Stainless steel, silver plated with gold flash OPERATING TEMPERATURE: -40°C TO 80°C. TERMINALS: Stainless steel, silver plated MOVABLE CONTACTS: Copper alloy, silver plated with

gold flash BASE: Glass filled LCP (UL94V-0) ACTUATOR: Glass filled nylon 4/6 (UL94V-0) COVER: Stainless steel

#### Electrical

MAXIMUM POWER: 3.5 VA MIN./MAX. VOLTAGE: 20 mV - 50 VDC MIN./MAX. CURRENT: 0.01 mA - 250 mA DIELECTRIC STRENGTH: ≥ 250 Vrms CONTACT RESISTANCE: ≤ 50 mΩ INSULATION RESISTANCE: ≥ 10° Ω BOUNCE TIME: ≤1 ms LED SPECIFICATIONS: See page A-5

#### Mechanical

**OPERATING FORCE: 2.5 N at Full Travel** SWITCHING TRAVEL: .067" (1.7 mm) LATCH TRAVEL: .131" (3.6 mm) FULL TRAVEL: .200" (5.1 mm)

STORAGE TEMPERATURE: -40°C TO 80°C. RELATIVE HUMIDITY: 90% R.H. @ 80°C. OPERATING LIFE: 30,000 Cycles. VIBRATION: Per EIA 186-E Method MECHANICAL SHOCK: Per EIA 186-E Method 12. OVERLOAD: Withstands 40 N for 1 minute without damage

#### Process Environment

SOLDERABILITY: According to Mil STD 202F Method 208D or EIA RS-186E Method 9.

LEAD FREE PROCESS COMPATIBLE: 260°C peak, 10 seconds Max. above 250° C.

WASHING PROCESS: No clean process compatible (SMT) Bottom wash compatible (Thru-hole)

SHEAR TEST (SWITCH/PCB): > 40 N

#### Packaging

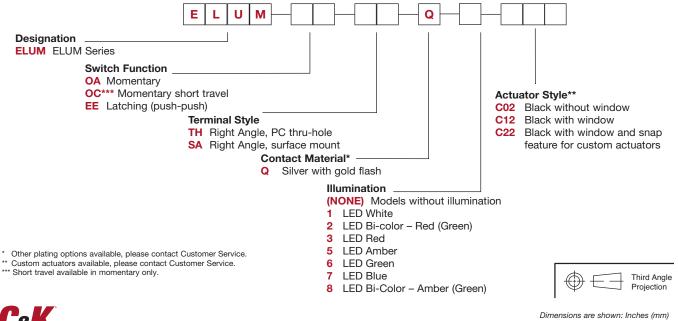
"SA" Terminal Style SMT: Tape and reel per EIA 481-2 (450/reel) "TH" Terminal Style PC: Tray (60/tray)

#### NOTE: Any models supplied with Q. contact material are RoHS compliant.

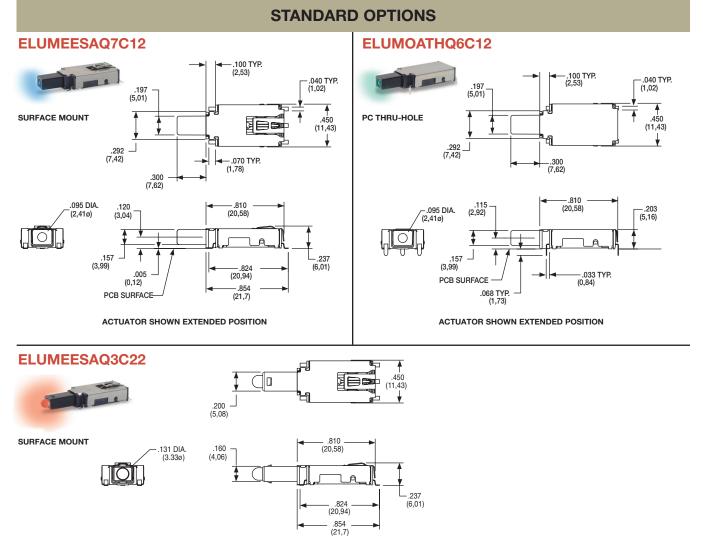
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box.



Specifications and dimensions subject to change



ACTUATOR SHOWN EXTENDED POSITION



ELUM SERIES, Illuminated Latching Pushbutton

## SWITCH FUNCTION

		POSITION -	1	POSITION	12	SCHEMATIC
OPTION CODE	NO. OF POLES	SWITCH FUNCTION	CONNECTED TERMINALS	SWITCH FUNCTION	CONNECTED TERMINALS	3 C 4 NC NO 2
OA / OC	SP Momentary	ON	3 – 4	ON (Mom.)	3 – 2	SPDT
EE	SP Latching (Push-Push)	ON	3 – 4	ON	3 – 2	- → • + Anode - Cathode

For SPST N.O. function, only terminals 3 & 2 are used.

For SPST N.C. function, only terminals 3 & 4 are used.

Circuit: Make before break

NOTE: For bi-color LED's the polarity must be reversed to alternate the color



+ Anode - Cathode



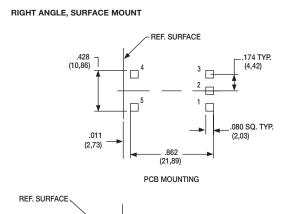
LED pins 1 & 5 are independent of

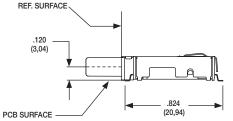
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

Third Angle Projection

### **TERMINAL STYLE**

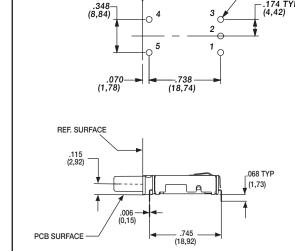
ΤН





Terminal 5 = LED Anode

#### **CONTACT MATERIAL**



4

**RIGHT ANGLE, PC THRU-HOLE** 

REF. SURFACE

3

.062 DIA. TYP.

.174 TYP. (4,42)

(1,57ø)

Terminal 5 = LED Anode

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS
Q	SILVER WITH GOLD FLASH	SILVER	250 mA

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

FIXED CONTACTS AND TERMINALS: Stainless steel, silver plated with gold flash MOVABLE CONTACTS: Copper alloy, silver plated with gold flash

NOTE: Any models supplied with Q, contact material are RoHS compliant.

## **ILLUMINATION**

OPTION CODE	ILLUMINATION TYPE	TYPICAL I MIN	NTENSITY* MAX	PEAK WAVELENGTH	Vf Forward Voltage
		(m	cd)	(nm)	
0	Model without illumination	N	/A	N/A	
1	LED Super White	4,000	5,000	N/A	3.5
2	LED Bi-Color – Red (Green)	10	20	635/565	2.0
3	LED Red	4	8	700	2.0
5	LED Amber	35	50	610	2.0
6	LED Green	35	50	565	2.0
7	LED Super Blue	800	1,500	470	3.8
8	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

\*LED FORWARD CURRENT: 20 mA

LED FORWARD VOLTAGE: see chart above

LED REVERSE VOLTAGE: 5.0 V MAX

\* For information on specific and custom LED, please contact Customer Service.





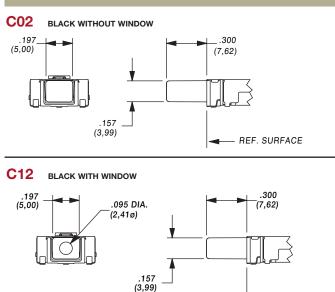
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

SA

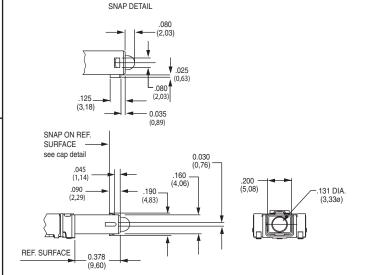
A-6

## **ACTUATOR STYLE\***

-REF. SURFACE

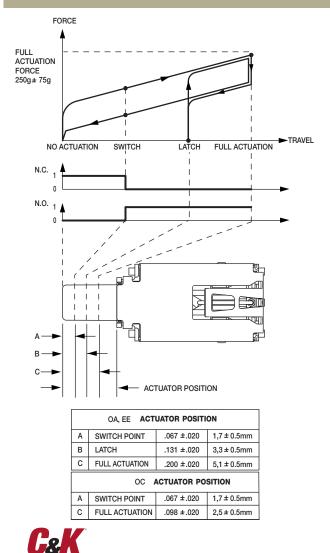


C22 BLACK WITH WINDOW AND SNAP FEATURE TO ACCEPT CUSTOM CAP

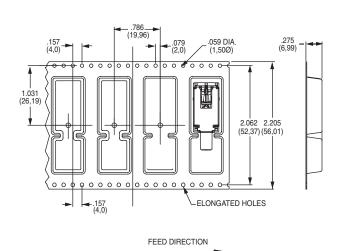


\* Custom actuators available, please contact Customer Service.

#### FORCE TRAVEL DIAGRAM



#### **TAPE & REEL**





#### **AVAILABLE HARDWARE**

#### Cap

PART NO.



#### Cap



#### PART NO.

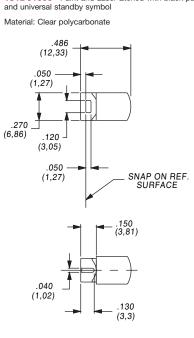
Cap

Pushbutton >

# **957C00000** High temperature black cap with universal standby symbol

# 956C02000 High temperature black cap with no symbol

Material: 4/6 Nylon SMT compatible



181D01000 Paint and Laser Etched with black paint

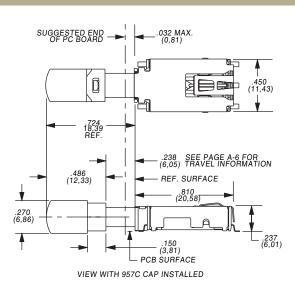


#### PART NO.

**181D00000** Paint and laser etched with white paint underlay and black paint with universal standby symbol. Material: Clear polycarbonate

NOTE: Caps are for use with the C22 actuator style. Other colors and symbols available, consult Customer Service Center.

#### **CAP INSTALLATION**





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Third Angle

Projection

### Features/Benefits

- Sealed against solder & cleaning processes
- Thru-hole and surface mount models
- Snap-fitting actuator accepts standard caps
- Tape & reel packaging available
- RoHS compliant models available



Models Available

#### **Specifications**

- CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page A-13 for additional ratings.
- ELECTRICAL LIFE: EP11, EP21 models: 60,000 make-and-break cycles at full load. EP12 models: 30,000 cycles.
- CONTACT RESISTANCE: Below 20 mΩ9 typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE:  $10^9 \Omega 9$  min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

- SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).
- DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

PACKAGING: Surface mount switches standard in anti-static tape and reel packaging per EIA 481-3, see page A-14 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

#### **Typical Applications**

- Telecommunications and networking equipment
- Computers and peripherals
- Instrumentation and controls





#### Materials

CASE & BUSHING: High temperature material, glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0) on EP11 / EP12 models; glass filled nylon 6/6 on EP21.

PLUNGER: Thermoplastic polyester or glass filled nylon (UL 94V-0), with internal o-ring seal. SA surface mount: High temperature material, glass filled LCP (UL 94V-0).

SWITCH SUPPORT: Brass, matte-tin plated.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-13 for additional contact materials.

TERMINAL SEAL: Epoxy.

#### NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

CAUTION: PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

#### **Build-A-Switch**

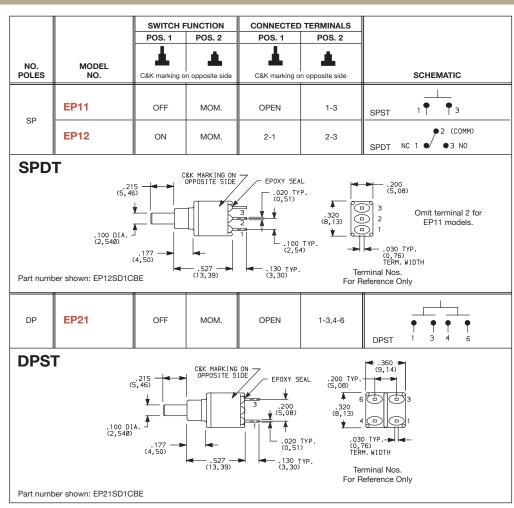
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-10 thru A-14. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

Switch Function — EP11 SPST Off-Mom. EP12 SPDT On-Mom. EP21 DPST Off-Mom.	Plunger         S       .215" high         S1       .110" high         S2       .465" high         FP       Flush         R       Snap-fitting, .215 high (not available with EP12 version)         Bushing	Seal _         E         E         E         E         E         E         E         E         E         E         B         Gold         P         Gold, matte-tin         Q         Silver         S         Silver, matte-tin         G         Gold over silver         R         Gold over silver, matte tin
		Dimensions are shown: Inches (mm)



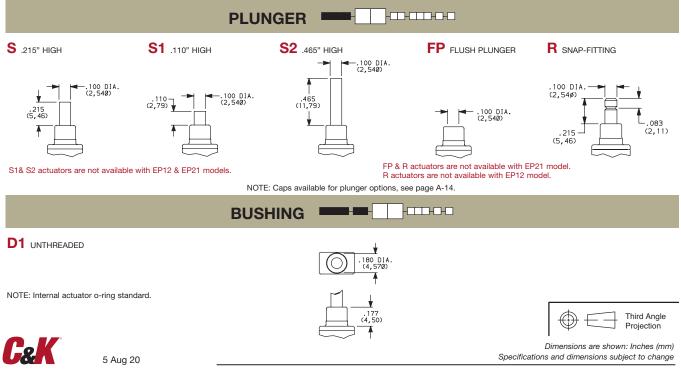
Specifications and dimensions subject to change

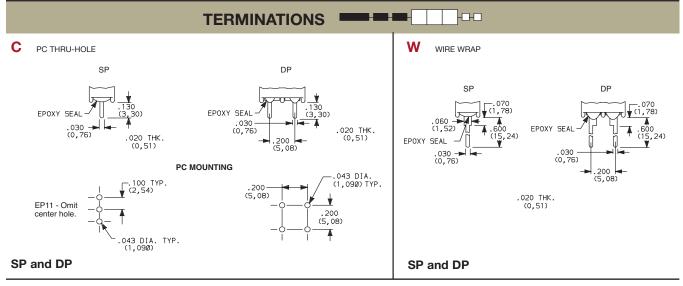
SWITCH FUNCTION



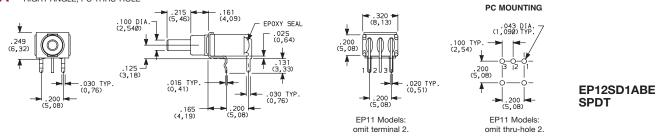
MOM. = Momentary

All models c Wus with all options when ordered with G, Q, R or S contact material.

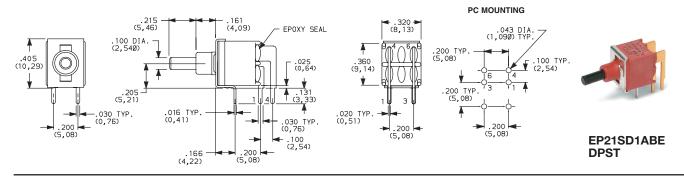




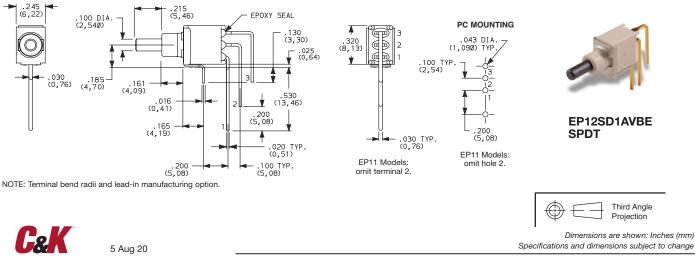
A RIGHT ANGLE, PC THRU-HOLE

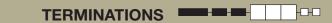


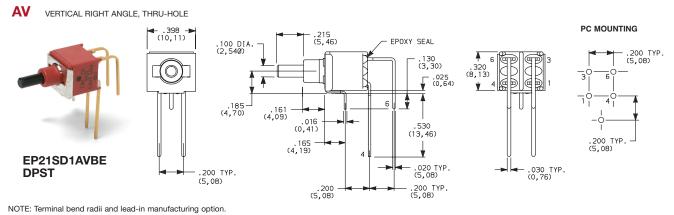
A RIGHT ANGLE, PC THRU-HOLE

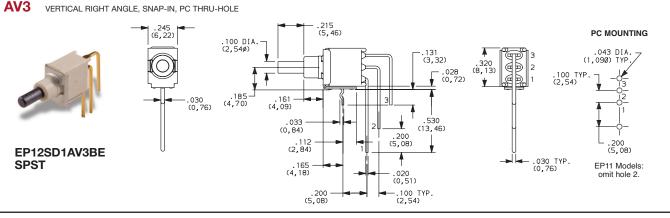


AV VERTICAL RIGHT ANGLE, PC THRU-HOLE

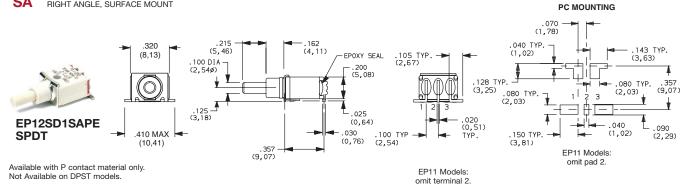




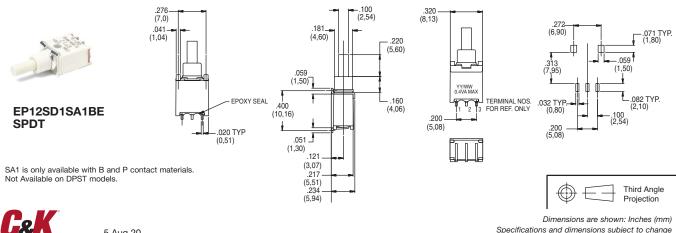






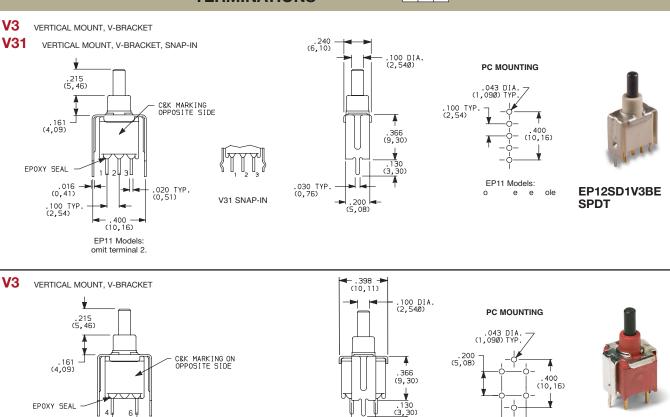






PC MOUNTING

#### -0-0 **TERMINATIONS**



EP21SD1V3BE DPST

#### **CONTACT MATERIAL**

.030 TYP. (0,76)

.200

(5,08)

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	R/	ATINGS	
В	00101	GOLD 1		0.4 VA MAX. @ 20 V AC OR DC MAX.	
Р	GOLD 1	MATTE-TIN 6	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.	
Q	SILVEB 4,5	SILVER 5	2011/52		
S		MATTE-TIN 6	POWER	1 AMP @ 120 V AC OR 28 V DC.	
G	GOLD OVER SILVER 2,3	GOLD <sup>3</sup>	LOW LEVEL/DRY	0.4 VA MAX @ 20 V AC OR DC MAX. OR	
R	GOLD OVEN SILVEN	MATTE-TIN <sup>6</sup>	CIRCUIT OR POWER	1 AMP @ 120 V AC OR 28 V DC.	

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

.020 TYP. (0,51)

.400 — (10,16)

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate

over nickel plate.

<sup>4</sup> END CONTACTS: Coin silver, silver plated.

.016

.200 TYF (5,08)

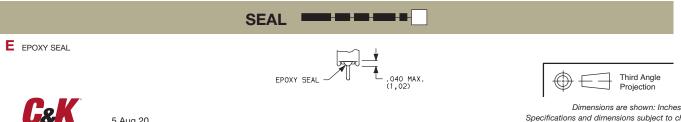
<sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

<sup>6</sup> TERMINALS: Copper alloy, with matte tin over nickel plate.

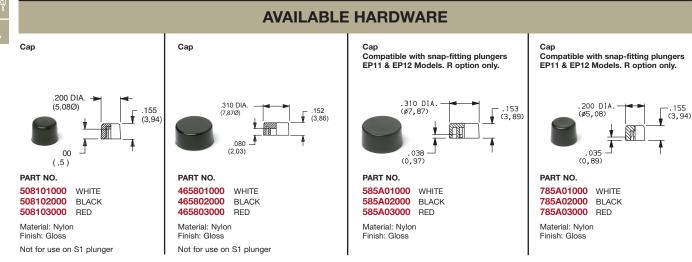
NOTE: Any models supplied with Q, B P, S ,R or G contact material are RoHS compliant.

.200

All models with all options when ordered with G, S, R or Q contact material.



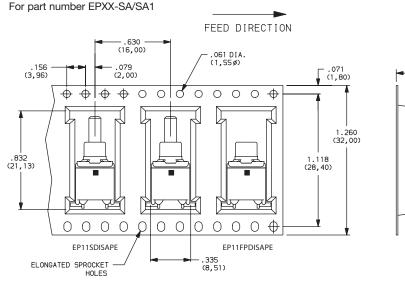




NOTE: Other colors available, consult Customer Service Center.



-.274 (6,96)



REEL INFORMATION		
OUTSIDE DIAMETER	13.00 (330,0)	
PILOT HOLE	.512 (13,0)	
QUANTITY PER REEL	600	



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

GeK

#### Features/Benefits

- Subminiature size—capable of switching 1 AMP
- Vertical & right angle terminations
- PC & panel mount models
- Snap-in front panel mounting available
- Epoxy terminal seal-compatible with bottom wash cleaning
- RoHS compliant models available



Models Available

#### Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 1 AMP @ 120 V AC or 28 V DC. See page A-19 for additional ratings.

- ELECTRICAL LIFE: TP11, TP21 MODELS: 60,000 make-and-break cycles at full load. TP12 MODELS: 30,000 cycles.
- CONTACT RESISTANCE: Below 20 mΩ15 typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.
- INSULATION RESISTANCE:  $10^{9}\Omega$  15min.
- DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or

EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with Q, B, P, R or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

#### **Typical Applications**

- Telecommunications and networking equipment
- Computers and peripherals
- Instrumentation and controls



#### **Materials**

CASE: Glass filled nylon 4/6 or 6/6, flame retardant, heat stabilized or diallyl phthalate (DAP), (UL 94V-0).

PLUNGER: Thermoplastic polyester (UL 94V-0).

CAP & FRAME: Nylon, black standard.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass, matte-tin plated.

- END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page A-19 for additional contact materials.
- CENTER CONTACT & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page A-19 for additional contact materials.
- TERMINAL SEAL: Epoxy. Refer to soldering and cleaning in Technical Data Chapter
- HARDWARE: Nut & Locking Ring: Brass nickel plated. Lockwasher: Steel, nickel plated.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-16 thru A-20. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

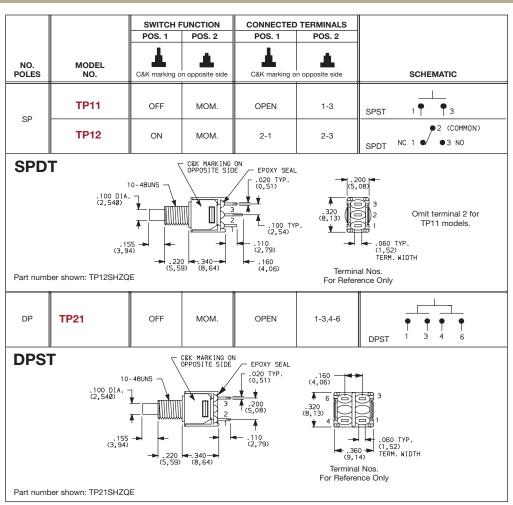
Switch Function TP11 SPST Off-Mom. TP12 SPDT On-Mom. TP21 DPST Off-Mom. SH .155" high plunger, threader .220" high bushing, flat SH8 .155" high plunger, unthreader .220" high bushing, round SH9 .155" high plunger, unthreader .220" high bushing, flat J81 Snap-in with frame LT .215" high plunger, threaded .310" high plunger, unthreader .310" high bushing, flat MS9 .130" high plunger, unthreader .310" high bushing, flat	Terminations         led,       A       Right angle, PC thru-hole         C       PC Thru-hole         led,       Z       Solder lug         AV       Vertical right angle, PC thru-hole         V3       Vertical mount, v-bracket         W       Wire wrap	Seal E Epoxy Cap Color 2 Black NONE Models with no cap 1 White Frame Color 2 Black NONE Models with no frame
.020" high bushing, round	<ul><li>G Gold over silver</li><li>R Gold over silver, matte-tin</li></ul>	



www.ckswitches.com

Pushbutton >





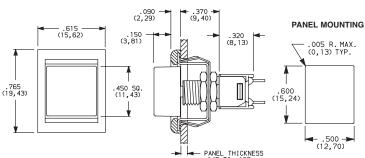
MOM. = Momentary

All models All with all options when ordered with G, Q or R contact material.

**ACTUATOR-SNAP-IN FRONT MOUNT** -----IE COLOB

#### J81 SNAP-IN WITH FRAME







OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
OPTION	

CAP COLOF

.005 R. MAX. (0,13) TYP.

.500 .12.70)

OPTION CODE	FRAME COLOR
2	BLACK
NONE	No Frame Color (J80 option)

Cap and Frame Finish: matte. Other colors available, consult Customer Service Center. NOTE: Available with Z, C, or W terminations.

> Third Angle Projection

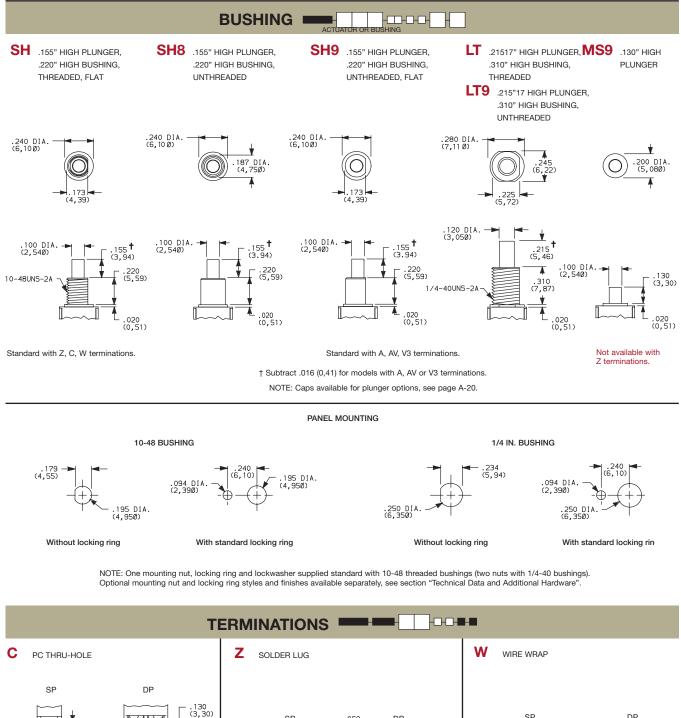
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

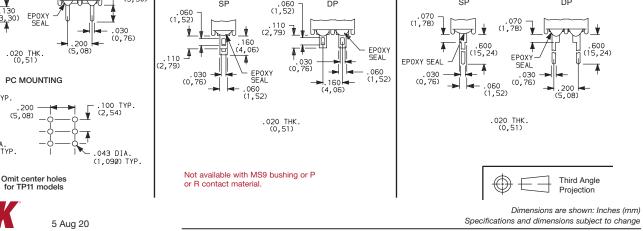


NOTE: Caps & frames available separately, see page A-20.



A Pushbutton





DP

SF

.030

.100 TYP. (2,54)

.043 DIA. (1,090) TYP

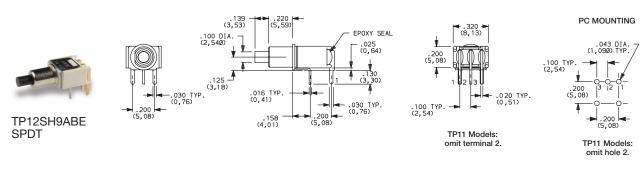
SP

www.ckswitches.com

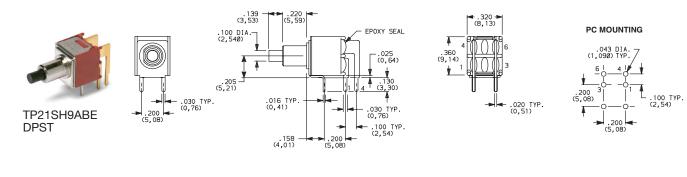
DP

#### ----**TERMINATIONS**

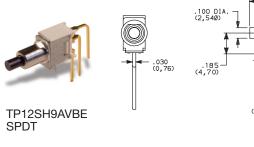
#### Α RIGHT ANGLE, PC THRU-HOLE



Α RIGHT ANGLE, PC THRU-HOLE

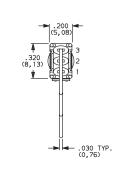


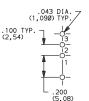
#### AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



.139 (3,53) EPOXY SEAL .025 (0,64) .130 (3,30) 4 .220 200 TYP. (5,08) .016 4 .152 .020 TYP. .100 TYP. (2,54) .200 (5,08)

> TP11 Models: omit terminal 2.

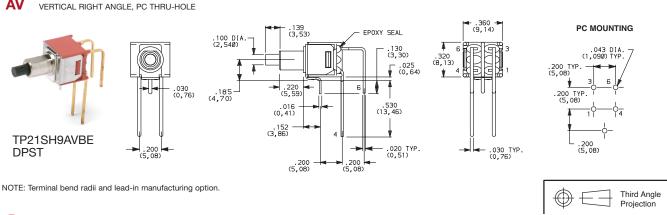




PC MOUNTING

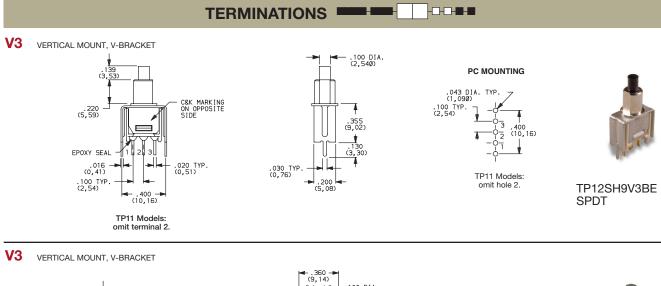
TP11 Models: omit hole 2.

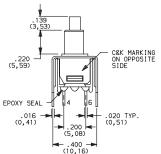
NOTE: Terminal bend radii and lead-in manufacturing option.

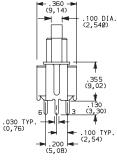


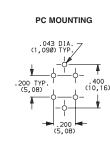
**CeK** 

AV











TP21SH9V3BE DPST

#### 

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
В	GOLD <sup>1</sup>	GOLD <sup>1</sup>		
Р	GOLD '	MATTE-TIN <sup>6</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	SILVER 4,5	SILVER 5	POWER	1 AMP @ 120 V AC OR 28 V DC.
G	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR
R		MATTE-TIN 6		1 AMP @ 120 V AC OR 28 V DC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- <sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.
- <sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>4</sup> END CONTACTS: Coin silver, silver plated.
- <sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- <sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

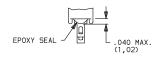
NOTE: Any models supplied with P, R, Q, B or G contact material are RoHS compliant.

All models **N** with all options when ordered with R, G, or Q contact material. B contact material standard with A, AV, V3 & W terminations. Q contact material standard with C & Z terminations

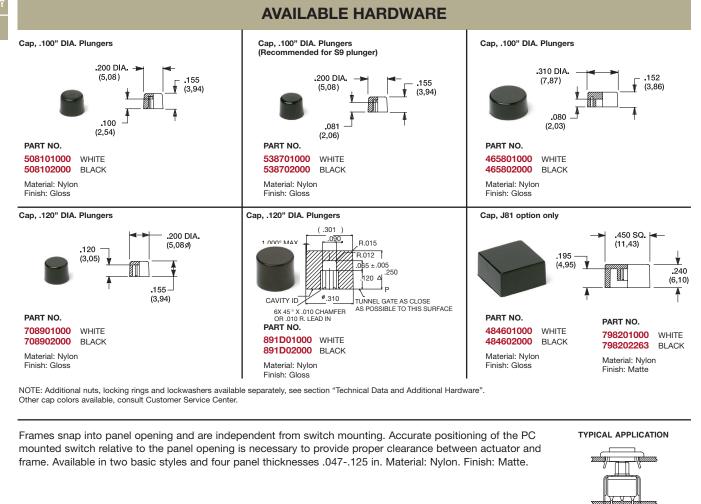
P. R contact materials not available with Z terminations



E EPOXY SEAL









.090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

PART NO. 432702263 PART NO

432802263 BLACK

#### PANEL MOUNTING

For part numbers 432502263, 432602263

.005 R.

(0,13) MAX. TYP

.595 ± .605

 $(15,11 \pm 15,37)$ 

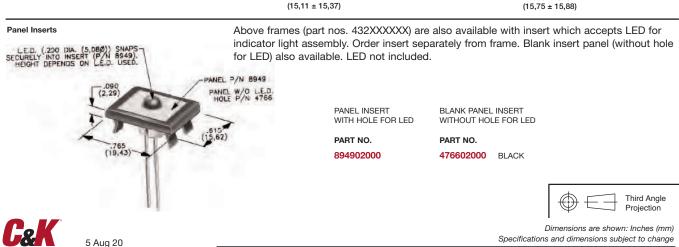


.495 ± .505

(12,57 ± 12,83)

432702263, 432802263 .005 R. .495 ± .505 (0,13) MAX. TYP. (12,57 ± 12,83) .620 ± .625

For part numbers



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#### Features/Benefits

- Process sealed with disposable splashproof boot
- Long life contact design
- Snap-fitting plunger available
- RoHS compliant models available



Models Available

#### Specifications

- CONTACT RATING: B contact material (EX25 Models): 0.4 VA max. @ 20 V AC or DC max. G contact material (EX21 Models): 1 AMP @120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max. Note: Break-before-make contacts. Multi-pole contacts do not make and break simultaneously. See page A-26 for additional ratings.
- ELECTRICAL LIFE: 60,000 make-and-break cycles at full load.
- CONTACT RESISTANCE: Below 50 m21Ω typ. initial @
- 2–4 V DC, 100 mA, for both silver and gold plated contacts. INSULATION RESISTANCE:  $10^{9}\Omega$  min.
- DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 75°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or

EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with P, R, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

#### **Typical Applications**

- Instrumentation
- Telecommunications and networking equipment
- Computers and peripherals



Pushbutto

#### Materials

- CASE & BUSHING: Glass filled nylon 6/6, flame retardant (UL 94V-0).
- PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

SWITCH SUPPORT: Brass or steel, matte-tin.

SWITCH SUPPORT RETAINER: Stainless steel.

- N.O. & N.C. CONTACTS: EX25 MODELS: B contact material: Copper alloy, with gold plate over nickel plate. EX21 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-26 for additional contact materials.
- COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate. See page A-26 for additional contact materials.

TERMINAL SEAL: Epoxy.

DISPOSABLE BOOT: Vinyl splashproof boot supplied standard. Remove and discard only after soldering and cleaning processes are complete.

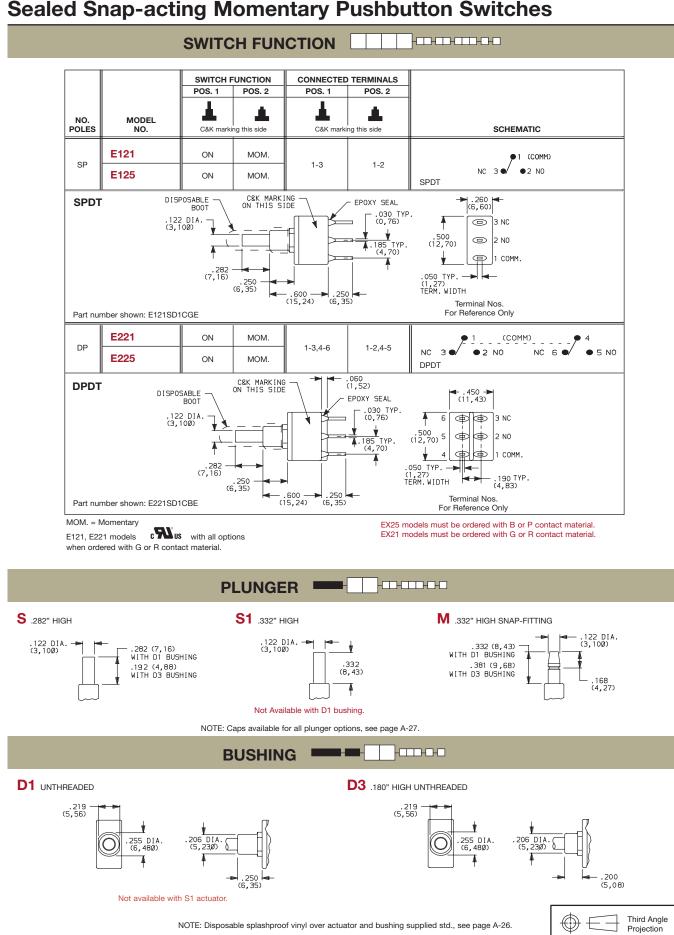
#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-22 thru A-28. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

Switch Function           E121         SPDT On-Mom. 1 Amp           E221         DPDT On-Mom. 1 Amp           E125         SPDT On-Mom. 0.4VA           E225         DPDT On-Mom. 0.4VA		
Plunger S .282" high M .331" high, snap-fitting S1 .332" high	Bushing         D1       Unthreaded         D3       .180" high, unthreaded         Terminations	Contact Material B Gold G Gold over silver P Gold, matte-tin R Gold over silver, matte-tin
	<ul> <li>V6 .460" high, V-bracket</li> <li>V8 .953" high, V-bracket</li> <li>V31 .460" high, snap-in V-bracket</li> <li>V41 .630" high, snap-in V-bracket</li> <li>V61 .460" high, snap-in V-bracket</li> </ul>	Seal E Epoxy and disposable splashproof boot

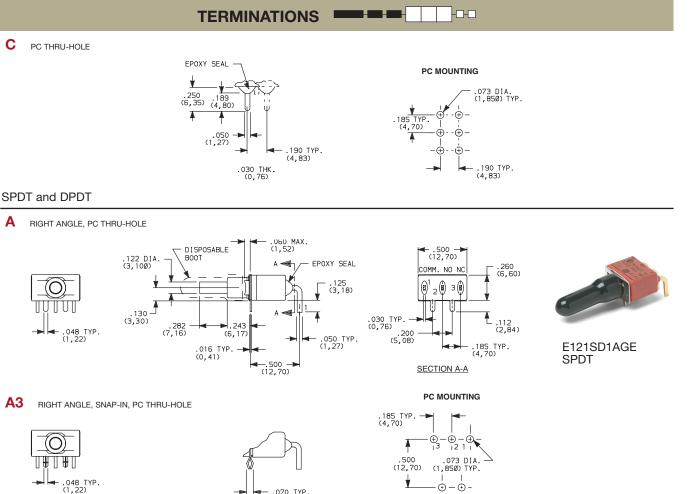


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**C&K** 5 A

Pushbutton >



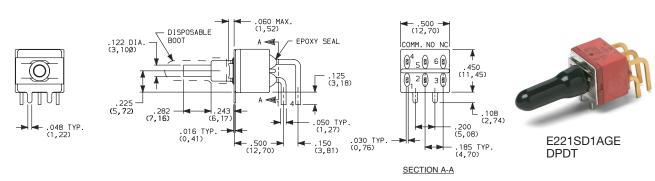
NOTE: Terminal bend radii and lead-in manufacturing option.

#### Α RIGHT ANGLE, PC THRU-HOLE

С

Α

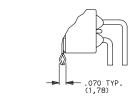
**A3** 



.070 TYP. (1,78)

#### **A3** RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

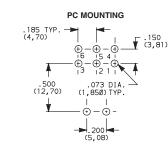




NOTE: Terminal bend radii and lead-in manufacturing option.



5 Aug 20

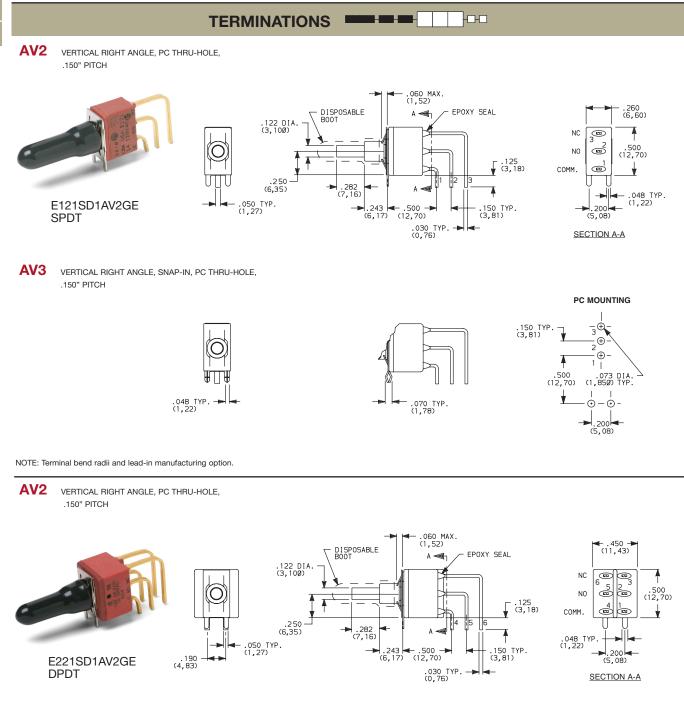


 $(\mathbf{f})$ - (+) -

⊨.<sub>200</sub>⊧ (5,08)

Third Angle Projection

www.ckswitches.com



AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



NOTE: Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

PC MOUNTING

-\_⊕-\_\_6⊕-

- ⊕ - ⊕ -- ⊕ - ⊕ -1 | 4 | .073 DIA. .073 DIA.

 $\oplus - \oplus$ 

.150 TYP. (3,81)

V

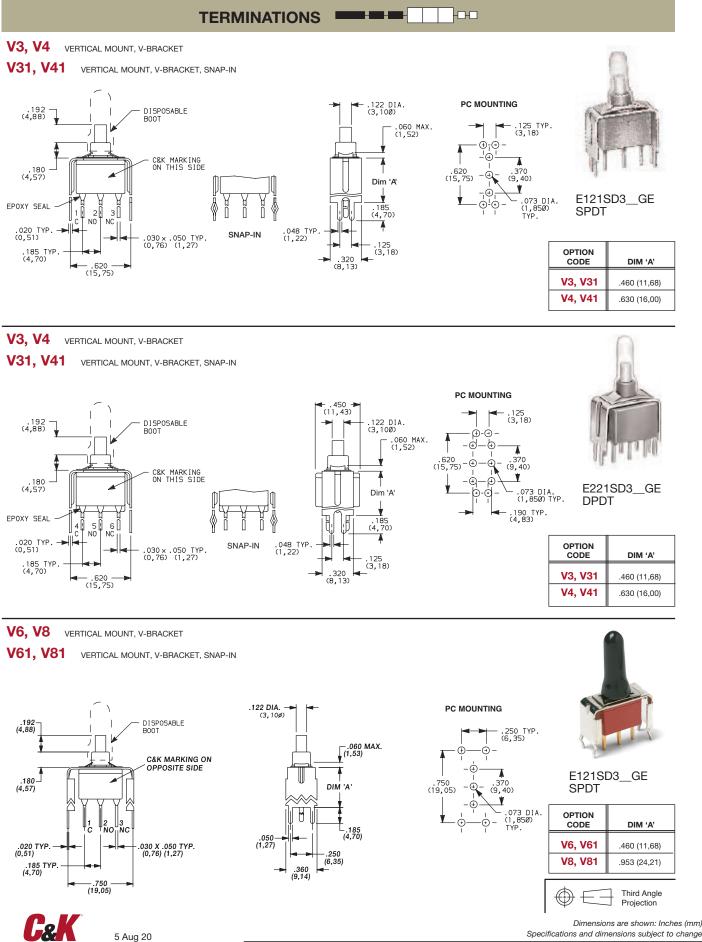
.500

.190 TYP. (4,83)

.200 (5,08)

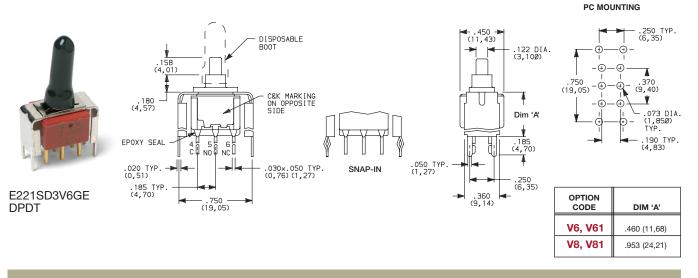
> Third Angle Projection

.070 TYP. (1,78)



TERMINATIONS

- V6, V8 VERTICAL MOUNT, V-BRACKET
- V61, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



#### CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
В	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DBY CIBCUIT	EX25 MODELS ONLY: 0.4 VA MAX.
Р		MATTE-TIN <sup>4</sup>		@ 20 V AC OR DC MAX.
G	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>		EX21 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR
R		MATTE-TIN <sup>4</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- <sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>2</sup> N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
- <sup>3</sup> COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>4</sup> TERMINALS: Copper alloy, with matte-tin alloy over nickel plate.

#### NOTE: Any models supplied with P, R, B or G contact material are RoHS compliant.

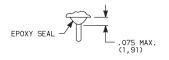
E121, E221 models CNUS with all options when ordered with mandatory G, or R contact material.

P or B contact material must be ordered with EX25 models.

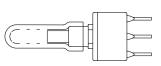
R or G contact material must be ordered with EX21 models.



E EPOXY SEAL AND DISPOSABLE SPLASHPROOF BOOT



Disposable splashproof boot supplied standard. Remove and discard boot *only after* soldering and cleaning processes are complete.

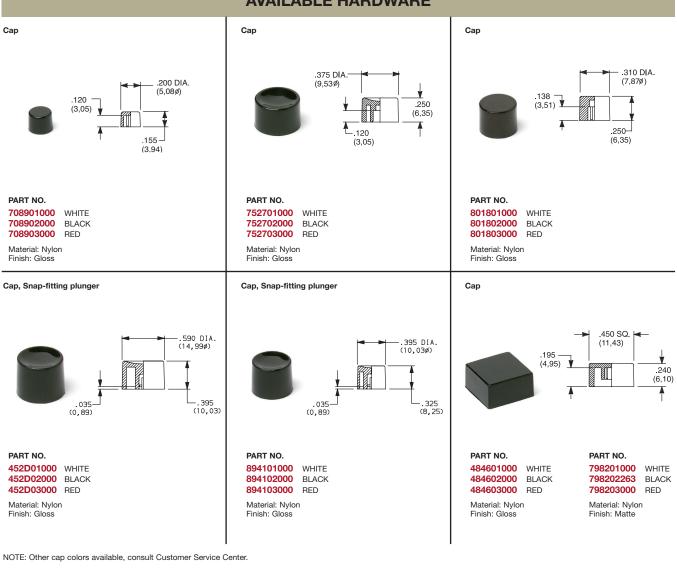






# A Pushbutton

**AVAILABLE HARDWARE** 



Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.







PART NO.	PART NO.	
432702263	432802263	BLACK
	PANEL MOU	ITING
For part numbers 4325xxxxx, 4326xxx		432
.005 R. (0,13) MAX. TYP.	.495 ± .505 (12,57 ± 12,83)	

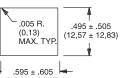
 $(15.11 \pm 15.37)$ 

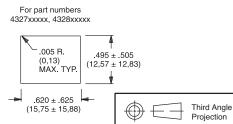


.125" (3,18) PANEL THK.

.090" (2,29) PANEL THK.

PART NO





Dimensions are shown: Inches (mm)

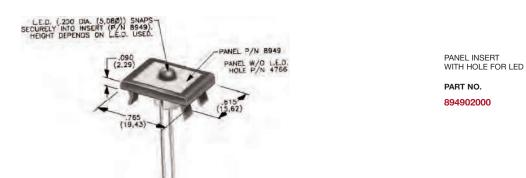
Specifications and dimensions subject to change

#### **AVAILABLE HARDWARE**

PANEL INSERTS

Pushbutton >

Above frames (part nos. 432XXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. LED not included.



ERT BLAN FOR LED WITH

BLANK PANEL INSERT WITHOUT HOLE FOR LED

**PART NO. 476602000** BLACK

Special colors, custom markings available, consult Customer Service Center.



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

 $\bigcirc$ 

Third Angle

Projection

#### Features/Benefits

- Positive tactile feel
- Multi-positions available
- Wide variety of termination options
- Epoxy terminal seal compatible with bottom wash cleaning
- RoHS compliant models available



Models Available

#### Specifications

- CONTACT RATING: B contact material (8X25 Models): 0.4 VA max. @ 20 V AC or DC maximum. G contact material (8X21, U8X1 Models): 1 AMP @ 120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max. Note: Break-before-makecontacts. Multi-pole contacts do not make and break simultaneously. See page A-43 for additional ratings.
- ELECTRICAL LIFE: 60,000 make-and-break cycles at full load.
- CONTACT RESISTANCE: Below 50 mΩ typ. initial @
- 2-4 V DC, 100 mA, for both silver and gold plated contacts. INSULATION RESISTANCE:  $10^{9}\Omega$  min.
- INSULATION RESISTANCE. 10-12 IIIII.
- DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.
- OPERATING TEMPERATURE: 8X2X MODELS: -30°C to 75°C. U8X1 MODELS: -30°C to 65°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with B, P, R, or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

#### **Typical Applications**

- Instrumentation
- Computer peripherals
- Telecommunications equipment



#### Materials

- CASE: Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).
- PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

CAP & FRAME: Nylon, black, standard.

BUSHING: Brass or zinc, nickel plated.

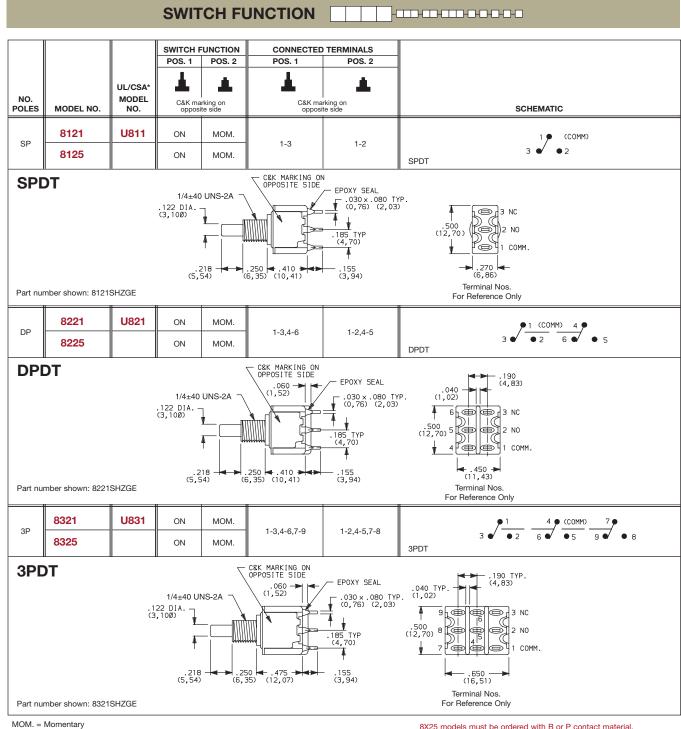
HOUSING: Stainless steel.

- SWITCH SUPPORT: Brass or steel, matte-tin plated.
- N.O. & N.C. CONTACTS: 8X21, U8X1 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-43 for additional contact materials. 8X25 MODELS: B contact material: Copper alloy, with gold plate
  - over nickel plate. See page A-43 for additional contact materials.
- COMMON CONTACT & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- TERMINAL SEAL: Epoxy. Refer to soldering and cleaning Technical Data Chapter.
- HARDWARE: Nut & Locking Ring: Brass, nickel plated; Lockwasher: Steel, nickel plated.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-30 thru A-45. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

Terminations3Red9GrayARight angle, PC thru-holeA4Right angle, PC thru-hole, reversed terminalsV2.555" high, V-bracketV31.460" high, snap-in V-bracketAV2Vertical right angle, PC thru-holeA6Right angle, PC thru-holeV3.460" high, V-bracketV31.460" high, snap-in V-bracketCPC Thru-holeA4Right angle, PC thru-holeV4.630" high, V-bracketV61.460" high, snap-in V-bracketZSolder lugAV3 Vertical right angle, snap-in, PC thru-holeV6.460" high, V-bracketV1.964" long, wire wrapA2Right angle, PC thru-holeRRight angle with PCBV7.630" high, V-bracketV3.425" long, wire wrapA3Right angle, snap-in, PC thru-holeR2Right angle with PCB, reversed terminalsV8.953" high, V-bracketV4.1062" long, wire wrapV9.150" high, V-bracketV4.000" high, V-bracketV4.000" high, veracketV4.425" long, wire wrap	Switch Function           8121         SPDT On-Mom. 1 Amp           8125         SPDT On-Mom. 0.4VA           8221         DPDT On-Mom. 0.4VA           8225         DPDT On-Mom. 0.4VA           8321         3PDT On-Mom. 0.4VA           8325         3PDT On-Mom. 0.4VA           8425         3PDT On-Mom. 0.4VA           8425         4PDT On-Mom. 0.4VA           8425         4PDT On-Mom. 0.4VA           8425         4PDT On-Mom. 0.4VA           Note: UL models available, see page A-30 and A-31.	Actuator or Plung S Plunger NONE Snap-in J80 Snap-in W/frame J82 Snap-in w/frame flush cap J84 Snap-in w/frame flush cap J85 Snap-in w/frame J85 Snap-in w/frame	choice required D .280° high, keyway D2 .288° high, flat D3 .180° high D4 .280° high, keyway D2 .288° high, flat D4 .250° high, flat, hi torque Y .350° high, keyway e for LED, Y3 6.35mm high, keyway, hi torque A .278° high, flat, hi torque & LED Y4 .378° high, flat, hi torque Y9 .350° high, keyway	Contact Material B Gold P Gold, matte-tin G Gold over silver R Gold over silver, matte-tin Seal E Epoxy I Epoxy potted base Cap Color2 Black NONE Models without caps 1 White	Frame Color 2 Black NONE Models without frame 1 White 3 Red 5 Yellow 6 Green 9 Gray LED Color 3 Red 4 Orange 5 Yellow 5 Yellow 6 Green 5 Yellow 7 Blue 6 Green
AV2Vertical right angle, PC thru-holeA6Right angle, PC thru-holeV3.460" high, V-bracketV61.460" high, snap-in V-bracketCPC Thru-holeAV1 Vertical right angle, PC thru-holeAV3 Vertical right angle, PC thru-holeV4.630" high, V-bracketV61.460" high, snap-in V-bracketZSolder lugAV3 Vertical right angle, snap-in, PC thru-holeAV3 Vertical right angle, snap-in, PC thru-holeV6.460" high, V-bracketV1.964" long, wire wrapA2Right angle, PC thru-holeRRight angle with PCBV7.630" high, V-bracketV3.425" long, wire wrapA3Right angle, snap-in, PC thru-holeR2Right angle with PCB, reversed terminalsV8.953" high, V-bracketV41.062" long, wire wrap	Terminations _			3 Red	9 Gray
	<ul> <li>A Right angle, PC</li> <li>AV2 Vertical right ar</li> <li>C PC Thru-hole</li> <li>Z Solder lug</li> <li>A2 Right angle, PC</li> </ul>	ngle, PC thru-hole A A k thru-hole F	<ul> <li>A6 Right angle, PC thru-hole</li> <li>AV1 Vertical right angle, PC thru-hole</li> <li>AV3 Vertical right angle, snap-in, PC thru-hole</li> <li>Right angle with PCB</li> </ul>	<ul> <li>V3 .460" high, V-bracket</li> <li>V4 .630" high, V-bracket</li> <li>V6 .460" high, V-bracket</li> <li>V7 .630" high, V-bracket</li> </ul>	<ul> <li>V61 .460" high, snap-in V-bracket</li> <li>W .750" long, wire wrap</li> <li>W1 .964" long, wire wrap</li> <li>W3 .425" long, wire wrap</li> </ul>



\*U811 thru U841 model numbers cmus with all options (except R, R2 terminations) when ordered with G or R contact mater

8X25 models must be ordered with B or P contact material. 8X21 and U8X1 models must be ordered with G or R contact material.

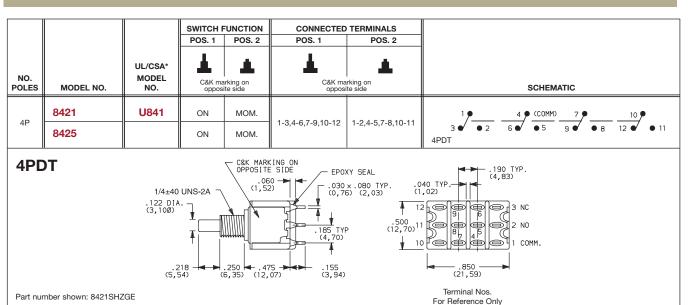


Pushbutton >

Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

Third Angle Projection

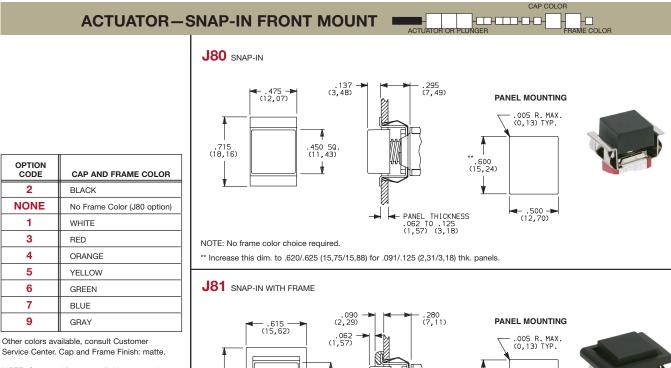
SWITCH FUNCTION



MOM. = Momentary

\* U811 thru U841 model numbers cmus with all options (except R, R2 terminations) when ordered with G or R contact material.

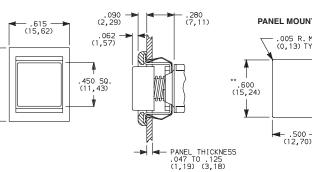
8X25 models must be ordered with B or P contact material. 8X21 and U8X1 models must be ordered with G or R contact material.



NOTE: Caps and frames available separately,

Service Center. Cap and Frame Finish: matte.

see pages A-44 and A-45.





NOTE: Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only. f Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

 $\bigoplus$ Projection

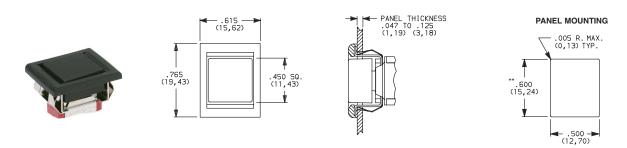
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

Third Angle

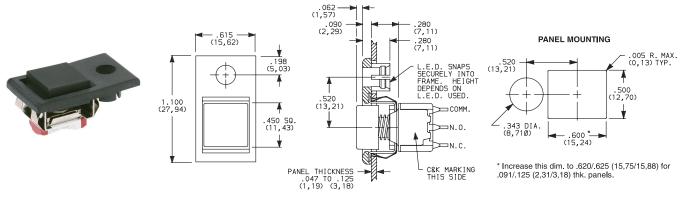
.765 (19,43)

ACTUATOR-SNAP-IN FRONT MOUNT 





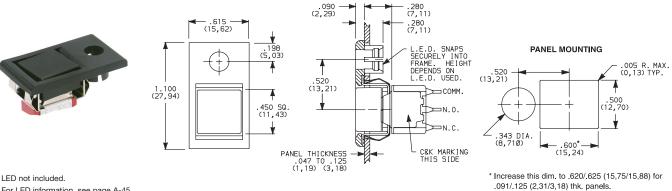
**J82** SNAP-IN WITH FRAME FOR LED



LED not included.

For LED information, see page A-45.

**J84** SNAP-IN WITH FRAME FOR LED, FLUSH CAP



For LED information, see page A-45.

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

Other colors available, consult Customer Service Center. Cap and Frame Finish: matte.

Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only.

NOTE: Caps and frames available separately, see pages A-44 and A-45.



# FRAME COLOR

8020 Series

8121J85ZGE223 SPST

Available with C, W-W4, Z or Z3 terminations and SPDT models only. For LED information see page A-45.

.079 (2,01)

**J85** 

.765 (19,43)

Ĩ

SNAP-IN WITH FRAME AND LED

- .615 -(15,62)

NOTE: Caps & frames available separately, see pages A-44 and A-45.

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

ACTUATOR-SNAP-IN FRONT MOUNT

Ø

.280

PANEL THICKNESS .047 T0 .125 (1,19) (3,18)

SHORT LEAD IS CATHODE

N.C.

N.O.

COMM. C&K MARKING OPPOSITE SIDE

.152 (3,86)

4

v

.197 .450 SQ. (5,00) (11,43)

ŧ

Å

OPTION CODE	LED COLOR	
3 RED		
5	YELLOW	
6 GREEN		
For LED information see page A-45		

**Snap-acting Momentary Pushbutton Switches** 

.600\*

¥

.091/.125 (2,31/3,18) thk. panels.

PANEL MOUNTING

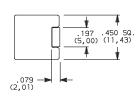
.005 R. MAX. (0,13) TYP.

> - .500 -(12**,**70)

\* Increase this dim. to .620/.625 (15,75/15,88) for

#### 

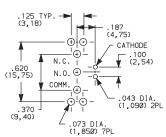
J95 PC WITH V-BRACKET AND LED



← .445 → (11,30)	(11,84) – SH	HORT LEAD CATHODE
		N.C.
		N.O.
		COMM.
		MARKING SITE SIDE

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

PC MOUNTING

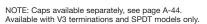


OPTION CODE	LED COLOR	
3	RED	
5	YELLOW	
6 GREEN		
For LED information see page A-45.		



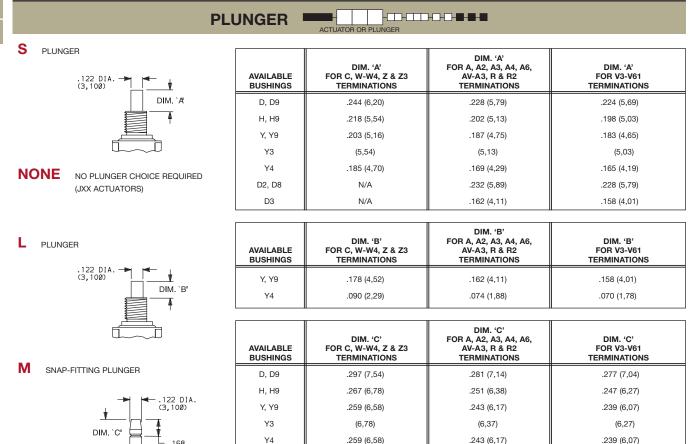
8121J95V3GE23 SPST







www.ckswitches.com



N/A = NOT AVAILABLE

D2, D8

D3

NOTE: When selecting plunger option, bushing selection must also be made, see next page. No plunger option is required when any JXX actuator option is selected. Additional plunger lengths are available on SPDT and DPDT models, consult Customer Service Center. Not all plunger lengths sufficient for use with caps, see page A-44.

.168 (4**,**27)

NONE	NO BUSHING CHOICE REQUIRED (JXX ACTUATORS)	<ul> <li>280" HIGH THREADED, KEYWAY</li> <li>28034" HIGH UNTHREADED, KEYWAY</li> </ul>	<ul> <li>.250"34 HIGH THREADED, FLAT</li> <li>.250"34 HIGH UNTHREADED,</li> <li>FLAT</li> </ul>	<ul> <li>Y .350" HIGH THREADED, KEYWAY</li> <li>Y9 .350" HIGH UNTHREADED, KEYWAY</li> </ul>
		.028	.314 DIA. (7,960) .225 (5,72)	.028 (0,71)
		1/4-40 UNS-2A	1/4-40 UNS-2A MFG. OPTION-RELIEF OR IMPERFECT THD. .040 (1,02) .020 (0,51)	1/4-40 UNS-2A .350 (8, 89)
		D9 bushing standard with A-A6, R, R2 AV-AV3 terminations.	H bushing standard with C, W-W4, Z or Z: H, H9 bushings not available on single pol A3-A6, R, R2 terminations. Will withstand 12 in./lbs. of torque with no distortion.	
<b>C&amp;K</b>	• 29 Aug 18		Sρ	Dimensions are shown: Inches (mm) ecifications and dimensions subject to change

N/A

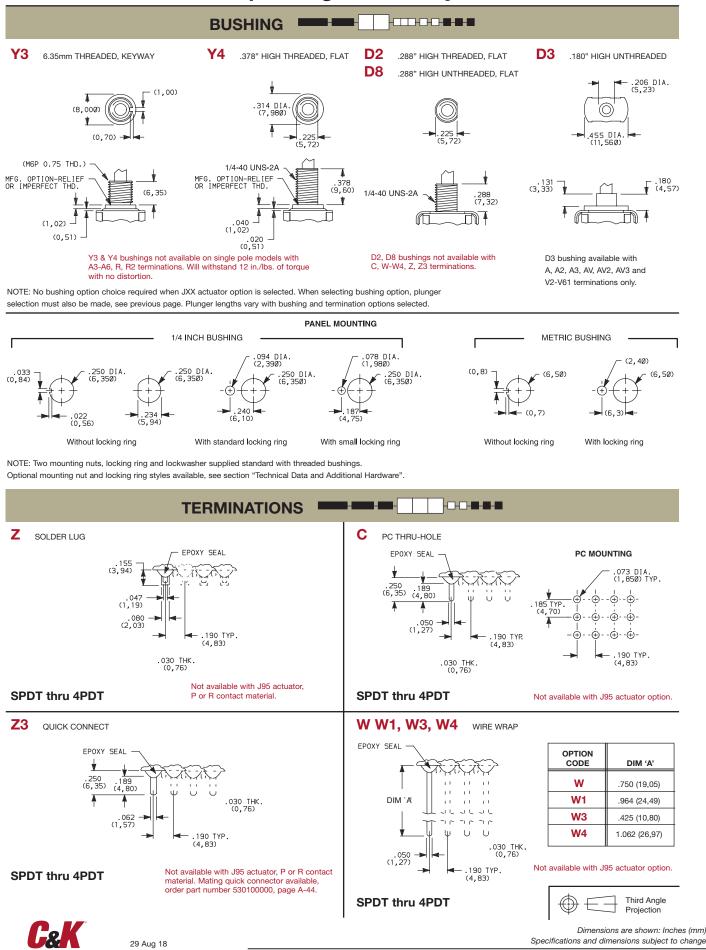
N/A

.273 (6,93)

.361 (9,17)

.269 (6,83)

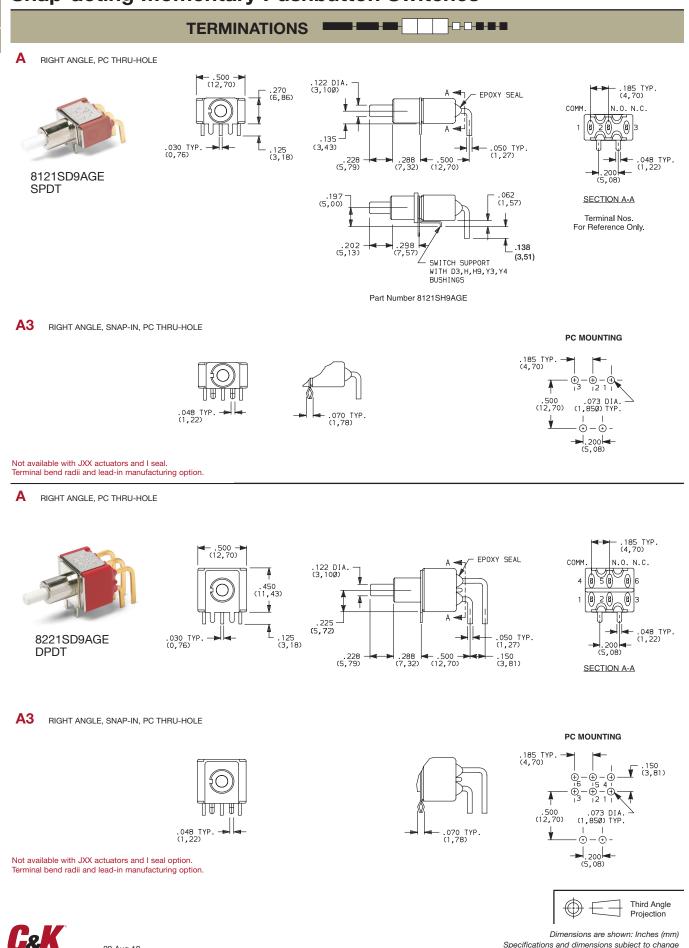
.357 (9,07)



www.ckswitches.com

A-35

Pushbutton >

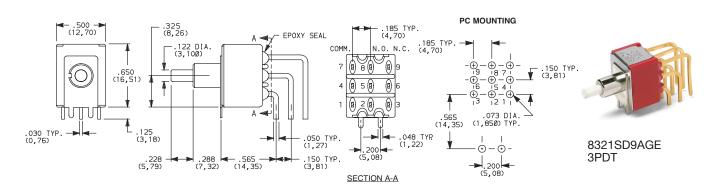


Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

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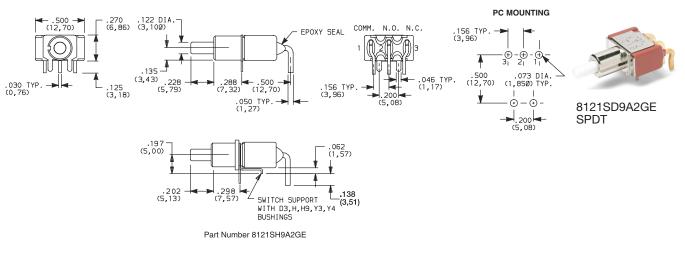
TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE



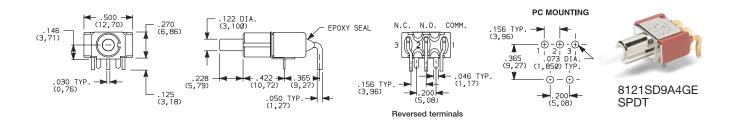
Not available with JXX actuators and I seal option. Terminal bend radii and lead-in manufacturing option

A2 RIGHT ANGLE, PC THRU-HOLE



Not available with JXX actuators, I seal option. Terminal bend radii and lead-in manufacturing option.

A4 RIGHT ANGLE, PC THRU-HOLE, REVERSED TERMINALS



Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings and I seal. Terminal bend radii and lead-in manufacturing option.

The A4 and R2 termination options are functionally identical and fit the same PC mounting pattern. The switches, however, are shifted relative to the mounting holes. The PC pattern must clear the switch support legs. Unlike the R2, the A4 option is available with UL/CSA.



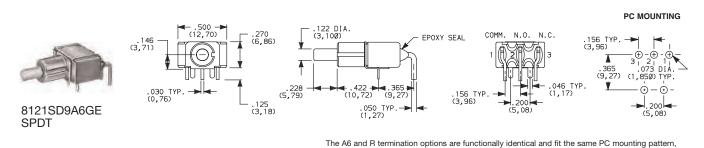
**C&K** 

29 Aug 18

## TERMINATIONS

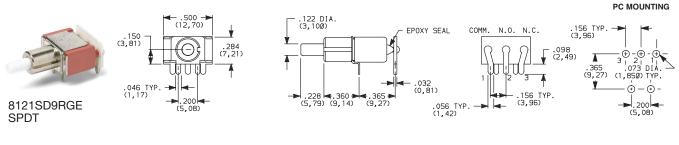
A6 RIGHT ANGLE, PC THRU-HOLE

Pushbutton >



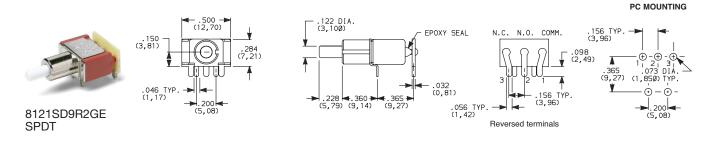
Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings and I seal. Terminal bend radii and lead-in manufacturing option.

#### R RIGHT ANGLE WITH PCB



Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings, I seal option. R termination not UL/CSA approved.

R2 RIGHT ANGLE WITH PCB, REVERSED TERMINALS



Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings, I seal option. R2 termination not UL/CSA approved.





.270 (6,86)

4

**TERMINATIONS** 

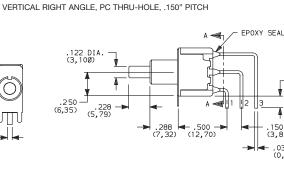
.150 TYP. (3,81)

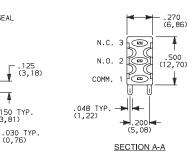
AV1

.048 TYP. (1,22)

.050 TYP. (1,27)

AV2





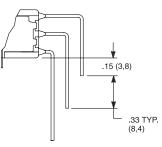


8121SD9AV2GE SPDT

AV3 VERTICAL RIGHT ANGLE, SNAP-IN,, PC THRU-HOLE, .150" PITCH



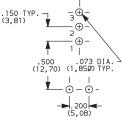
.070 TYP. (1,78)



VERTICAL RIGHT ANGLE, EXTENDED,

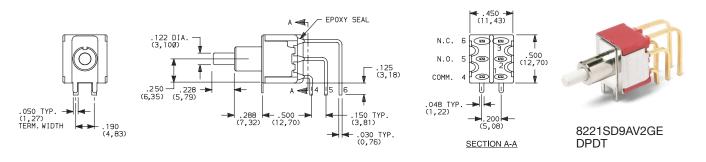
PC THRU-HOLE, .150" PITCH





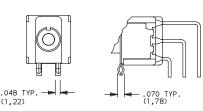
Not available with JXX actuators and I seal Terminal bend radii and lead-in manufacturing option.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



AV3

VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH

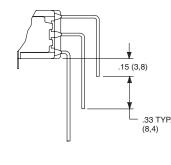


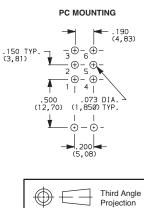
Not available with JXX actuators and I seal. Terminal bend radii and lead-in manufacturing option.

-e

(1,22)

AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH

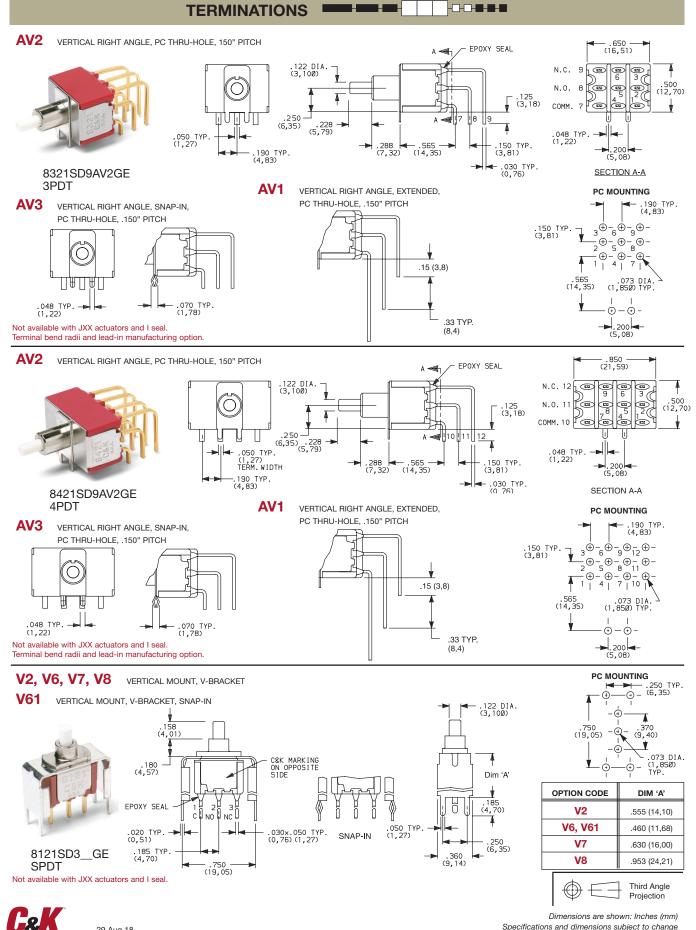




Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

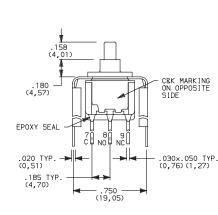
www.ckswitches.com

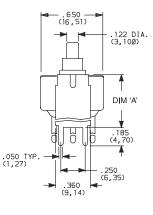


Specifications and dimensions subject to change

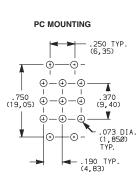
┝ᢕᢕ᠊᠊᠊᠊᠊᠊᠆᠊᠊᠊ -----**TERMINATIONS** V2, V6, V7, V8 VERTICAL MOUNT, V-BRACKET V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN ← .450 → (11,43) .122 DIA. (3,10Ø) PC MOUNTING .158 (4,01) .250 TYP. (6,35) Θ C&K MARKING ON OPPOSITE SIDE 4 l. .180 Ð Ð Dim 'A' 8221SD3\_GE .370 (9,40) (19,05) -⊕ Ð DPDT ¥ ĥ ¥ EPOXY SEAL 5 NO 6 NC .185 Æ .073 DIA. (1,850) TYP. [ .050 TYP (1,27) .020 TYP. (0,51) .030x.050 TYP. (0,76)(1,27) SNAP-IN .250 (6,35) OPTION .185 TYP. (4,70) .190 CODE .360 (9,14) -.750 -(19,05) **V2** V6, V61 **V7 V**8 Not available with JXX actuators and I seal.

V2, V7, V8 VERTICAL MOUNT, V-BRACKET





- .850 · (21,59)





DIM 'A'

.555 (14,10)

.460 (11,68)

.630 (16,00)

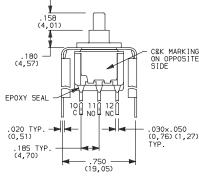
.953 (24,21)

8321SD3\_\_GE 3PDT

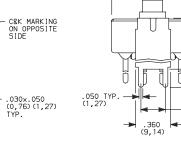
OPTION CODE	DIM 'A'
V2	.555 (14,10)
<b>V</b> 7	.630 (16,00)
<b>V</b> 8	.953 (24,21)

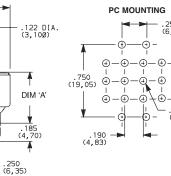
## Not available with JXX actuators and I seal

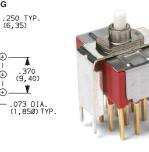




Not available with JXX actuators and I seal.







8421SD3\_\_GE 4PDT

$\oplus$ E	Third Angle Projection	

Specifications and dimensions subject to change



A-41

OPTION CODE

**V**2

**V7** 

**V**8

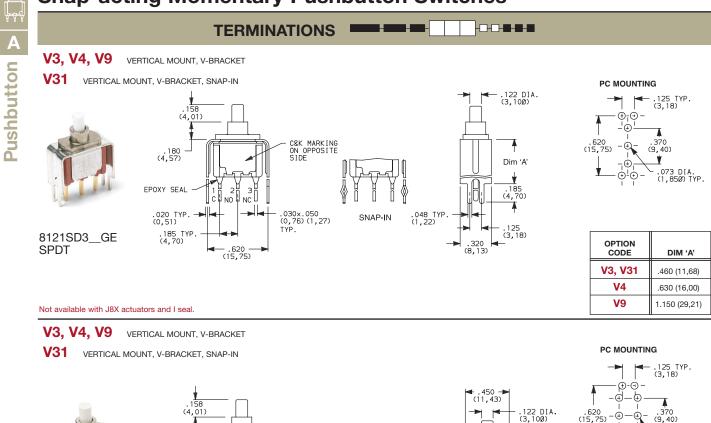
DIM 'A'

.555 (14,10)

.630 (16,00)

.953 (24,21)

Dimensions are shown: Inches (mm)



C&K MARKING ON OPPOSITE SIDE

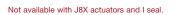
.030x.050 (0,76)(1,27) TYP.

SNAP-IN

.048 TYP

F

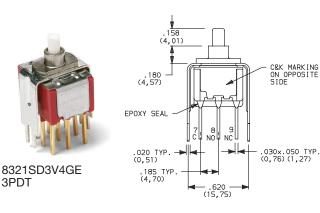
- .620 -(15,75)



8221SD3\_GE

DPDT

V4, V9 VERTICAL MOUNT, V-BRACKET



.180 (4,57)

EPOXY SEAL

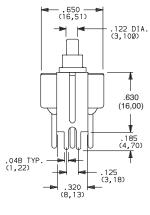
.020 TYP. (0,51)

.185 TYP (4,70)









PC MOUNTING

¥

.073 DIA. (1,850) TYP.

DIM 'A'

.460 (11,68)

.630 (16,00)

1.150 (29,21)

Ð

OPTION

CODE

V3, V31

**V**4

**V**9

.190 (4,83)

Dim 'A'

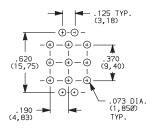
.185

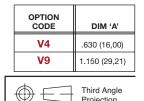
4

.125 (3,18)

.320 (8,13)

b-6





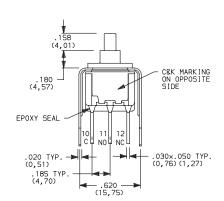
Projection

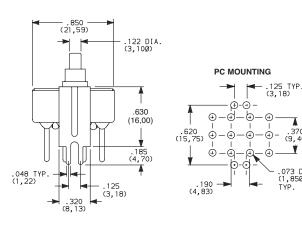
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

www.ckswitches.com

<u>}</u>\_\_\_\_**₽\_₽**₽ TERMINATIONS

#### V4, V9 VERTICAL MOUNT, V-BRACKET







8421SD3V4GE 4PDT

370

(9,40)

¥

.073 DIA. (1,850)

TYP.

OPTION CODE	DIM 'A'
<b>V</b> 4	.630 (16,00)
<b>V</b> 9	1.150 (29,21)

Not available with JXX actuators and I seal

#### CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING		RATINGS
В	GOLD 1	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	8x25 MODELS ONLY: 0.4 MAX. @ 20 V AC OR DC MAX.
Р	GOLD	MATTE-TIN <sup>4</sup>		
G	GOLD OVER SILVER 2,3	GOLD <sup>3</sup>	LOW LEVEL/DBY	8X21, U8X1 MODELS ONLY: 0.4 VA MAX
R	GOLD OVEN GIEVEN	MATTE-TIN <sup>4</sup>	CIRCUIT OR POWER	@ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> ALL CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate

<sup>4</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

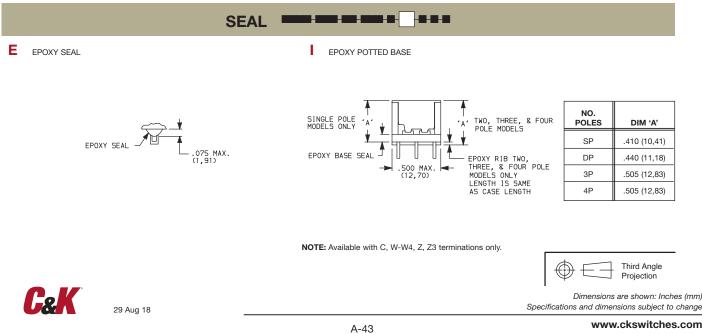
#### NOTE: Any models supplied with B, P, R or G contact material are RoHS compliant.

U811-U841 models  ${}_{\circ}$   $\mathbf{N}$   ${}_{\circ}$   ${}^{\circ}$  with all options (except R, R2 terminations) when ordered with mandatory G or R contact material.

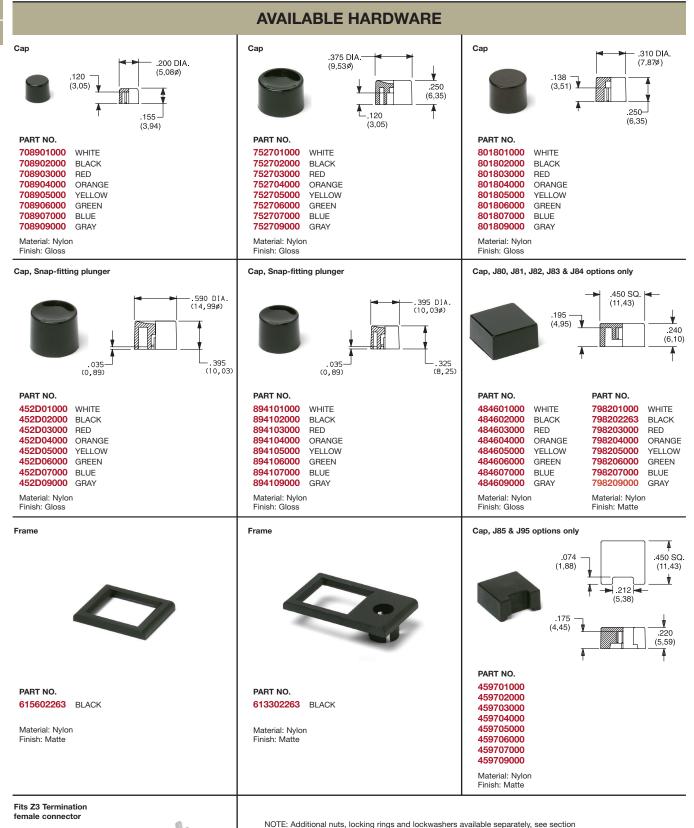
B or P contact material must be ordered with 8X25 models.

G or R contact material must be ordered with 8X21, U8X1 models.

P or R contact material not available with Z, Z3 terminations.



Pushbutton >



PART NO.

530100000



Available in loose pieces.



"Technical Data and Additional Hardware".

Other cap & frame colors available, consult Customer Service Center.

www.ckswitches.com

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

Third Angle Projection

# AVAILABLE HARDWARE

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.





.090" (2,29) PANEL THK.

PART NO. 432702263

For part numbers

4325xxxxx, 4326xxxxx

005 B

MAX TYP

.595 ± .605 (15,11 ± 15,37)

(0, 13)

.495 ± .505

 $(12,57 \pm 12,83)$ 

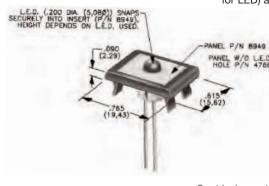
.125" (3,18) PANEL THK PART NO.

432802263 BLACK

PANEL MOUNTING

For part numbers 4327xxxxx, 4328xxxxx .005 R. (0,13) MAX. TYP. .620 ± .625 (15,75 ± 15,88)

Panel Inserts



Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. LED not included.

PANEL INSERT WITH HOLE FOR LED

Flat denotes

cathode

.230 DIA

(5.84)

200 DIA

(5.08))

PART NO.

894902000

BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO. 476602000 BLACK

Special colors, custom markings available, consult Customer Service Center.

## LED INFORMATION

SWITCHES WITH LED SUPPLIED: J85, J95 OPTIONS:

Rectangular LEDs are supplied on 8020 Series pushbutton switches with J85 and J95 options. These LEDs are factory installed and are not replaceable. The following specifications apply:

			TYP.	TYP.	MAX RAT	NGS AT 25°C AMBIENT T	EMPERATURE
OPTION CODE	COLOR	TYP. INTENSITY	FORWARD VOLTAGE	FORWARD	FORWARD VOLTAGE	CONTINUOUS FORWARD CURRENT	POWER DISSIPATION
6	Green	1.0 mcd		20 mA	2.5 V	50 mA	125 mW
3	Red*	0.5 mcd	2.1 V	10 mA		30 mA	75 mW
5	Yellow	4.0 mcd		20 mA		50 mA	125 mW

**Process Information:** Soldering to LED leads must be completed within 5 seconds at 500°F ( $260^{\circ}$ C) maximum.

**Caution:** Circuit elements must limit forward current of LED to 50mA max. continuous. \* Extra-bright red LED available (typ. intensity 4.5 mcd), consult Customer Service Center. LEDs are not supplied with J82, J84 options. LED snaps into switch frame surrounding actuator and is wired externally.



.030-

(0,76)

.340

Suggested LED for J82 & J84 options.

Dimensions for reference only

(8,64)

Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

.025 SQ.

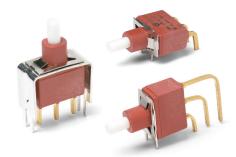
TYP. (0,63)



750

(19,05)

www.ckswitches.com



## Features/Benefits

- Process sealed, withstands soldering and cleaning
- Long life contact design
- Snap-fitting plunger available, accepts a variety of caps
- RoHS compliant models available

## **Typical Applications**

- Instrumentation
- Telecommunications and networking equipment
- Computers and peripherals

c Sus Models Available

## Specifications

Materials

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC. See page A-50 for additional ratings.

ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2–4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE:  $10^9 \Omega$  min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 75°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or

EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with P, Q, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

- CASE & BUSHING: Glass filled nylon 6/6, flame retardant (UL 94V-0).
- PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0), with internal o-ring seal standard.
- SWITCH SUPPORT: Brass or steel, matte-tin plated.

SWITCH SUPPORT RETAINER: Stainless steel.

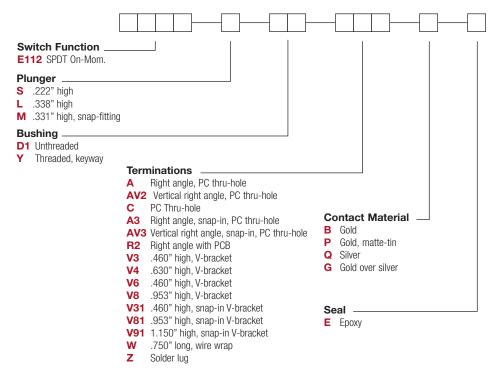
- END CONTACTS: Q contact material: Coin silver, silver plated. See A-50 for additional ratings.
- CENTER CONTACTS & ALL TERMINALS: Q contact material: Copper alloy, silver plated. See page A-50 for additional ratings.

#### TERMINAL SEAL: Epoxy.

HARDWARE: Nut & locking ring-Brass, nickel plated. Lockwasher-Steel, nickel plated.

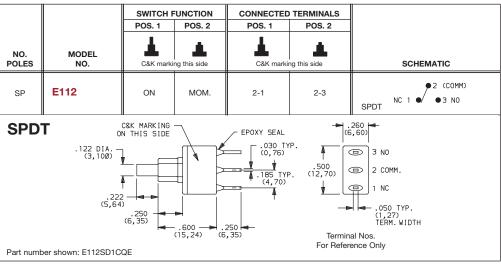
## **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-47 thru A-51. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.





## SWITCH FUNCTION



#### MOM. = Momentary

All models 

with all options when ordered with G or Q contact material.

#### PLUNGER

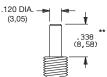
#### S .218" HIGH



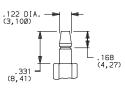
Standard with D1 bushing (as shown). † Subtract .100 (2,54) from plunger length when ordered with Y bushing.

# .338" HIGH

with D1 bushing.

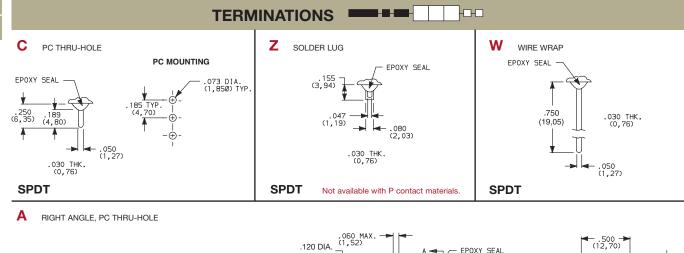


Standard with Y bushing (as shown). \*\* Add .100 (2,54) from plunger length when ordered M .331" HIGH, SNAP-FITTING



NOTE: Caps available for all plunger options, see pages A-50 and A-51.

#### -----**BUSHING** . . D1 UNTHREADED Y THREADED, KEYWAY C&K marking PANEL MOUNTING .219 (5,56) KEYWAY this side. 1/4-40 NS .240 DIA. (6.10Ø) 3 .033 ţ .250 DIA. (6,350) 255 DIA (6,48Ø) 2 .022 .350 (8,89) (6, L plunger standard with Y bushing. Available only with C, Z terminations. Hardware: One dress nut part number 299D01201, one hex nut and lockwasher supplied standard. S plunger standard with D1 bushing. Withstands 4 in./lbs. without distortion. Third Angle Projection NOTE: Internal o-ring actuator seal standard for all bushing options. Dimensions are shown: Inches (mm) Specifications and dimensions subject to change





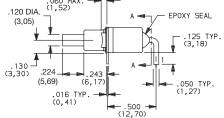
**A3** 

Pushbutton >



.070 TYP. (1,78)

AW



.50 (12,7)

Α 

Α

.150 TYP. (3,81)

.030 TYP. (0,76)

Ā

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.243 .500 -(6,17) (12,70)

EPOXY SEAL

PC MOUNTING

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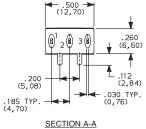
1 | .500 .073 DIA. (12,70) (1,85Ø) TYP.

Т

.200 (5,08)

-.125 (3,18)

.150 TYP. (3,81)



RIGHT ANGLE, EXTENDED, PC THRU-HOLE

.060 MAX. (1,52)

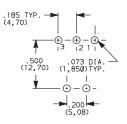
.224

(5,69)

(3.05)

.222

PC MOUNTING



(B)

\_\_\_\_\_ \_\_\_\_

->

.200 (5,08)

SECTION A-A

.260 (6,60)

4

.500

¥

Third Angle Projection

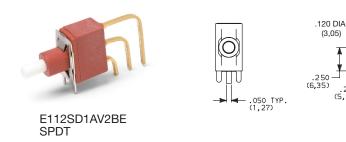
.048 TYP. (1,22)

NOTE: Terminal bend radii and lead-in manufacturing option. Available with D1 bushing only.

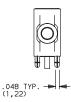
.048 TYP. (1,22)

RIGHT ANGLE, SNAP-IN, PC THRU-HOLE





AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



NOTE: Terminal bend radii and lead-in manufacturing option. Available with D1 bushing only.



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

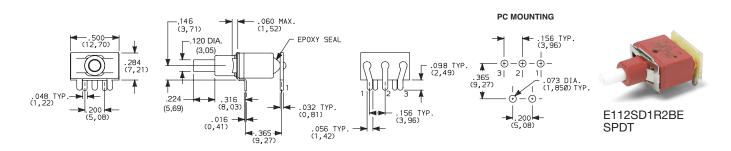
www.ckswitches.com

.070 TYP. (1,78)

100

TERMINATIONS

**R2** RIGHT ANGLE WITH PCB

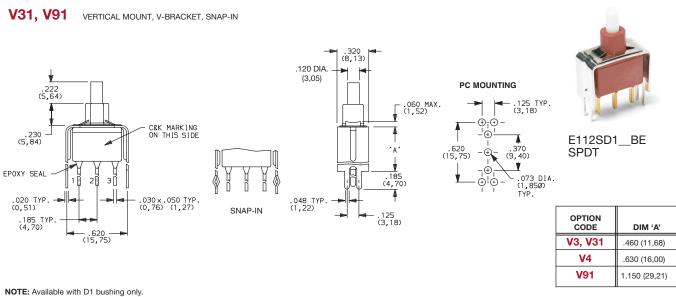


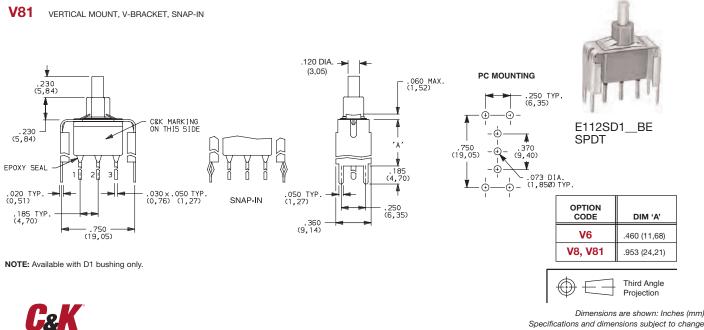
NOTE: Available with D1 bushing and B contact material only.

VERTICAL MOUNT, V-BRACKET

V3, V4 VERTICAL MOUNT, V-BRACKET

V6, V8





Specifications and dimensions subject to change

www.ckswitches.com

Pushbutton >

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RAT	INGS	
В	GOLD <sup>1</sup>	GOLD <sup>1</sup>		0.4 VA MAX. @ 20 V AC OR DC MAX.	
Р		MATTE-TIN 6	LOW LEVEL/DRY CIRCUIT		
Q	SILVER 4,5	SILVER 5	POWER	4 AMPS @ 125 V AC 0R 28 V DC.	
G	GOLD OVER SILVER 2,3	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX. @ 20 V AC OR DC MAX. OR 4 AMPS @ 125 V AC 0R 28 V DC.	

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- <sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.
- <sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Coin silver, with gold plate
- over nickel plate.
- <sup>4</sup> END CONTACTS: Coin silver, silver plated.
- <sup>5</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.
- <sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

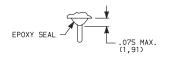
#### NOTE: Any models supplied with P, Q, B or G contact material are RoHS compliant.

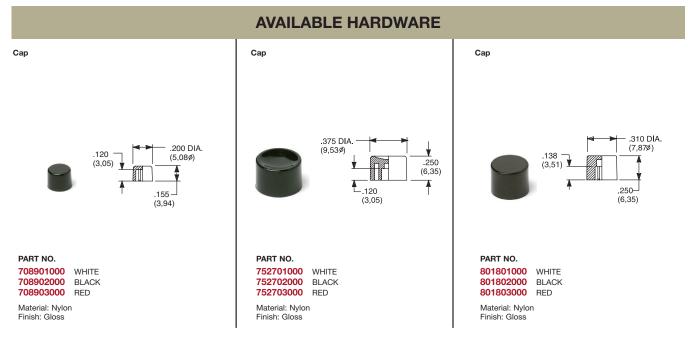
All models **cN**us with all options when ordered with G or Q contact material. B contact material standard with all terminations except C, Z.

- B contact material standard with all terminations except of B contact material must be ordered with R2 terminations.
- Q contact material standard with C, Z terminations.
- P contact materials not available with Z terminations.



E EPOXY SEAL





NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware". Other cap colors available, consult Customer Service Center.



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Third Angle Projection

v

4

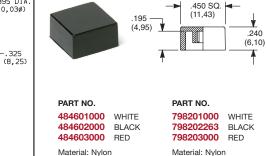


.035

WHITE

BLACK

RED



Finish: Gloss

Material: Nylon Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware". Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

PART NO.

PART NO.

894101000

894102000

894103000

Finish: Gloss

Material: Nylon

395 (10,03)





Cap, Snap-fitting plunger

PART NO.

452D01000 WHITE

452D02000 BLACK

452D03000 RED

Material: Nylon

Finish: Gloss

.035

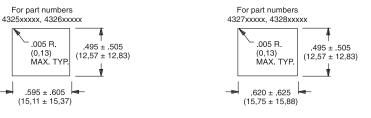
#### .090" (2,29) PANEL THK.

432702263

.005 R.

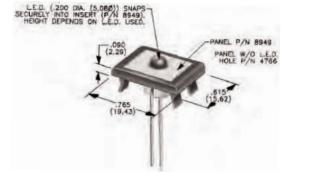
.125" (3,18) PANEL THK. PART NO. 432802263 BLACK

PANEL MOUNTING



Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. LED not included.



PANEL INSERT WITH HOLE FOR LED

BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO. 894902000 PART NO. 476602000 BLACK

Special colors, custom markings available, consult Customer Service Center.



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

Third Angle Projection



## Features/Benefits

- Long travel
- Available with LED
- Long life contact design
- Epoxy terminal seal compatabile with bottom wash cleaning
- RoHS compliant models available

Materials

## **Typical Applications**

- Instrumentation
- Computers and peripherals
- Telecommunications and networking equipment



## Specifications

CONTACT RATING: Q contact material: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC. See page A-59 for additional ratings.

ELECTRICAL LIFE: 50,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 20 m $\Omega$  typ. initial @

2-4 V DC, 100 mA, for both silver and gold plated contacts. INSULATION RESISTANCE:  $10^9\Omega$  min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

CAP INSTALLATION FORCE: 10 lbs. maximum permissible.

NOTE: Any models supplied with P, R, S, Q, B or G contact material are RoHS compliant

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

CASE: Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).

PLUNGER: S, S1, S2 Options: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0). L, L1 Options: Brass, nickel plated.

CAP & FRAME: Nylon, black standard.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

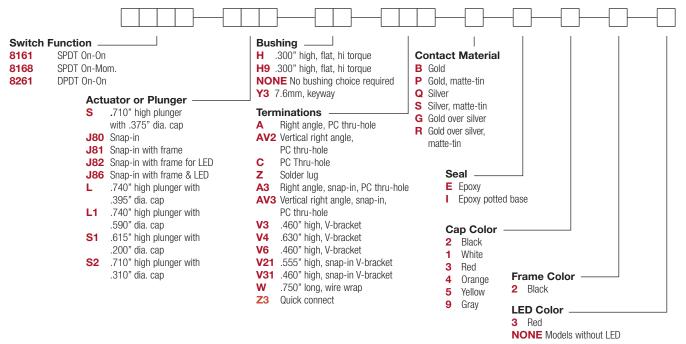
END CONTACTS: Q contact material: Coin silver, silver plated. See page A-59 for additional contact materials.

CENTER CONTACT & ALL TERMINALS: Q contact material: Copper alloy, silver plated. See page A-59 for additional contact materials.

- TERMINAL SEAL: Epoxy. Refer to soldering and cleaning in Technical Data Chapter.
- HARDWARE: Nut & Locking Ring: Brass, nickel plated; Lockwasher: Steel, nickel plated.

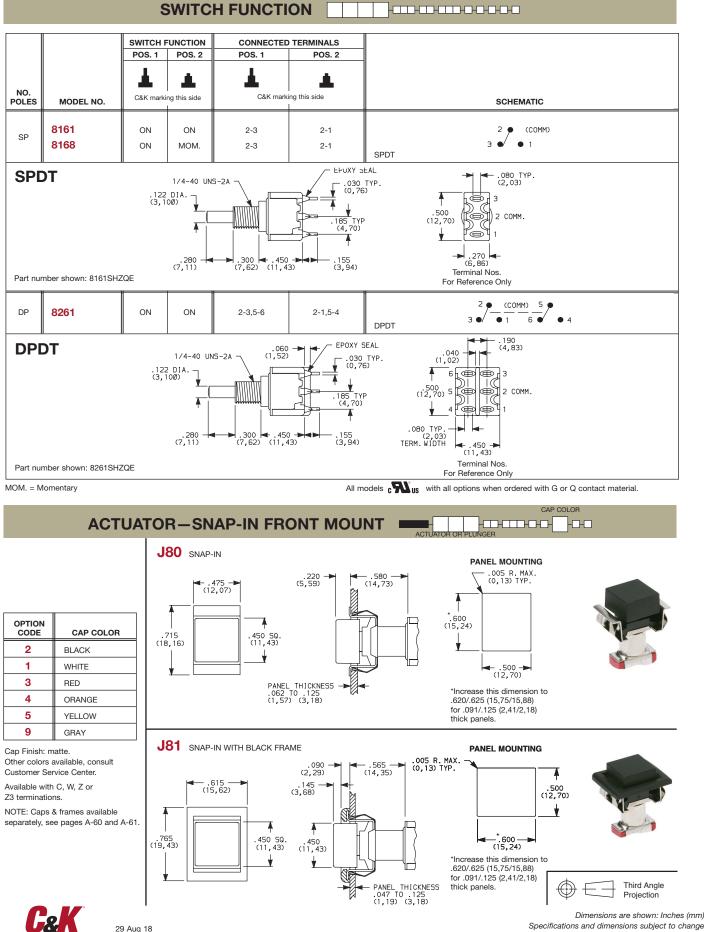
## **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-53 thru A-61. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.





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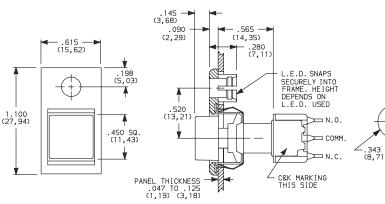
# 29 Aug 18

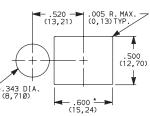
A-53

Specifications and dimensions subject to change

## ACTUATOR-SNAP-IN FRONT MOUNT







PANEL MOUNTING

\* Increase this dimension to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thick panels.

Available with C, W, Z or Z3 terminations.

#### LED not included.

For LED information, see page A-61.

NOTE: Caps & frames available separately, see pages A-60 and A-61.

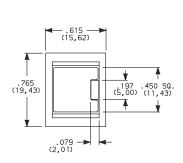
Other colors available, consult Customer Service Center.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

**ACTUATOR-SNAP-IN FRONT MOUNT** 

## **J86** SNAP-IN WITH BLACK FRAME AND LED





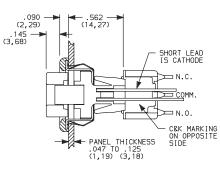
8161J86ZQE223 SPDT

Available with C, W, Z or Z3 terminations and SPDT models only.

NOTE: Caps & frames available separately, see pages A-60 and A-61.

Other colors available, consult Customer Service Center.

OPTION CODE	CAP COLOR	
2	BLACK	
1	WHITE	
3	RED	
4	ORANGE	
5	YELLOW	
9	GRAY	

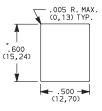


ACTUATOR OR PLUNGER

#### PANEL MOUNTING

LED COLOR

CAP COLOR



\* Increase this dimension to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thick panels.

OPTION CODE	LED COLOR
3	RED

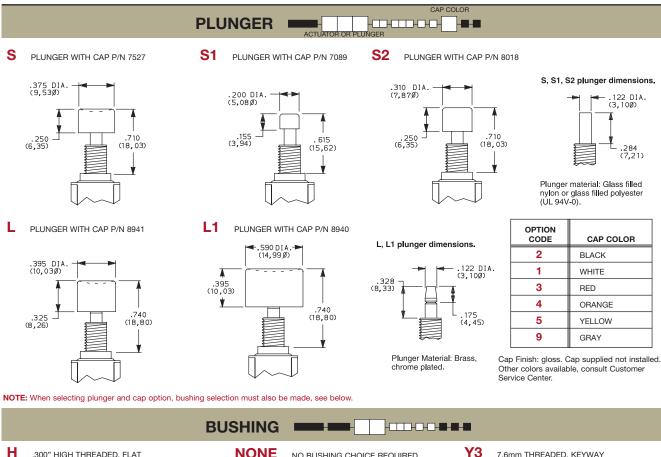
For LED information, see page A-61.

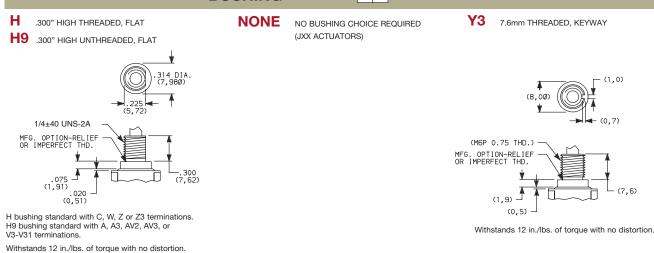


Specifications and dimensions subject to change

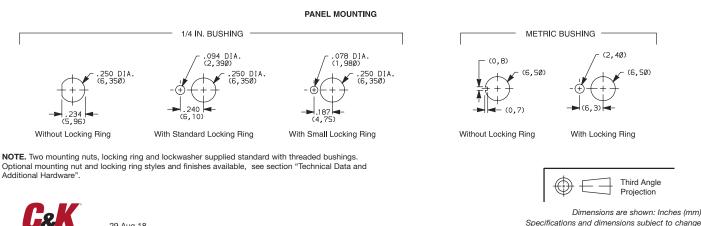


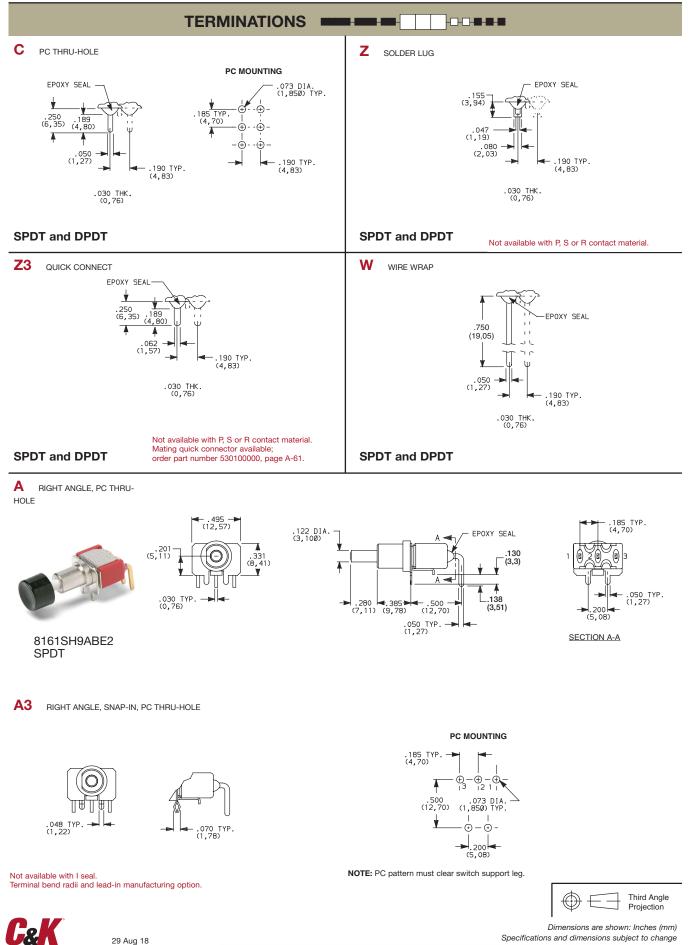
A-54





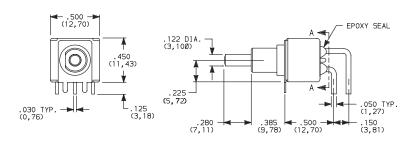
NOTE: When selecting bushing option, plunger selection must also be made, see above. No bushing option choice required when any JXX actuator option is selected.

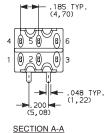




Pushbutton >

A RIGHT ANGLE, PC THRU-HOLE

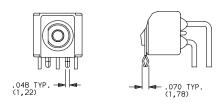


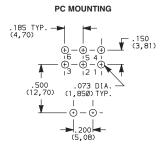




8261SH9ABE2 DPDT

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

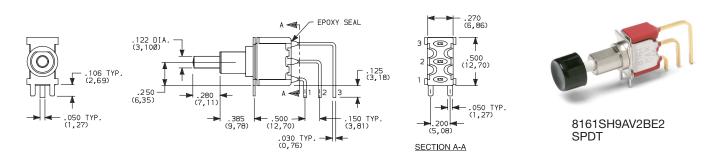




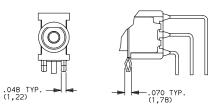
#### Not available with I seal.

Terminal bend radii and lead-in manufacturing option.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



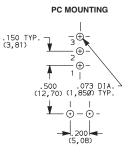
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



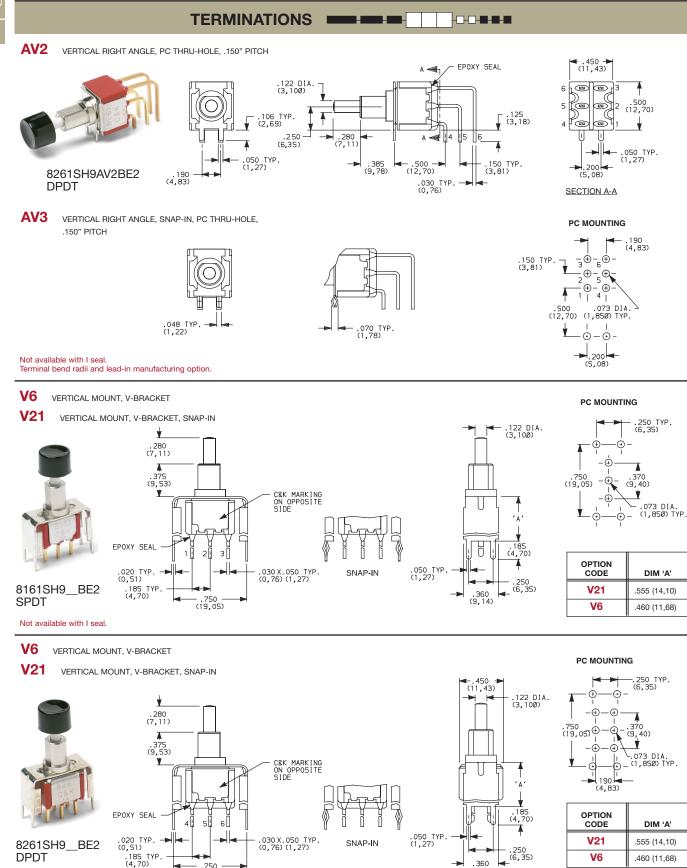
Not available with I seal. Terminal bend radii and lead-in manufacturing option.



29 Aug 18



Third Angle Projection



Not available with I seal.

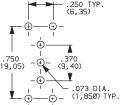


- .750 -(19,05)

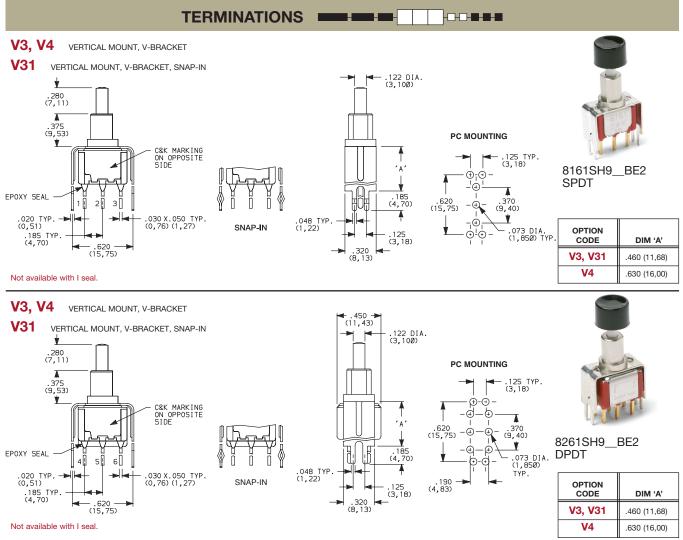
A-58

.360 (9,14)

Third Angle Projection



Pushbutton >



## CONTACT MATERIAL

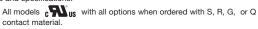
OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS				
В	GOLD 1	GOLD <sup>1</sup>		0.4 VA MAX. @ 20 V AC OR DC MAX.			
Р		MATTE-TIN <sup>6</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.			
Q	SILVER 4,5	SILVER 5		6 AMPS @ 120 V AC OR 28 V DC;			
S	SILVER 7,0	MATTE-TIN 6	POWER	3 AMPS @ 250 V AC.			
G	GOLD OVER	GOLD <sup>3</sup>		0.4 VA MAX @ 20 V AC OR DC MAX. OR			
R	SILVER <sup>2,3</sup> MATTE-TIN <sup>6</sup>		LOW LEVEL/DRY CIRCUIT OR POWER	6 AMPS @ 120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.			

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- <sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.
- <sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>4</sup> END CONTACTS: Coin silver, silver plated.
- <sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- <sup>6</sup> TERMINALS: Copper alloy, with matte-tin over nickel plate.

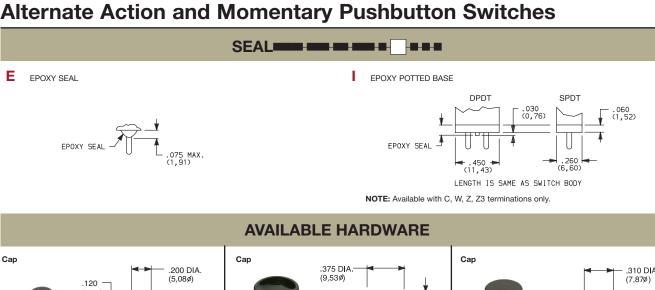
**NOTE:** Any models supplied with P, S, R,Q, B or G contact material are RoHS compliant.

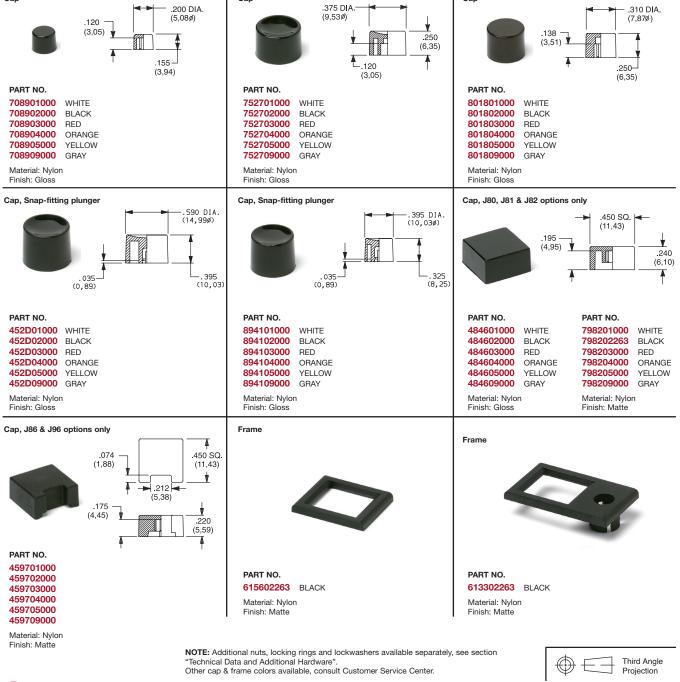




- B contact material standard with all terminations except C, Z & Z3.
- Q contact material standard with C, Z & Z3 terminations.
- P, S & R contact materials not available with Z & Z3 terminations.







ushbutton >

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

**AVAILABLE HARDWARE** 

1 Contraction

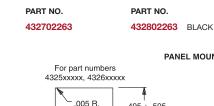
Fits Z3 Termination female connector

PART NO. 530100000 Available in loose pieces.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.







(0.13)

MAX. TYP

 $.595 \pm .605$ 

 $(15,11 \pm 15,37)$ 

.090" (2,29) PANEL THK.

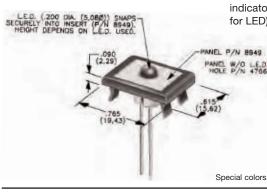
PANEL MOUNTING 495 + 505(12,57 ± 12,83)

.125" (3,18) PANEL THK.

4327xxxx, 4328xxxxx .005 R. .495 ± .505 (0.13) $(12,57 \pm 12,83)$ MAX, TYP .620 ± .625  $(15,75 \pm 15,88)$ 

For part numbers

Panel Inserts



Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. LED not included.

> PANEL INSERT WITH HOLE FOR LED PART NO. 894902000

WITHOUT HOLE FOR LED PART NO. 476602000 BLACK

BLANK PANEL INSERT

Special colors, custom markings available, consult Customer Service Center,

## LED INFORMATION

SWITCHES WITH LED SUPPLIED: J86 OPTION:

Rectangular LEDs are supplied on 8060 Series pushbutton switches with J86 option. These LEDs are factory installed and are not replaceable. The following specifications apply:

			TYP.	TYP.	MAX RAT	NGS AT 25°C AMBIENT T	EMPERATURE	Flat denotes	1
OPTION CODE	COLOR	TYP. INTENSITY	FORWARD VOLTAGE	FORWARD	FORWARD VOLTAGE	CONTINUOUS FORWARD CURRENT	POWER DISSIPATION	cathode	¥.
6	Green	1.0 mcd		20 mA		50 mA	125 mW		Ť
3	Red*	0.5 mcd	2.1 V	10 mA	2.5 V	30 mA	75 mW	.230 DIA.	
5	Yellow	4.0 mcd		20 mA		50 mA	125 mW	340	.750 (19,05)

Process Information: Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.

Caution: Circuit elements must limit forward current of LED to 50mA max. continuous.

\* Extra-bright red LED available (typ. intensity 4.5 mcd), consult Customer Service Center.

LEDs are not supplied with J82 & J84 options. LED snaps into switch frame surrounding actuator and is wired externally.



Suggested LED for J82 & J84 options. Dimensions for reference only





## Features/Benefits

- Pre-travel or over-travel models available
- Ratings up to 3 AMPS
- Reliable contact design
- RoHS compliant

## **Typical Applications**

- Detection
- Telecommunications and networking equipment
- Computers and peripherals

® **FN** Models Available

## Specifications

Jushbutton

### **Materials**

- CONTACT RATING: Q contact material (853X Models): 1 AMP @ 120 V AC or 28 V DC; (855X Models): 3 AMPS @ 120 V AC or 28 V DC. See page A-65 for additional ratings.
- ELECTRICAL LIFE:

853X MODELS: 250,000 actuations at full load. 855X MODELS: 10,000 actuations at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE:  $10^{9}\Omega$  min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

TORQUE SPECS: T, T1 15/32" bushings - 50 in. lbs max. All other 1/4 -40 bushing types 12 in. lbs max. CASE: Glass filled phenolic or diallyl phthalate (DAP) (UL 94V-0).

PLUNGER: Phenolic or glass filled polyester, black standard(UL94V-0).

CAP & FRAME: Nylon, black, standard.

BUSHING: Brass, nickel plated.

- CONTACTS: Q contact material: Coin silver, silver plated. See page A-65 for additional contact materials.
- TERMINALS: Q contact material: Copper alloy, silver plated. See page A-65 for additional contact materials.

TERMINAL SEAL: Epoxy.

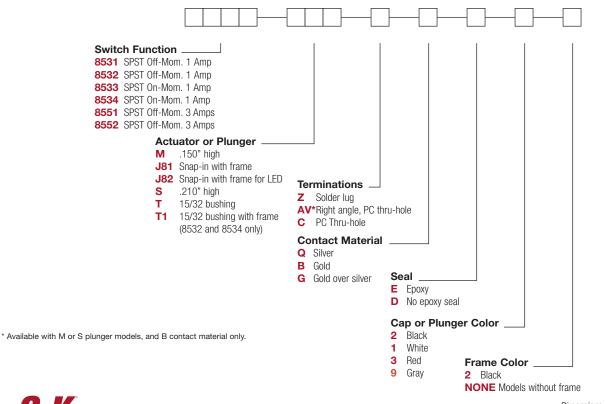
HARDWARE: Nut: Brass, nickel plated; Lockwasher: Steel, bright nickel plated.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

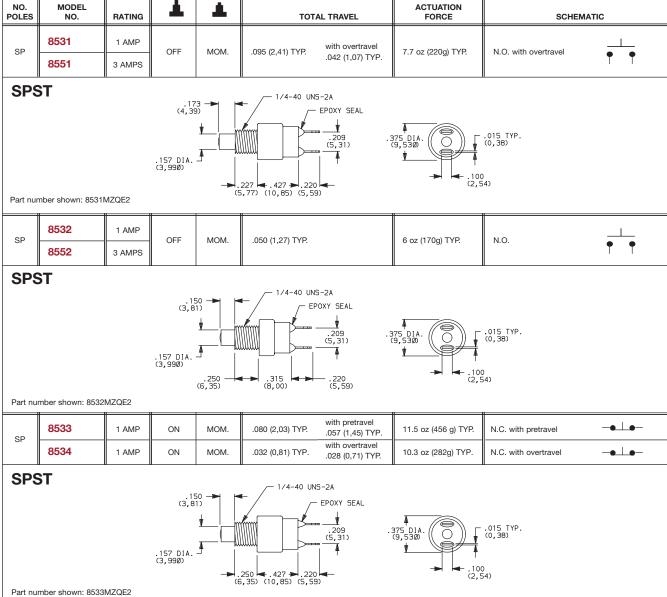
## **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-63 thru A-66. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.





# A Pushbutton SCHEMATIC • •



SWITCH FUNCTION

SWITCH FUNCTION

POS. 2

POS. 1

MOM. = Momentary

NO.

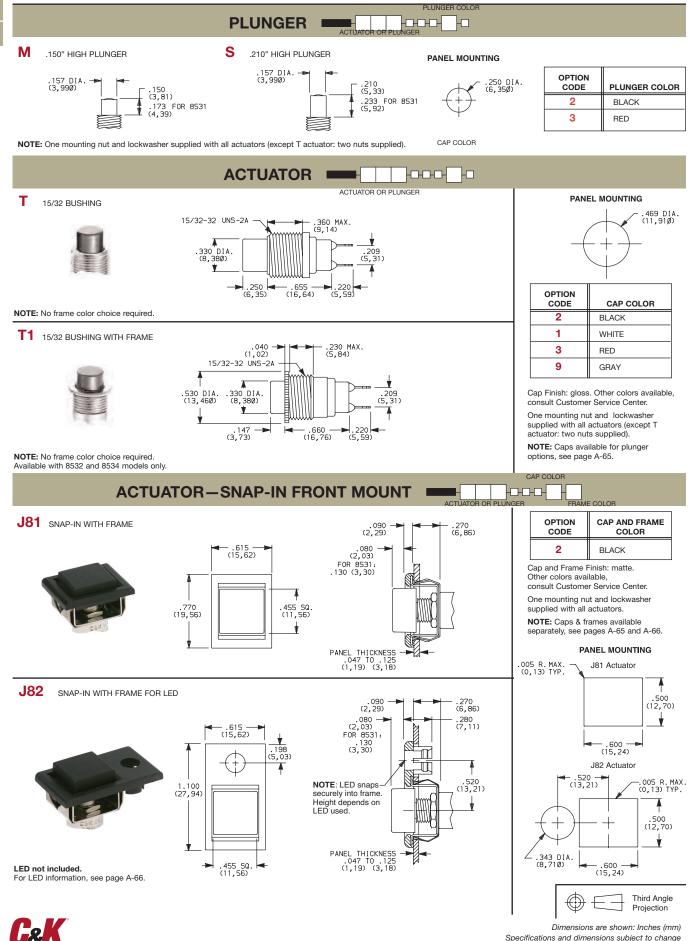
MODEL

All models with all options when ordered with G or Q contact material.

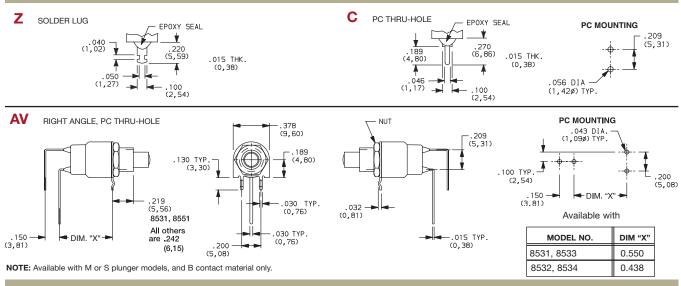




Pushbutton >



# TERMINATIONS



## CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	TERMINAL PLATING	CONTACT MATERIAL	RATINGS	
В	YES	YES	GOLD <sup>1</sup>	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	YES	YES	SILVER <sup>4</sup>	SILVER 5	POWER	853X MODELS: 1 AMP @ 120 V AC OR 28 V DC. 855X MODELS: 3 AMPS @ 120 V AC OR 28 V DC.
G	YES	YES	GOLD OVER SILVER <sup>2</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 V MAX @20 V AC OR DC MAX. OR 853X MODELS: 1 AMP @ 120 V AC OR 28 V DC. 855X MODELS: 3 AMPS @120 V AC OR 28 V DC.

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>2</sup> CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> TERMINALS: Copper alloy, with gold plate over nickel plate.

<sup>4</sup> CONTACTS: Coin silver, silver plated.

<sup>5</sup> TERMINALS: Copper alloy, silver plated

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

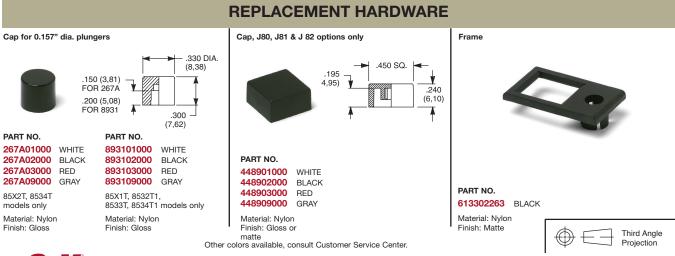
All models with all options when ordered with G or Q contact material. Q contact material standard with C, Z terminations.

8551 & 8552 available with Q contact material only

E EPOXY SEAL



SEAL



# **AVAILABLE HARDWARE**

Frame

PART NO.

Material: Nylon Finish: Matte

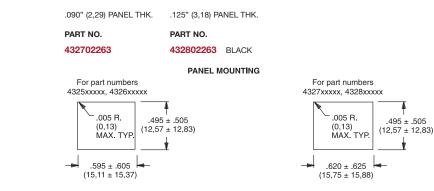


NOTE: Additional nuts, locking rings and lockwashers available separately, see section 'Technical Data and Additional Hardware' Other colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.





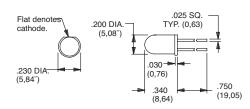




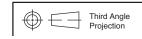
## LED INFORMATION

Process Information: Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.

LEDs are not supplied with J82 option. LED snaps into switch frame surrounding actuator and is wired externally.



Suggested LED for J82 option. Dimensions for reference only.



-2.K

## Features/Benefits

- Reliable contact design
- Available with pretravel and overtravel
- **RoHS** compliant

# LP<sub>®</sub>

Models Available

## **Specifications**

CONTACT RATING: Q contact material (KM11, KM12 Models): 0.25 AMPS @ 125 V AC or DC (UL); (KM33 Model): 1 AMP @ 125 V AC or 28 V DC. See page A-69 for additional ratings.

ELECTRICAL LIFE: 10,000 actuations min. at full load.

CONTACT RESISTANCE: Below 30 m
 typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE:  $10^9\Omega$  min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

NOTE: Any models supplied with Q or B contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center

## Typical Applications

- Alarm systems
- Computers
- Detector switch application





## Materials

HOUSING & BUSHING: 6/6 nylon (UL94V-2), black.

- ACTUATOR: 6/6 nylon (UL 94V-2), natural. Internal o-ring seal, available on KM11 & KM33 models.
- MOVABLE CONTACT: B contact material: Bronze or copper, with gold plate over nickel plate. See page A-69 for additional contact materials.
- STATIONARY CONTACTS & TERMINALS: B contact material: Copper, with gold plate over nickel plate. See page A-69 for additional contact materials.

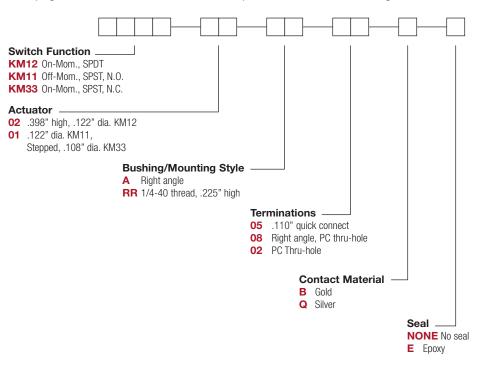
RETURN SPRING: Music wire, phosphor coated.

MOUNTING NUT: Brass, nickel plated.

TERMINAL SEAL: Epoxy.

## **Build-A-Switch**

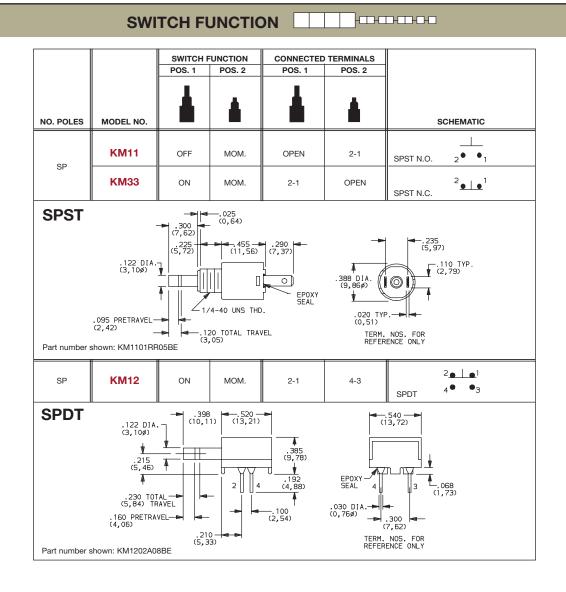
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-68 and A-70. For additional options not shown in catalog, consult Customer Service Center.

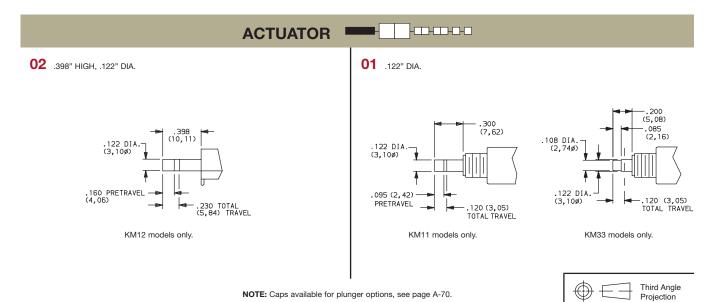




www.ckswitches.com

Pushbutton >



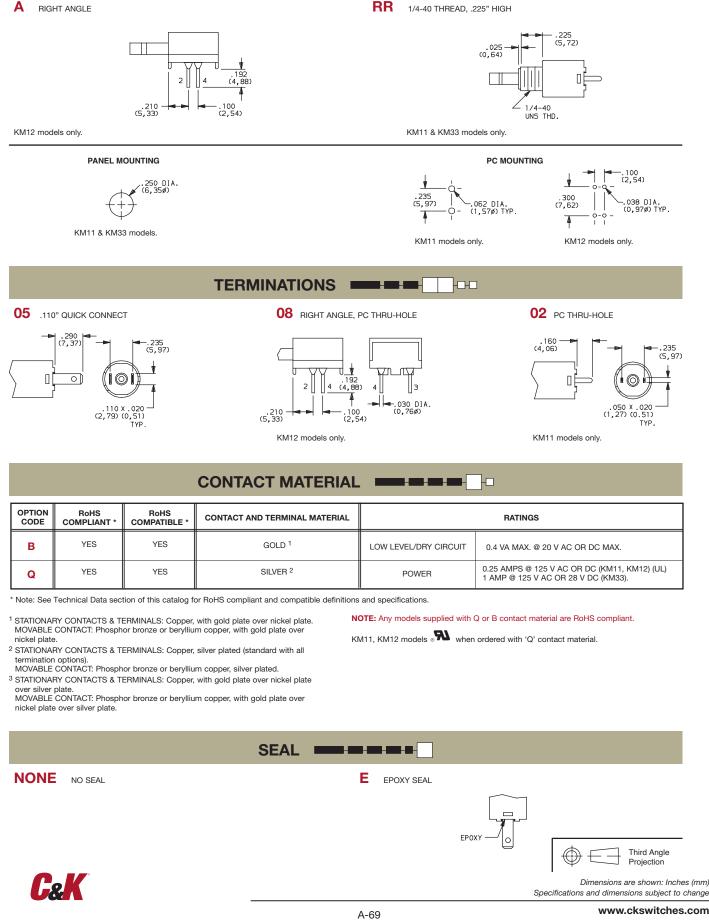


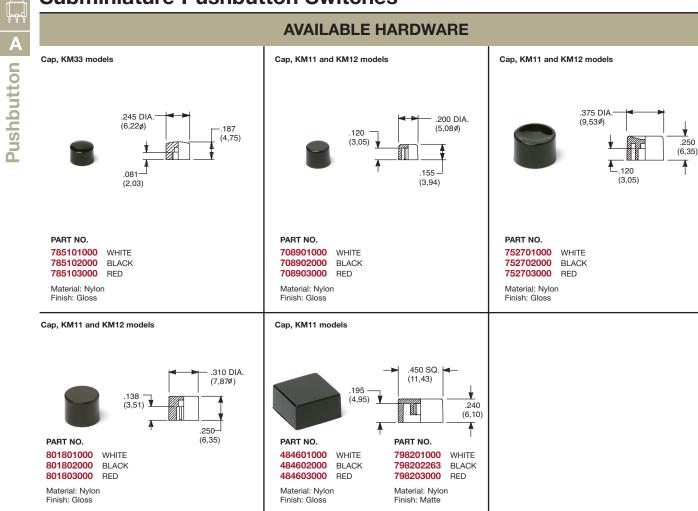
**C&K** 

Dimensions are shown: Inches (mm)

www.ckswitches.com

Specifications and dimensions subject to change





NOTE: Other cap colors available, consult Customer Service Center.



**C**&K

# 8600 Series Microminiature Pushbutton Switches

## Features/Benefits

- Available with overtravel
- Normally closed models available
- Microminiature size ideal for applications where space is limited
- RoHS compliant



Models Available

## Specifications

- CONTACT RATING: Q contact material (8631, 8632 Models): 500 mA @ 120 V AC or 28 V DC; 250 mA @ 250 V AC; (8633 Model): 250 mA @ 120 V AC or 28 V DC; 125 mA @ 250 V AC. See page A-73 for additional ratings.
- ELECTRICAL LIFE:
  - 8631 and 8633 MODELS: 250,000 actuations at full load. 8632 MODEL: 100,000 actuations at full load.
- CONTACT RESISTANCE: Below 30 m $\Omega$  typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 109  $\Omega$  min.

DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9.

**Typical Applications** 

- Detection
- Telecommunications and networking equipment
- Computers and peripherals



## Materials

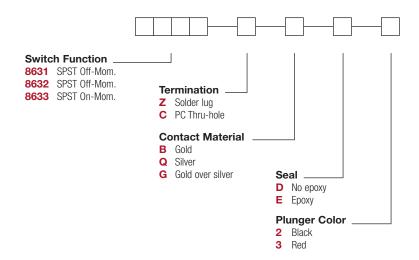
CASE: Glass filled phenolic or diallyl phthalate (DAP), (UL94V-0).
PLUNGER: Glass filled nylon (UL94V-0), black standard.
BUSHING: Brass, nickel plated.
CONTACTS: Q contact material: Coin silver, silver plated. See page A-73 for additional contact materials.
TERMINALS: 8631, 8632 MODELS: Copper alloy, silver plated. 8633 MODEL: Q contact material: Coin silver. See page A-73 for additional contact materials.
TERMINAL SEAL: 8633 MODEL: Epoxy. 8631, 8632 MODELS: Terminals insert molded.
HARDWARE: Nut: Brass, nickel plated.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-72 and A-73. For additional options not shown in catalog, consult Customer Service Center.

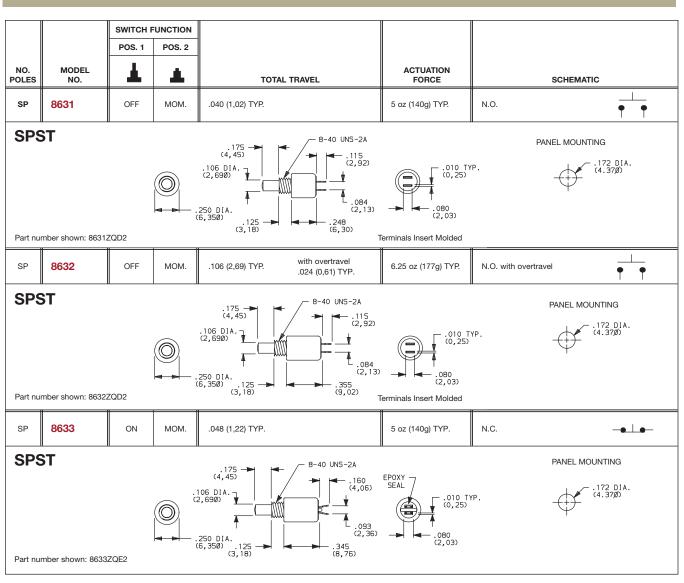




# 8600 Series Microminiature Pushbutton Switches

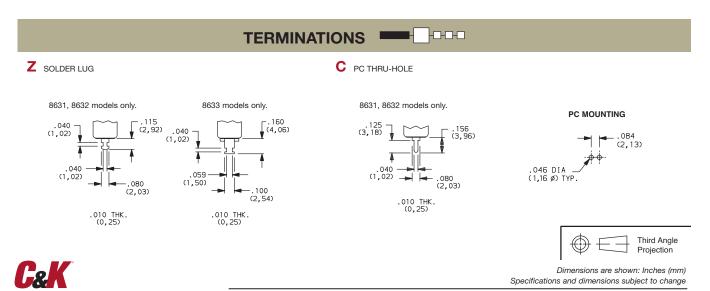
## SWITCH FUNCTION

-0-0-0-0



MOM. = Momentary

NOTE: Caps available for plunger options, see page A-73.



# 8600 Series **Microminiature Pushbutton Switches**

## 

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *				RATINGS		
в	YES	YES	GOLD 1	GOLD <sup>1</sup>	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.		
Q	YES	YES	SILVER <sup>4</sup>	SILVER 5	POWER	8631, 8632 MODELS: 500 mA @ 120 V AC OR 28 V DC; 250 mA @ 250 V AC. 8633 MODELS: 250 mA @ 120 V AC OR 28 V DC; 125 mA @ 250 V AC.		
G	YES	YES	GOLD OVER SILVER <sup>4</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 8631, 8632 MODELS: 500 mA @ 120 V AC OR 28 V DC; 250 mA @ 250 V AC. 8633 MODELS: 250 mA @ 120 V AC OR 28 V DC; 125 mA @ 250 V AC.		

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

<sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

 $^{2}$  CONTACTS: Coin silver, with gold plate over nickel plate.

<sup>3</sup> TERMINALS: Copper alloy, with gold plate over nickel plate. 8633 model only: Coin silver, with gold plate over nickel plate.

<sup>4</sup> CONTACTS: Coin silver, silver plated.

<sup>5</sup> TERMINALS: Copper alloy, silver plated. 8633 model only: coin silver.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

8631, 8632 models Number all options when ordered with G or Q contact material. Q contact material standard with C, Z terminations.



## PLUNGER COLOR

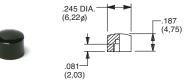
OPTION CODE	COLOR		
2	BLACK		
3	RED		

## **AVAILABLE HARDWARE**

Cap

PART NO. 785101000 WHITE 785102000 BLACK 785103000 RED

Material: Nylon Finish: Gloss



NOTE: Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)

 $\bigcirc$ Ŧ

Specifications and dimensions subject to change

Third Angle

Projection



CONTACT RATING: Q contact material: 1 AMP @

ELECTRICAL LIFE: 100,000 actuations at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. Initial @

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

NOTE: Any models supplied with Q, or B contact material are RoHS compliant.

For information on specific and custom switches, consult Customer Service Cente

NOTE: Specifications and materials listed above are for switches with standard options.

120 V AC or 28 V DC. See page A-76 for additional ratings.

## Features/Benefits

- Extended pre-travel or over-travel
- Heavy-duty brass plunger
- Long electrical life 100K cycles
- RoHS compliant

## **Typical Applications**

- Telecommunications
- High end Instrumentation
- Medical & test equipment
- Detection

ushbutton >

#### Materials

CASE: Diallyl phthalate (DAP) (UL 94V-0).

PLUNGER:

8731 – .39074" brass, nickel plated. 8732 – .390"74 PBT polyester, black.

BUSHING: brass, nickel plated.

CONTACTS: Q contact material: Coin silver, silver plated. See page A-76 for additional contact materials.

TERMINALS: Q contact material: Copper alloy, silver plated. See page A-76 for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut: Brass, nickel plated; lockwasher: Steel, bright nickel plate. One mounting nut & lockwasher supplied with all switches.

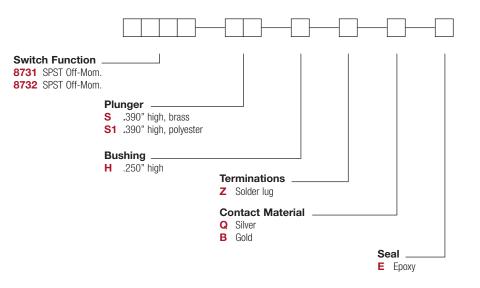
#### **Build-A-Switch**

2-4 V DC, 100 mA.

INSULATION RESISTANCE:  $10^3\Omega$  min.

OPERATING TEMPERATURE: -30°C to 65°C.

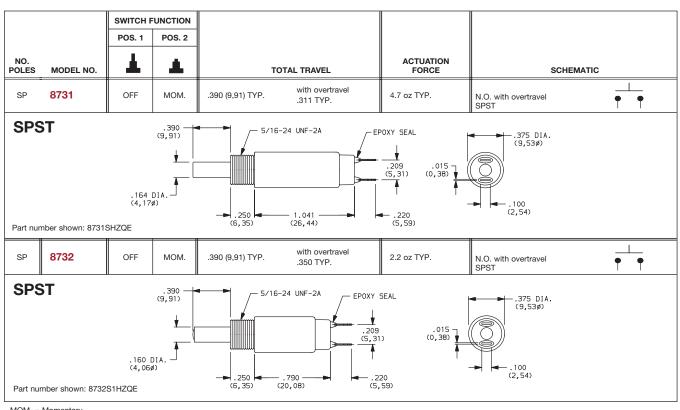
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-75 and A-76. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



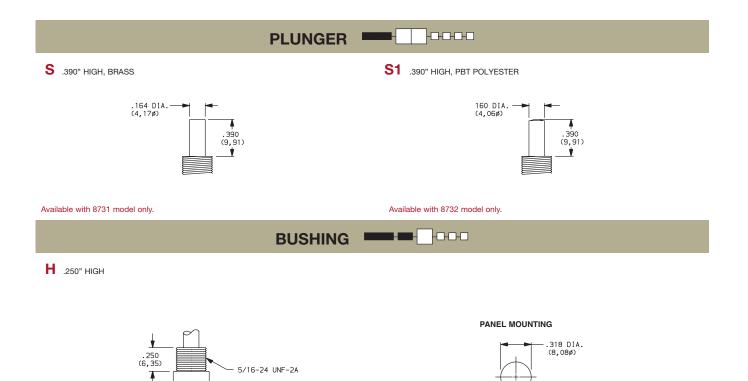
# E

# 8700 Series Overtravel Pushbutton Switches

# SWITCH FUNCTION



MOM. = Momentary



**C&K** 

Dimensions are shown: Inches (mm) Specifications and dimensions subject to change www.ckswitches.com

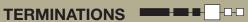
 $\bigcirc$ 

Third Angle

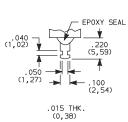
Projection

# 8700 Series Overtravel Pushbutton Switches





Pushbutton >



# CONTACT MATERIAL

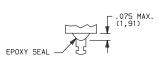
OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL	TERMINAL PLATING	RATINGS		
Q	YES	YES	SILVER	SILVER	POWER	1 AMP @ 125 V AC OR 28 V DC.	
В	YES	YES	GOLD	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.	

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

NOTE: Any models supplied with Q, or B contact material are RoHS compliant.

SEAL

E EPOXY SEAL







Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

**C&K** 

# GP Series Sealed Ultraminiature Pushbutton Switches

## Features/Benefits

- Ultraminiature design saves space
- Process compatible, withstands most soldering and washing processes
- Thru-hole and surface mount models available
- Sealed construction—internal o-ring and epoxy base

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.

CONTACT RESISTANCE: Below 50 mΩ typ. initial @

DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.

SOLDERABILITY: Per MIL-STD-202F method 208D, or

EIA RS-186E method 9 (1 hour steam aging).

DEGREE OF PROTECTION: IP57; Protection against harmful dust

PACKAGING: Surface mount switches standard in anti-static tape

deposit, full-scale voltage protection, temporary immersion.

and reel packaging per EIA 481-3, see page A-80 for drawings and reel information. Thru-Hole parts are shipped in trays.

MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break

RoHS compliant

cycles at full load.

2-4 V DC, 100 mA.

INSULATION RESISTANCE:  $10^9\Omega$  min.

OPERATING TEMPERATURE: -40°C to 85°C.

All models are RoHS compliant and compliant.

# **Typical Applications**

- Telecommunications and network equipment
- Computers and peripheral products
- Instrumentation
- Medical Applications



Pushbuttor

## Specifications

#### Materials

- HOUSING & BASE: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).
- ACTUATOR: Glass filled nylon 4/6, flame retardant (UL 94V-0) with standard internal o-ring seal.

SWITCH SUPPORT: Brass, tin plated.

- MOVABLE CONTACT: Copper alloy, with gold plate over nickel plate.
- STATIONARY CONTACTS Copper alloy, with gold plate over nickel plate.
- TERMINALS: Copper alloy, with gold flash over nickel plate.

TERMINAL SEAL: Epoxy/Urethane. All terminals insert molded.

NOTE: Any models supplied with B contact material are RoHS compliant and compatible.

**NOTE:** Materials listed above are general specifications. Specifications available for specific and custom switches, consult Customer Service Center.

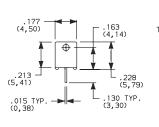
**CAUTION:** PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

## How To Order

Complete part numbers for GP Series Sealed Ultraminiature Pushbutton Switches are shown on pages A-78 thru A-80.

	SWITCH I	UNCTION	
	POS.1	POS. 2	
PART NUMBER			SCHEMATIC
GP11MCBE	OFF	MOM.	1 • • 3
Conn. Terms.	OPEN	1-3	SPST
GP12MCBE	ON	MOM.	<b>P</b> 2 (COMM)
Conn. Terms	2-1	2-3	NC 1 🖌 🛛 SPDT

MOM. = Momentary

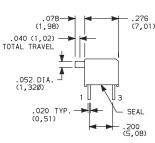


PC MOUNTING

GP11- omit center hole.

035 DIA

(0,890)



Terminal nos. for reference only





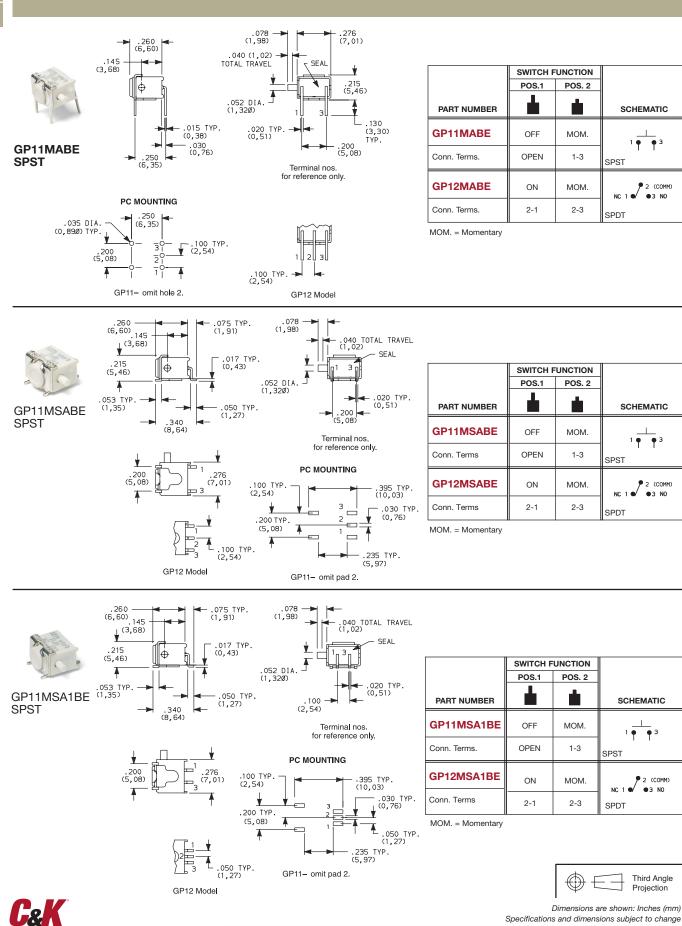
GP11MCBE

SPST

100 TYP.

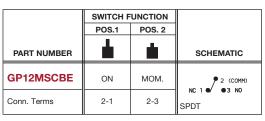
(2.54)

# GP Series Sealed Ultraminiature Pushbutton Switches



# GP Series Sealed Ultraminiature Pushbutton Switches

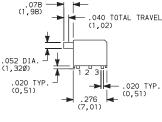
.050 TYP (1,27)



**NOTE:** Recommended for infrequent use applications only For increased switch mounting strength, order, SV1 termination style with support bracket (see below).

MOM. = Momentary



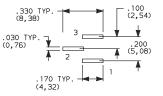


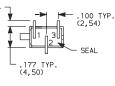
Terminal nos. for reference only.



GP12MSCBE

PC MOUNTING





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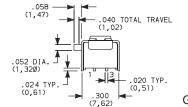
.280

A

.215 (5,46)

Œ

.168 (4,27)



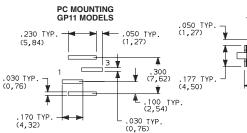
SEAL

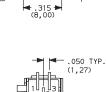


GP11MSV1BE SPST

	SWITCH FUNCTION		
	POS.1	POS. 2	
PART NUMBER			SCHEMATIC
GP11MSV1BE	OFF	MOM.	1 🔶 3
Conn. Terms.	OPEN	1-3	SPST
GP12MSV1BE	ON	MOM.	2 (COMM)
Conn. Terms.	2-1	2-3	SPDT

MOM. = Momentary





GP12 Model

Terminal nos. for reference only.

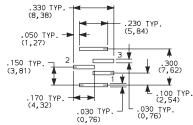
.100 (2,54)

¥

.215 (5,46)

Ā

PC MOUNTING GP12 Models



Third Angle Projection

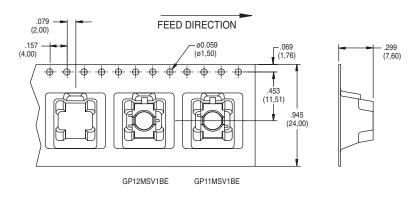


Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

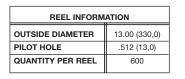
# TAPE & REEL

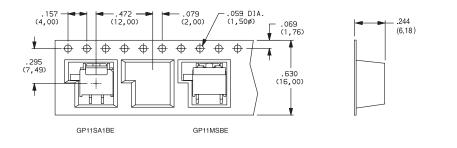
For part numbers GP11MSV1BE, GP12MSV1BE

REEL INFORMATION					
OUTSIDE DIAMETER	13.00 (330,0)				
PILOT HOLE	.512 (13,0)				
QUANTITY PER REEL	600				



For part numbers GPXXSA1BE, GPXXMSABE





FEED DIRECTION

For part numbers GP12MSCBE

REEL INFORMATION

13.00 (330,0)

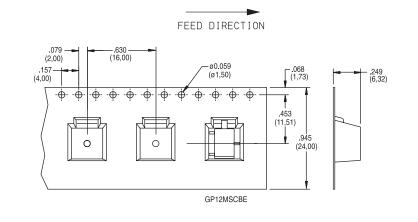
.512 (13,0)

600

OUTSIDE DIAMETER

QUANTITY PER REEL

PILOT HOLE





www.ckswitches.com

Third Angle Projection

# **PN** Series **Alternate & Momentary Action Pushbutton Switches**

#### Features/Benefits

- Momentary or locking action
- Different actuation forces for customized feel
- Low cost, reliable contact design
- Single and double pole options
- RoHS compliant

#### Specification

Typical Applications

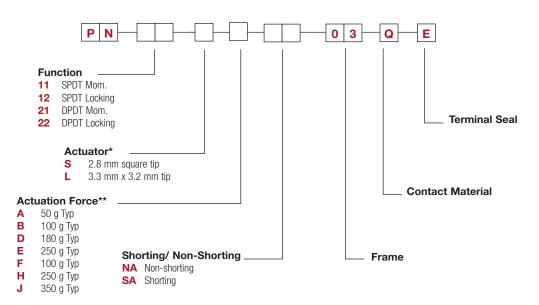
- Computers and peripherals
- Instrumentation and measurement equipment
- Non-power, on-off switch applications



Specifications	Materials
CONTACT RATING: 0.2 AMP @ 30 V DC max.	FRAME: Tin plated steel.
ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.	ACTUATOR: PA 66 black.
MECHANICAL LIFE: 10,000 on/off cycles.	BASE: Phenolic resin.
CONTACT RESISTANCE: 30 mΩ max. initial	TERMINALS: Silver plated brass.
INSULATION RESISTANCE: 100 MΩ min.	MOVABLE CONTACTS: Silver plated phosphor bronze.
DIELECTRIC STRENGTH: 500 V AC min.	RETURN SPRING: SWC
OPERATING/STORAGE TEMPERATURES: -10°C to 60°C.	DETENT SPRING: Phosphor bronze.
PACKAGING: Switches are supplied in anti-static trays.	DETENT SPRING PLATE: Phosphor bronze.
	RETURN SPRING RETAINER RING: Nickel plated steel.
	TERMINAL SEAL: Epoxy.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



\* Note - The switch body style dimenions differ for each of these 3 groupings

"S" actuator available for PN 11 & PN 12 options

"S" actuator available for PN 21 & PN 22 options

"L" actuator available for PN 21 & PN 22 options

\*\* Actuation Force "A" only available with PN11 with "S" actuator PN 11 & PN 21 available with Acuation Force "B", "D", "E", "F", "H", "J" PN 12 & PN 22 available with Actuation Force "D", "E", "H", "J" Full travel



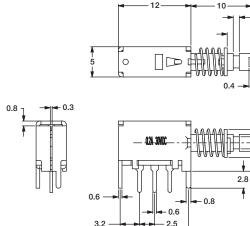
4 □2.8

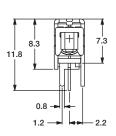
4.7±0.5

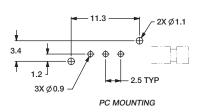
ŧ

□4.6 ↓ <sup>2</sup>

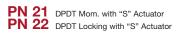
PN 11 SPDT Mom. PN 12 SPDT Locking

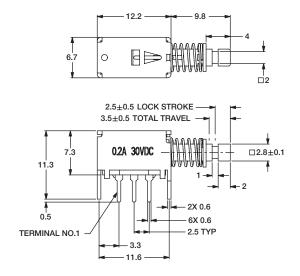


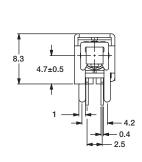


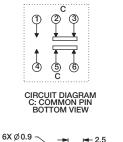


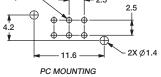
- 11.3













**C**&K

Dimensions are shown: mm Specifications and dimensions subject to change

C

CIRCUIT DIAGRAM C: COMMON PIN BOTTOM VIEW

3.2 TYP

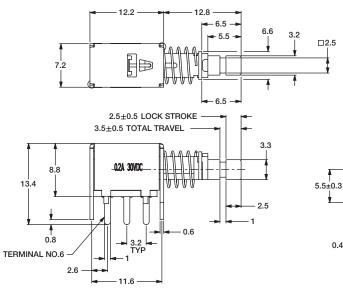
 $\oplus$ 

6 (5) 4

٩

Ø1.3 TYP

6.2



#### BUTTONS MUST BE ORDERED SEPARATELY. SHIPPED IN BULK.

PE (.232 . 11 (.433) 12,1 -----13.7 (.59) — OPTION CODE COLOR RD Red GY Gray

Black

White

PE and PV buttons fit "L" actuators

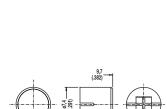


9.8

2.8

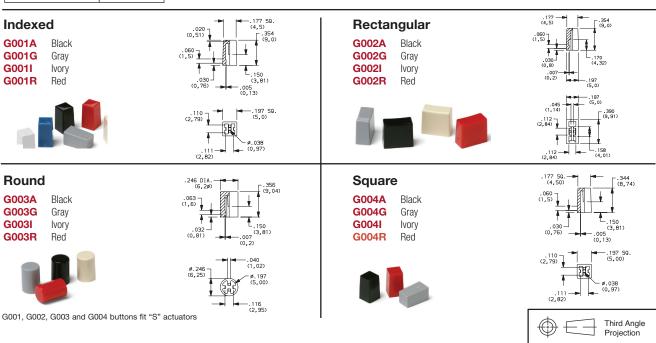
6.2

. 3



(.276)

PC MOUNTING





BK

WH

G001A

G001G

G001I

G001R

G003A

G003G

G003I

G003R

Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

# **PHB Series** Short Stroke Pushbutton Switches



## Features/Benefits

- Momentary or latching action
- Low cost, reliable contact design
- 2 & 4 pole configurations
- Sealed contacts
- **Optional buttons**
- **RoHS** compliant

#### Typical Applications

- Computers and peripherals
- Instrumentation and • measurement equipment
- Non-power, on-off switch applications

#### **Specifications**

RATING: 1 A @ 15 V DC

DIELECTRIC STRENGTH (50 Hz/1 min.): 500 V DC between terminals or between terminals and frame for 1 minute

OPERATING LIFE: 10,000 cycles at rated load

CONTACT RESISTANCE: 20 m Ωohms initial

INSULATION RESISTANCE: 100 M Ωohms

TOTAL TRAVEL/LATCHING TRAVEL: 2.5mm (± 0.5 mm) /

1.5mm (± 0.5 mm) to latch EE option (push-push) **OPERATING FORCE:** 

2U option: 170 grams ± 100 grams (1.67 ± 0.98N) 4U option: 230 grams ± 100 grams (2.26 ± 0.98N)

OPERATING TEMPERATURE: -10°C to 60°C

BOUNCE TIME: ≤10 ms

SEALING: Sealed contacts.

PACKAGING: Switches; PHB2 models: 84 pcs per tray; PHB4 models 72 pcs per tray Optional Caps; Bulk bag - 100 caps per bag

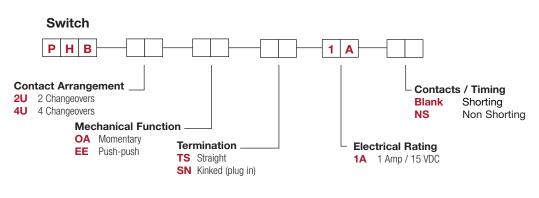
Materials

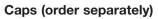
FIXED TERMINAL: Brass, silver plated MOVABLE CONTACT: Phosphor bronze, silver plated COVER: PA 66 Black COVER TO BASE RETAINING CLIP: POM ACTUATOR: POM **RETURN SPRING: Stainless steel** SPRING RETAINING RING: Steel, nickel plate BASE: Phenolic resin TERMINAL SEAL: Epoxy.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.







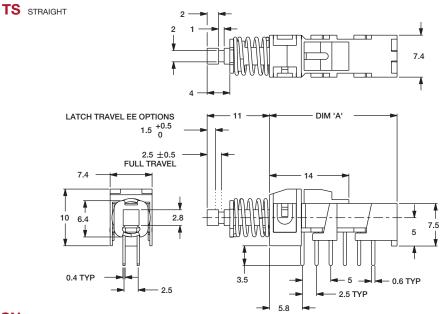
INDEXED	COLOR	RECTANGULAR	COLOR	ROUND	COLOR	[	SQUARE	COLOR
0.0011	51.4.01/					Ē		
G001A	BLACK	G002A	BLACK	G003A	BLACK		G004A	BLACK
G001G	GRAY	G002G	GRAY	G003G	GRAY	Ī	G004G	GRAY
G0011	IVORY	G0021	IVORY	G0031	IVORY	ľ	G0041	IVORY
G001R	RED	G002R	RED	G003R	RED	ľ	G004R	RED



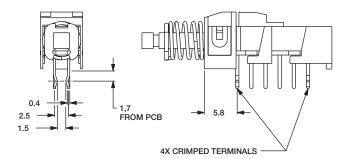
Dimensions are shown: Inches (mm) www.ckswitches.com

Specifications and dimensions subject to change

# TERMINATION



**SN** KINKED (PLUG IN)



Ω

0 -

2X

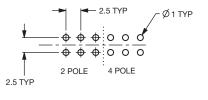
0- 2

4 POLE

- 1

O- 2

POLES	MODEL NO.	DIM 'A'	ACTION
	PHB4UEE1A	22.5	PUSH/PUSH
4	PHB4U0A1A	22.5	MOMENTARY
	PHB2UEE1A	15.0	PUSH/PUSH
2	-	- , -	
	PHB2U0A1A	15,0	MOMENTARY







0

0 -

 $\overline{}$ 

2 POLE

0-

0-

0- 2

- 1

# **PHB Series Short Stroke Pushbutton Switches**

Pushbutton >

#### Indexed G001A G001G G001I G001R

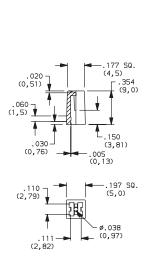
Black

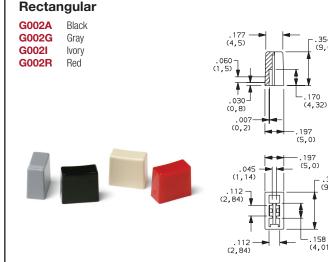
Gray

lvory

Red







#### Round

G003A Black G003G Gray G003I lvory G003R Red



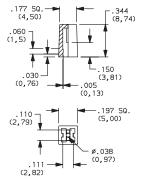
#### .246 DIA. (6,2ø) -.356 (9,04) .063 (1,6) ٧ Ā T. 150 .032 (0,81) (3,81) .007 (0,2) .040 (1,02) ø.246 (6,25) ø.197 (5,00) .116 (2,95)

#### Square

CAPS

G004A Black G004G Gray G0041 lvory G004R Red





.354 (9,0)

.197 (5,0)

L.158 (4,01)

.390 (9,91)



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

23 Aug 19

C&K

#### Features/Benefits

- Up to 10 poles per module
- Various contact terminals
- Various mounting & switch ganging configurations
- Mechanical indicator buttons
- RoHS compliant

#### Specifications

- SWITCHING POWER: F module max. AC/DC: Silver: 50 VA/15W, Gold: 1 VA/300 mW.
- SWITCHING VOLTAGE: F module max. AC/DC: Silver: 125/30V, Gold: 50/30 V.
- SWITCHING CURRENT: F module max. AC/DC: Silver: 0.5A/0.5A, Gold: 0.04A/0.01A.
- CARRYING CURRENT: Max at  $\Delta u = 20^{\circ}$ C: Silver: < 2A, Gold: <0.5A.
- DIELECTRIC STRENGTH (50 Hz, 1 min.): Chassis/contact: ≥1500V Between contacts: ≥1500V.
- OPERATING LIFE "OA/EE" (24V/200mA): >10^5 operations "GR": >3.5 x  $10^4$  operations.
- CONTACT RESISTANCE: Initial: Typical  ${\leq}10~m\Omega,~max.~20~m\Omega$  After operating life:  ${\leq}100~m\Omega$
- INSULATION RESISTANCE:  ${\geq}10^9~\Omega$  between open contacts,  ${\geq}10^9~\Omega$  between chassis and contacts.
- CAPACITANCE (at f = 10 kHz):  $\leq$ 0.7 pF between 2 contacts.
- TOTAL TRAVEL/LATCHING TRAVEL: 4.7mm/3.3mm (.185 inch/.130 inch).

All models and options are RoHS compliant and compatible.

NOTE: All models and options are RoHS compliant and compatible.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

TYPICAL F OPERATING FORCE: 2U: 6.5N (650 grams); 4U: 6.5N (650 grams); 6U: 7.5N (750 grams); 8U: 9.0N (900 grams); 10U: 9.0N (900 grams).

EUROPEAN TYPICAL SF OPERATING FORCE:

2U: 3.5N±0.5N (350 grams±100 grams); 4U: 5N±1N (500 grams±100 grams); 6U: 6.5N±1N (650 grams±100 grams); 8U: 9.0N±1N (900 grams±100 grams).

OPERATING TEMPERATURE RANGE: -40°C to 70°C.

#### Materials

Typical Applications

Digital equipment interface

Medical equipment interface

Audio selection

HOUSING: Polycarbonate UL 94V-0 or polyester UL 94V-0.

ACTUATOR: Polyester UL 94V-0.

- MOVABLE CONTACTS: Bimetal brass, silver plated, gold plate over nickel.
- STATIONARY CONTACTS & TERMINALS: Brass, silver plated, gold plated.

TERMINAL BOARD: Polyester UL 94V-0.

RETURN SPRING: Music wire.

TERMINAL SEAL: RTV adhesive sealant.

CHASSIS: Steel.

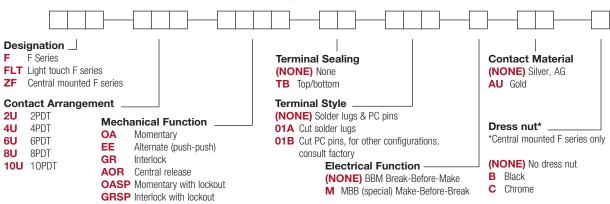
LOCKOUT PIN: Steel.

BLOCKERS: Steel.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-88 thru A-95. For additional options not shown in catalog, consult Customer Service Center. If requesting only a switch, select either a North American or European switch as noted below. Chassis and buttons are sold separately. If multiple stations are selected, we will assume all switches are the same unless noted otherwise.

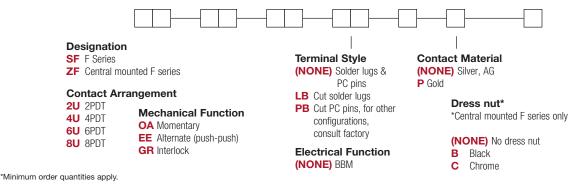
## North American Order Code - Switch Only



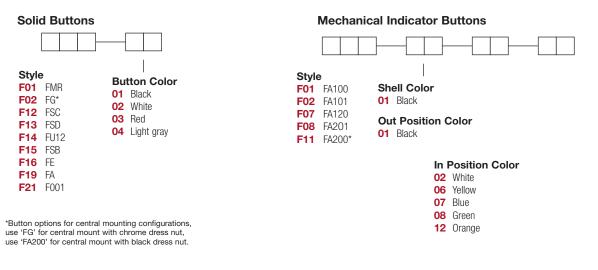




# European Order Code - Switch Only



## Order Code - Buttons



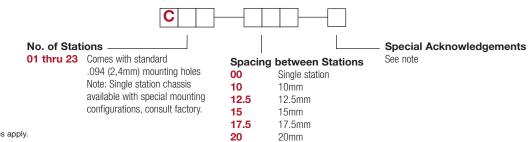
#### **BUTTON REMOVAL**

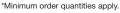
A button of a push-push switch should only be removed in the "OFF" non-latching position.

## **Order Code - Chassis**

To order a switch with chassis, create the switch part number listed above and add the Chassis part number configurator information at the end of the part number.

Note: We do not guarantee or recommend interlocking beyond 10 stations.



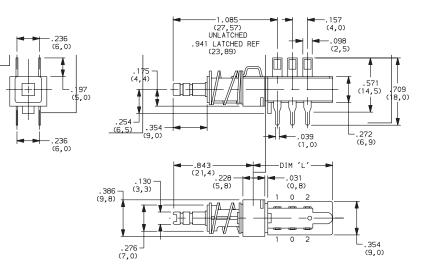




# SWITCHES WITH STANDARD OPTIONS

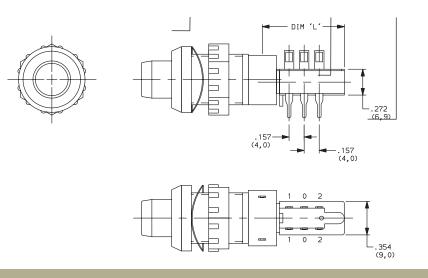
## **F2UEE**

	CONTACT ARRANGEMENT	LENGTH DIM 'L'		
	2U	0.827 (21,00)		
T	4U	1.300 (33,00)		
Τ	6U	1.770 (45,00)		
T	8U	2.240 (57,00)		
Ι	10U	2.720 (69,00)		



## **ZF2UEEBF11010108**

CONTACT ARRANGEMENT	LENGTH DIM 'L'
2U	0.827 (21,00)
4U	1.300 (33,00)
6U	1.770 (45,00)
8U	2.240 (57,00)
10U	2.720 (69,00)



# DESIGNATION

#### 

#### **Designation, North America**

F F Series FLT Light touch F series

**C**&K

ZF Central mounted F series

#### **Designation, Europe**

#### SF F Series

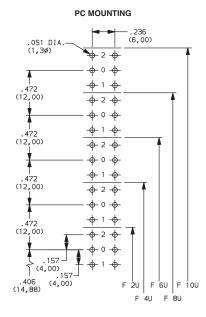
**ZF** Central mounted F series



Third Angle  $\odot$ Projection Dimensions are shown: Inches (mm)

#### 

OPTION CODE	NO. OF POLES	SCHEMATIC		
2U	2PDT			
4U	4PDT	$\begin{array}{c} 0 \\ 2X \\ 1 \\ 0 \\ 0 \\ 2 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$		
6U	6PDT	3X 1 0 0 0 3X 1 0 2 1 0 2		
8U	8PDT			
10U	10PDT	5X 1 0 0 5X 1 0 2 1 0 2		



## MECHANICAL FUNCTION

#### North America

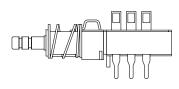
OPTION CODE	FUNCTION	
OA	Momentary	
EE	Alternate (push-push)	
GR	Interlock	
AOR	Central release	
OASP	Momentary with lockout	
GRSP	Interlock with lockout	

#### Europe

OPTION CODE	FUNCTION	
OA	Momentary	
EE	Alternate (push-push)	
GR	Interlock	

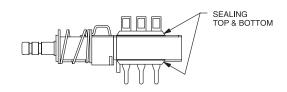
#### 

(NONE) NO SEAL



F2UEE shown in example above.

#### ТВ ТОР & ВОТТОМ



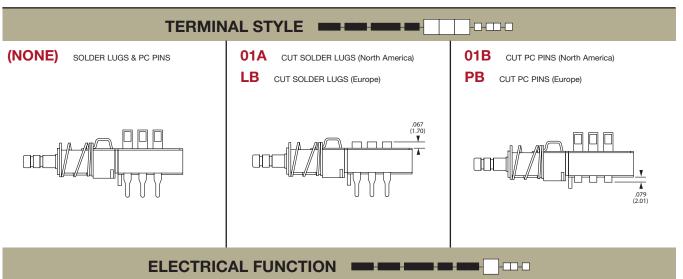
NOTE: Available for North America only



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

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Third Angle Projection

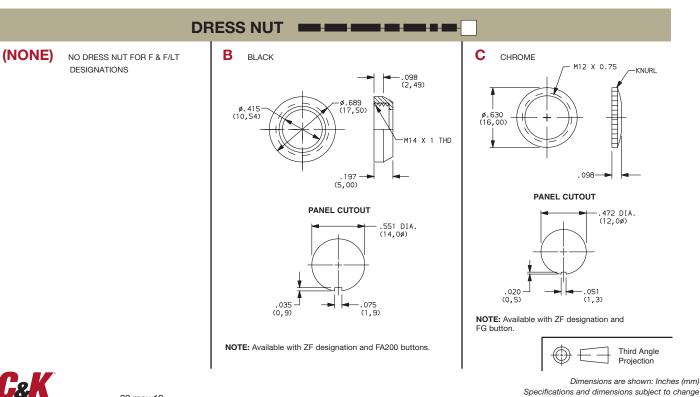


OPTION CODE	FUNCTION
(NONE)	BBM Non-shorting
м	MBB Shorting (North America only)

#### CONTACT MATERIAL

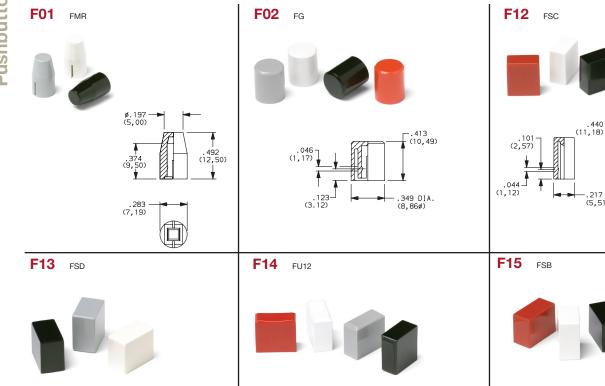
NORTH AMERICA OPTION CODE	EUROPE OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	MATERIAL	RATING
(NONE)	(NONE)	YES	YES	SILVER, AG	50 VA/15 W; 125/30 V; 0.5/0.5 A
AU	Р	YES	YES	GOLD	1 VA/300mW; 50/30 V; 0.04 A/0.01 A

\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.





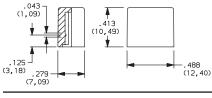
# **F** Series **Pushbutton Switches** COLOR **SOLID BUTTON STYLE**



.047 (1,19)

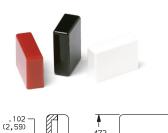
.100-(2,54)

**F19** FA



**F16** FE

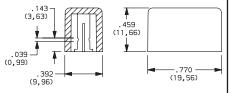
**C**&K







-.217 (5,51)

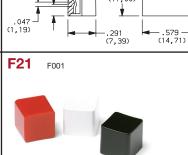


.435

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.470 (11,94)

OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY



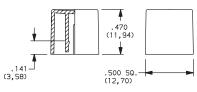
.433

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.122 (3,10)

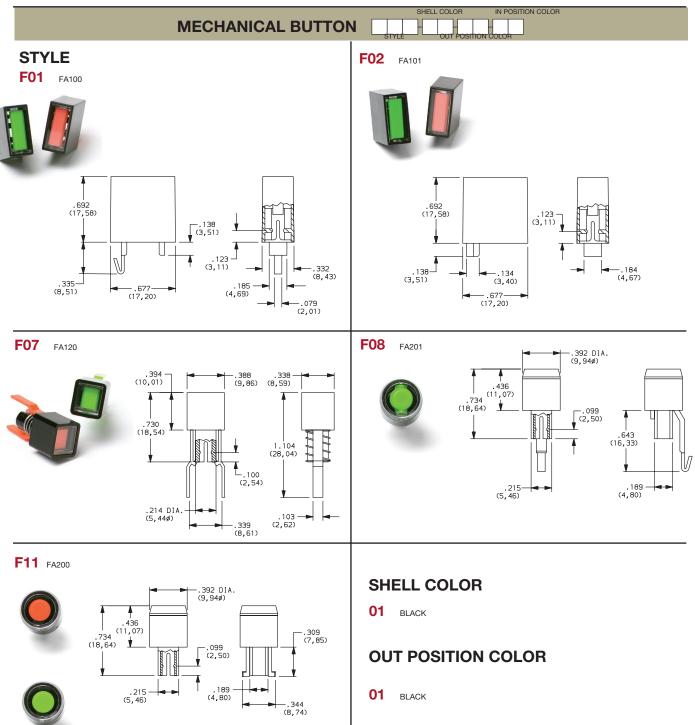
-.217 (5,51)

-.385 (9,78)



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



# IN POSITION COLOR

OPTION CODE	COLOR
02	WHITE
06	YELLOW
07	BLUE
08	GREEN
12	ORANGE

**C&K** 

Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

# CHASSIS

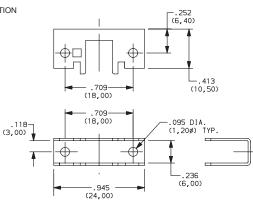
## NUMBER OF STATIONS

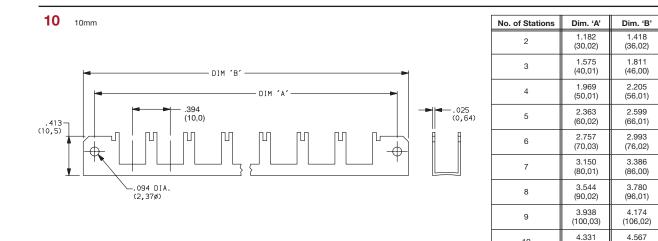
C00 Thru C10 Comes with standard 0.094 (2,44mm) mounting holes

NOTE: Single station chassis available with mounting configurations, consult factory.

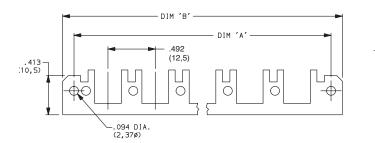
## **SPACING**

00 SINGLE STATION





12.5 12.5mm



No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.200 (30,48)	1.436 (36,47)	0.005
3	1.692 (42,98)	1.928 (48,97)	0.010
4	2.184 (55,47)	2.420 (61,47)	0.010
5	2.676 (67,97)	2.912 (73,96)	0.010
6	3.169 (80,49)	3.405 (86,49)	0.015
7	3.661 (92,99)	3.897 (98,98)	0.015
8	4.153 (105,49)	4.389 (111,48)	0.015
9	4.645 (117,98)	4.881 (123,98)	0.015
10	5.137 (130,48)	5.373 (136,47)	0.015

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(110,01)

(116,00)

10

Third Angle

Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

Projection

Tolerance

0.005

0.010

0.010

0.010

0.015

0.015

0.015

0.015

0.015

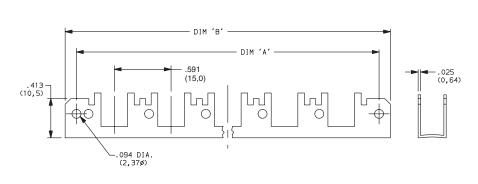
.025 (0,64)

# CHASSIS

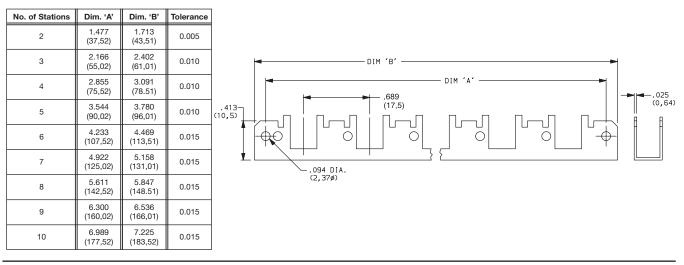
# SPACING

5		15mm
	5	5

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.374 (34,90)	1.615 (41,02)	0.005
3	1.969 (50,01)	2.205 (56,01)	0.010
4	2.560 (65,02)	2.796 (71,02)	0.010
5	3.150 (80,01)	3.386 (86,00)	0.010
6	3.741 (95,02)	3.977 (101,02)	0.015
7	4.332 (110,03)	4.568 (116,03)	0.015
8	4.922 (125,02)	5.158 (131,01)	0.015
9	5.513 (140,03)	5.749 (146,02)	0.015
10	6.103 (155,02)	6.339 (161,01)	0.015



#### 17.5 17.5mm





o. of Stations	Dim. 'A'	Dim. 'B'	Tolerance	
2	1.575 (40,01)	1.811 (46,00)	0.005	
3	2.363 (60,02)	2.599 (66,01)	0.010	Þ∎ DIM 'B'₽
4	3.150 (80,01)	3.386 (86,00)	0.010	DIM 'A'
5	3.938 (100,03)	4.174 (106,02)	0.010	.787 (20,0)
6	4.725 (120,02)	4.961 (126,01)	0.015	
7	5.512 (140,00)	5.748 (146,00)	0.015	
8	6.300 (160,02)	6.536 (166,01)	0.015	
9	7.087 (180,01)	7.323 (186,00)	0.015	└─094 DIA. (2, 37ø)
10	7.875 (200,03)	8.111 (206,02)	0.015	



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

## Features/Benefits

- Chassis or panel mount
- Various buttons

ushbutton >

- Various contact configurations
- RoHS compliant

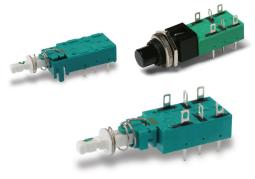
#### 

#### Specifications

ELECTRICAL RATING: NE18 Series: 8A GP, 125 VAC, 50/60 Hz, 1E4, T70 6A GP, 250 VAC, 50/60 Hz, 1E4, T70 6(4)A RM, 250 VAC, 50/60 Hz, 1E4, T70 6/48A RC, 250 VAC, 50/60 Hz, 1E4, T70 1RA, 100 VDC, 1E4, T70 8RA, 30VDC, 1E4, T70 NE18CTII Series: 4A GP, 250 VAC, 50/60 Hz, 1E4, T70 4/48A RC, 250 VAC, 50/60 Hz, 1E4, T70 1RA, 100 VDC, 1E4, T70 4RA, 30VDC, 1E4, T70 DIELECTRIC STRENGTH (50 Hz, 1 min.): 2000 V OPERATING LIFE AT MAX. LOAD AND AT MAX. INRUSH CURRENT: ^10<sup>4</sup> operations<sup>5</sup>) CONTACT RESISTANCE: Initial:  $50m\Omega$ ; After  $10^4$  operations:  $70m\Omega$ . INSULATION RESISTANCE: ^10<sup>12</sup> Ωchassis – nearest contact; ^10<sup>12</sup> Ωmains contact – mains contact; ^10<sup>12</sup> Ωmains contact – mains contact after 10<sup>4</sup> operations. LOW VOLTAGE CONTACT: SWITCHING POWER MAX .: 12W SWITCHING VOLTAGE MAX .: 24V

Typical Applications

- Mains/power switching
- Consumer electronics
- Audio equipment
- Digital products



SWITCHING CURRENT MAX.: 0.5A TOTAL TRAVEL: 4.7mm (.185 inch) LATCHING TRAVEL: 3.3mm (.130 inch) OPERATING FORCE: Without auxiliary low voltage contacts: NE18: 7N (700 grams); NE18CTII: 9.5N (950 grams). With auxiliary low voltage contacts: NE18: 8N (800 grams). SEALING: Dust proof.

#### Materials

HOUSING, ACTUATOR & TERMINAL BOARD: Thermoplastic polyester (UL 94V-0).

MOVABLE CONTACT: Silver nickel alloy, silver plated.

FIXED CONTACTS: Silver nickel alloy, silver plated.

COMMON CONTACTS & TERMINALS: Copper alloy, silver plated. RETURN SPRING: Music wire.

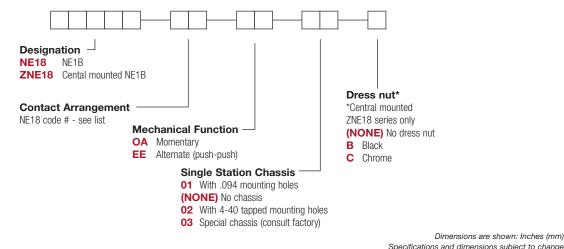
#### NOTE: All models arer RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

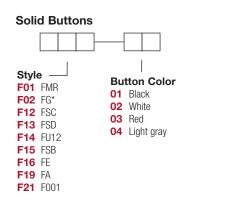
#### **Build-A-Switch**

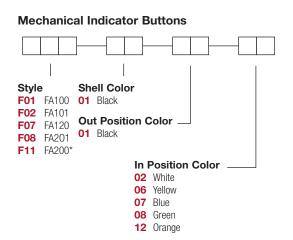
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-97 thru A-104. For additional options not shown in catalog, consult Customer Service Center.

If requesting only a switch, select the switch as noted below. Buttons are sold separately.



# **Order Code - Buttons**





\*Button options for central mounting configurations, use 'FG' for central mount with chrome dress nut, use 'FA200' for central mount with black dress nut.

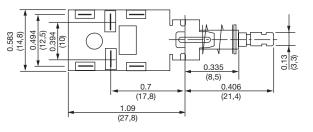
#### **BUTTON REMOVAL**

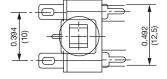
A button of a push-push switch should only be removed in the "OFF" non-latching position.

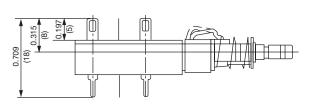
**DESIGNATION & SWITCHES WITH STANDARD OPTIONS** 

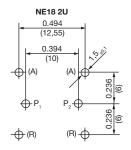
## **NE1838EE**















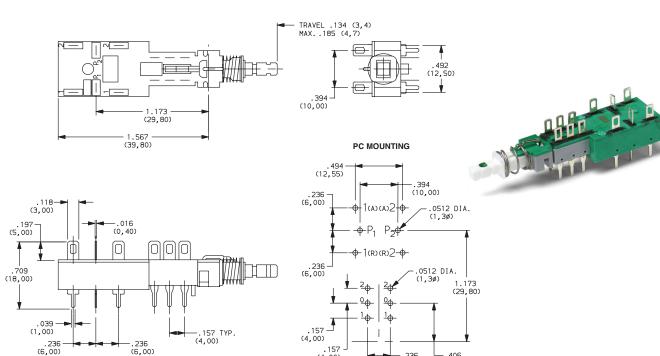
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

#### **DESIGNATION & SWITCHES WITH STANDARD OPTIONS**

## **NE1839EE**

 $\square$ 

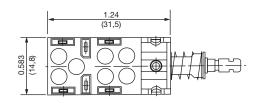
Pushbutton >

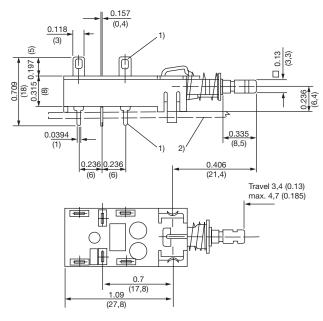


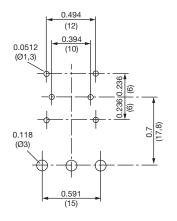
.157

(4,00)

## **NE1846EE**

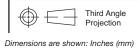






.406

-.236 (6,00)



Specifications and dimensions subject to change



PC MOUNTING

1(a)(a)2<del>|</del>\$

<del>ф</del>-1(к) (к)2-ф

φ-Ρ<sub>1</sub> Ρ<sub>2</sub>φ

## DESIGNATION & SWITCHES WITH STANDARD OPTIONS

#### 

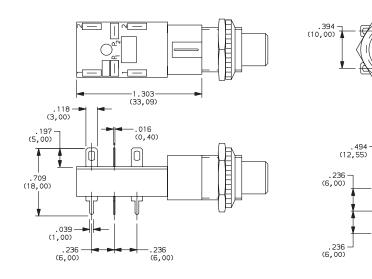
. 492

-.394 (10,00)

> .0512 DIA. (1,3ø)

## ZNE1838EECF0201









Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

## CONTACT ARRANGEMENT

OPTION CODE Contact capacity and availability	STYLE	ELECTRICAL CIRCUIT
37	NE18 — 2AX	DPST
38	NE18 — 2UX	DPDT
51	2U + NE18 — 2AX	DPST*
<b>52</b> (4A/64)	NE18CTII — 2AX	DPST
39	2U + NE18 — 2UX	DPDT*
41	NE18 — 2AP	DPST
42	NE18 — 2UP	DPDT
43	NE18 — 2AW	DPST
44	NE18 — 2UW	DPDT
45	NE18 — 2ASX	DPST

2U + Denotes auxiliary set of low current contacts DPDT 2A = DPST 2U = DPDT

OPTION CODE Contact capacity and availability	STYLE	ELECTRICAL CIRCUIT
46	NE18 — 2USX	DPDT
47	NE18 – 2ASP	DPST
48	NE18 — 2USP	DPDT
49	NE18 — 2ASW	DPST
50	NE18 — 2USW	DPDT
54	2U + NE18 — 2AW	DPST
55	2U + NE18 — 2AP	DPST
56	2U + NE18 — 2UW	DPDT
57	2U + NE18 — 2UP	DPDT

NOTES

Contact plating is silver on all Power Switches.
 The electrical function is Break Before Make (BBM) on all Power Switches.

3. The terminals will be epoxy sealed.

	POSSIBLE CONTACT ARRANGEMENT				
TYPE	POWER CONTACTS <sup>1</sup>	AUXILIARY CONTACTS	CONTACT SPACING	PROTECTION CLASS (CEE 24)	APPROVALS
NE18	2A <sup>2</sup>	2U	> 3mm (.118 inch)	II	c A us 15 UL61058-1
NE18	2A <sup>2</sup> 2U	2U	> 3mm (.118 inch)	I	c Al us UL61058-1
NE18CTII	2A <sup>2</sup>		> 3mm (.118 inch)	II	c <b>AU</b> us <b>UL61058-1</b>

1) A = make contact, U = changeover contact

2) With 2A mains contacts: Mounting only by PC pins is not sufficient.

#### MECHANICAL FUNCTION ----

OPTION CODE	FUNCTION	
OA	Momentary	
EE	Alternate (push-push)	



Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

 $\bigcirc$ 

Third Angle Projection

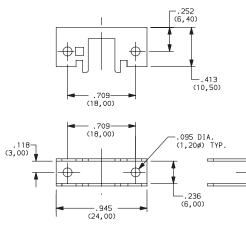
# S = Snap-in mounting X = Solder lug/PC pins W = Solder lugs only P = PC pins only

-0

#### SINGLE STATION CHASSIS

(NONE) NO CHASSIS

01 WITH .094 MOUNTING HOLES



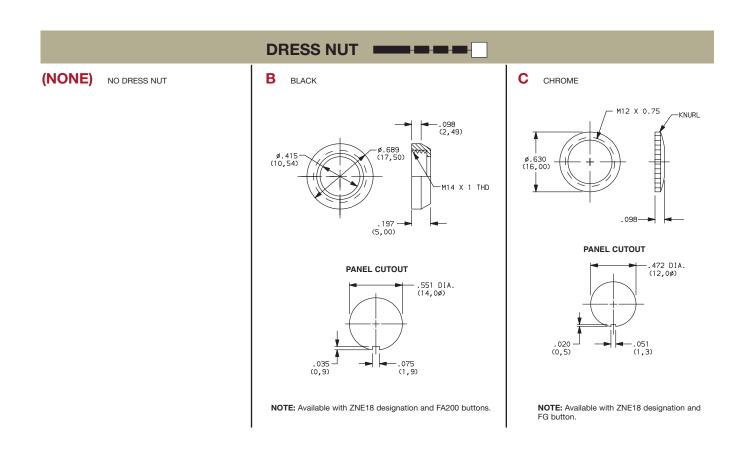
02 WITH 4-40 TAPPED MOUNTING HOLES -.252 (6,40) L.413 (10,50) 709 (18,00) 709 -4-40 UNC TYP. (18,00) .118-(3,00) 4

-.945 (24,00)

.236

(6,00)

03 SPECIAL CHASSIS (CONSULT FACTORY)



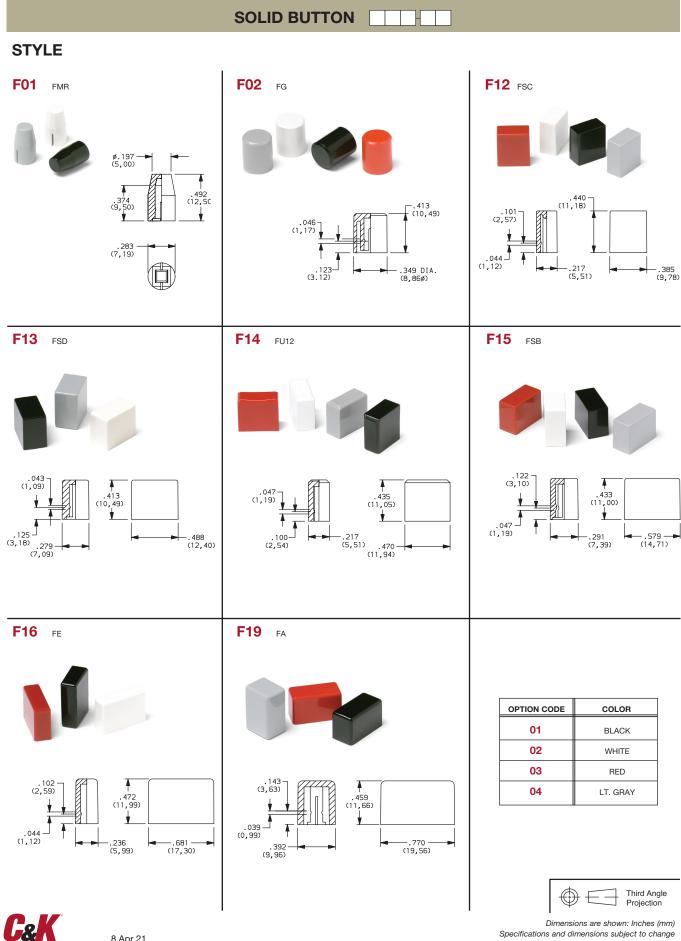


Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

8 Apr 21

C.e.K

Pushbutton >



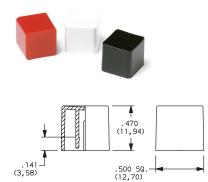
www.ckswitches.com

Specifications and dimensions subject to change

# SOLID BUTTON

# STYLE

F21 F001



OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY
09	BLACK/CHROME (F03,F06 & F07 buttons only

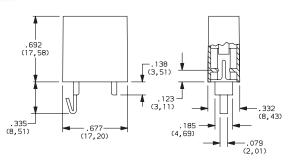
IN POSITION COLOR

# MECHANICAL BUTTON

# STYLE

F01 FA100

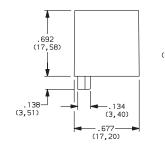


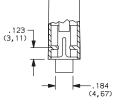


F02 FA101



SHELL COLOR







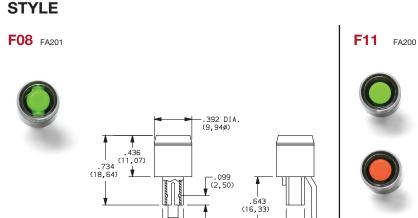
**C&K** 

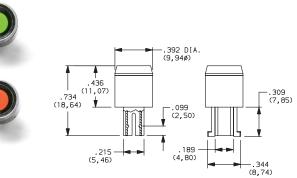
8 Apr 21

Dimensions are shown: Inches (mm) Specifications and dimensions subject to change **MECHANICAL BUTTON** 

 $\sqrt{}$ 

.189 (4,80)





IN POSITION COLOR

# SHELL COLOR

01 BLACK

# **OUT POSITION COLOR**

.215 (5,46)

01 BLACK

# **IN POSITION COLOR**

SHELL COLOF

OPTION CODE	COLOR
02	WHITE
06	YELLOW
07	BLUE
08	GREEN
12	ORANGE



www.ckswitches.com

Dimensions are shown: Inches (mm)

<u>Ce</u>K



# FP Series Sealed Ultra Miniature Pushbutton Switches

#### Features/Benefits

- Ultra-miniature pushbutton
- Multiple poles and throws
- Long life 100,000 cycles
- Vertical and right angle mount
- Sealed against soldering and cleaning processes
- Optional caps
- RoHS compliant

# **Typical Applications**

- Networking equipment
- High-end consumer

Data storage

- Professional instrumentation
- Computer, Server, Modem &

**Materials** 

MOVABLE CONTACTS:

Base metal: Brass

FIXED CONTACTS:

COVER: PA66 - Black

BASE: PPS - Black

ACTUATOR: PPS - Black

Base metal: Phosphor bronze

Plating: Gold over nickel plate

Plating: Gold over nickel plate

SUPPORT BRACKET: Steel with tin plate

(A1 type terminal only)

AL





## Specifications

CONTACT RATING: Max. 0.4 VA (28 V DC or V AC) ELECTRICAL LIFE: 50,000 cycles (FP11 & FP21) 10,000 cycles (FP12 & FP22) CONTACT RESISTANCE: (10mA @ 2 V DC) 80 mΩ max. initial INSULATION RESISTANCE: 500MΩ min. @ 500 V DC - 1 minute OPERATING TEMPERATURE: -20°C to 80°C SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 PACKAGING: Tray pack - 25 pcs per tray (A1 type terminal)

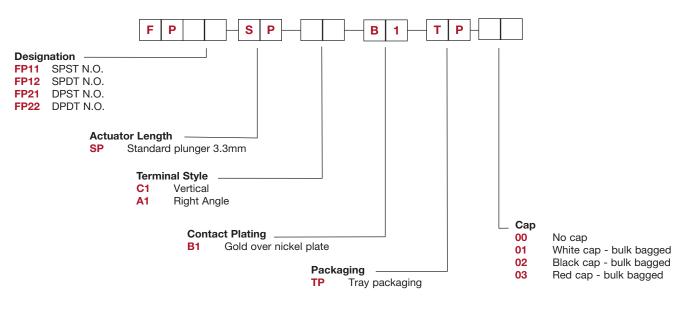
- 100 pcs per tray (C1 type terminal)

Caps (optional) - Bulk bag; 100 caps per bag.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-106 thru A-107. For additional options not shown in catalog, consult Customer Service Center.

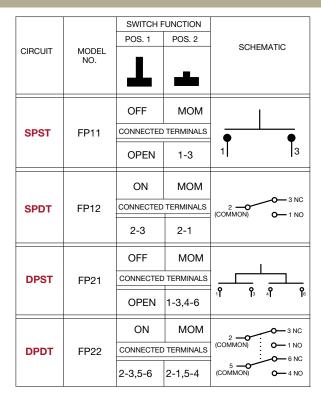




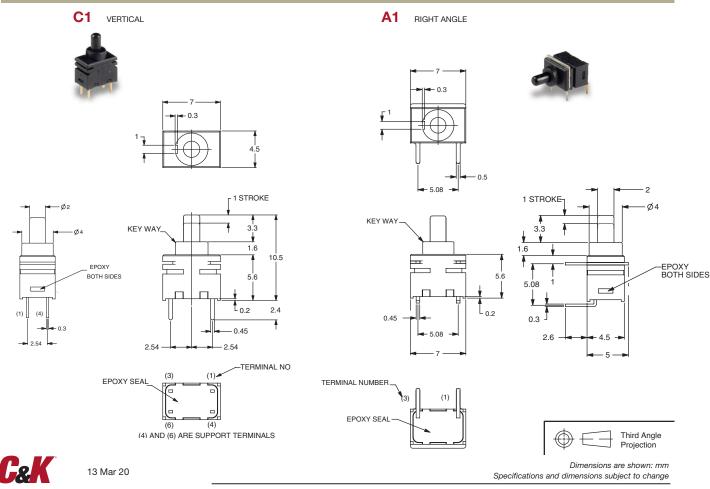
# FP Series Sealed Ultra Miniature Pushbutton Switches



# **SWITCH CIRCUIT**

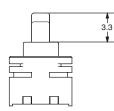


# **TERMINAL STYLE**



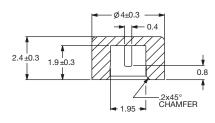


SP STANDARD PLUNGER 3.3MM



# CAPS

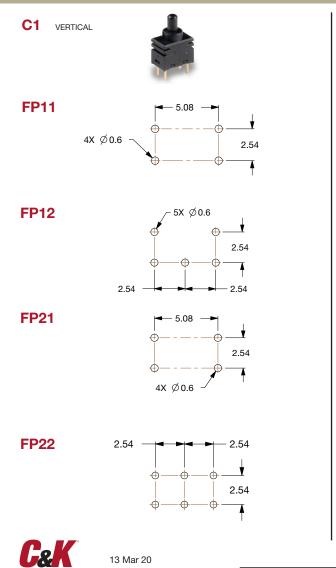
OPTION CODE	DESCRIPTION
00	NO CAP
01	WHITE CAP, BULK BAGGED
02	BLACK CAP, BULK BAGGED
03	RED CAP, BULK BAGGED



To purchase Caps separately without switch, please use these part numbers

PART #	COLOR
798D01000	WHITE
798D02000	BLACK
798D03000	RED

## **MOUNTING HOLE**



## **A1** RIGHT ANGLE - 5.08 Ø0.6 5.08 ¢ Œ A 5.08 5X Ø0.6 2.54 2.54 5.08 Æ 5.08 6X Ø0.6 ŧ 2.54 $\oplus$ ł ¢ 4 5.08 8X Ø0.6 ¥ 2.54



www.ckswitches.com

Third Angle Projection

4

2.54

2.54

## Features/Benefits

- IP67 sealed
  - 1,000,000 life cycle
  - Illumination / non-illumination
  - Multiple colored caps
  - Threaded or snap-in mounting
  - Caps available separately
  - RoHS compliant

#### **Specifications**

FUNCTION: SPST Momentary CONTACT ARRANGEMENT: N.O. MOUNTING TYPE: Snap-in (no panel seal) Threaded body (hex nut, lock washer, and panel seal gasket provided) Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

#### Mechanical

OPERATING LIFE: 1,000,000 cycles TOTAL TRAVEL: 2.1 ± 0.2 mm

OPERATING POINT 1.55 ± 0.25 mm

#### OVER TRAVEL: 0.6 min.

OPERATING FORCE:  $4N \pm 1N$  standard configuration; other force option  $2N \pm 0.5N$ 

VIBRATION: 10-500 Hz 10g Max SHOCK: 60g 11ms sawtooth wave

#### Electrical

CONTACT RATING: 200mA @ 24 V DC resistive (500,000 cycles) 100mA @ 50 V DC resistive (500,000 cycles) 400mA @ 32 V AC resistive (500,000 cycles) 125mA @ 125 V AC resistive (1,000,000 cycles)

DIELECTRIC STRENGTH: 1000 V AC min. INSULATION RESISTANCE: 1 G  $\Omega$  @ 500 VDC INITIAL CONTACT RESISTANCE 50 m $\Omega$  max (without wire leads) BOUNCE TIME: <5 ms

## Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



#### Materials HOUSING: PBT BASE: PBT CAP: PBT ACTUATOR: Illuminated: Clear polycarbonate Non-illuminated: PBT INTERNAL SEAL: Silicone rubber TERMINALS: Copper alloy, gold over silver plating MOVABLE CONTACT: Copper alloy, gold over silver plating TERMINAL SEAL: Epoxy WIRE LEADS: UL1569 Black 22 AWG

#### **Operating Environment**

OPERATING TEMPERATURE: -40°C to 85°C (+105°C non-illuminated) ESD PROTECTION: 20 KV min.

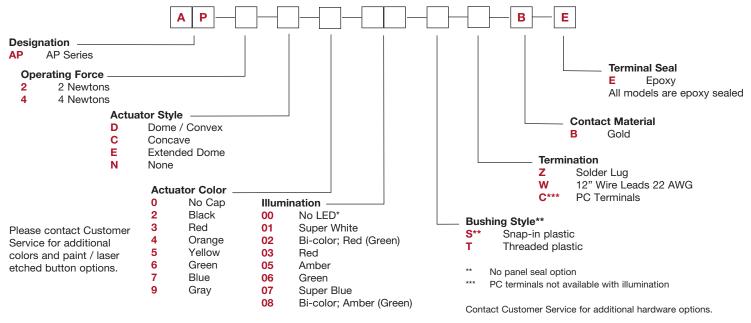
#### Process Environment

SEALING: IP67 for threaded body IP65 for snap-in version (no panel seal)

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box.

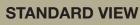


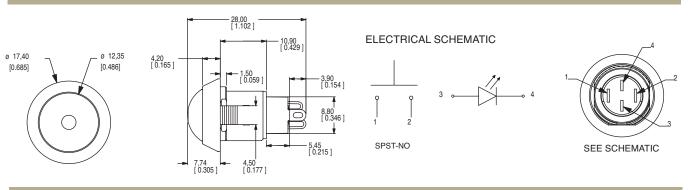
\* No LED available in short body only

Specifications and dimensions subject to change

ushbutton

# A Pushbutton





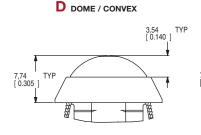
**OPERATING FORCE** 

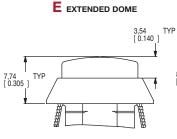
#### $\neg \circ \circ \cdots \circ \circ \circ \circ \circ$

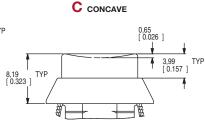
OPTION CODE	OPERATING FORCE
2	2 N, 200 g
4	4 N, 400 g

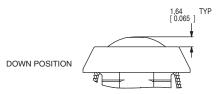
#### **ACTUATOR STYLE**

#### 

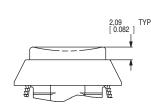








### 1,64 [ 0.065 ] TYP ₩



**ACTUATOR COLOR** 

#### 

OPTION CODE	ACTUATOR COLOR
0	No Cap
2	Black
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

For additional colors please contact Customer Service.



<u>Ce</u>K 28 Jul 21

#### AP Series Industrial Pushbutton Switch

#### 

OPTION CODE	ILLUMINATION TYPE	TYPICAL I MIN	NTENSITY* MAX	PEAK WAVELENGTH	Vf Forward Voltage
		(m	cd)	(nm)	
00	Model without illumination	N	/A	N/A	
01	LED Super White	4,000	5,000	N/A	3.5
02	LED Bi-Color – Red (Green)	10	20	635/565	2.0
03	LED Red	4	8	700	2.0
05	LED Amber	35	50	610	2.0
06	LED Green	35	50	565	2.0
07	LED Super Blue	800	1,500	470	3.8
08	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

\*LED FORWARD CURRENT: 20 mA

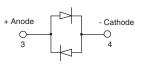
LED FORWARD VOLTAGE: see chart above

LED REVERSE VOLTAGE: 5.0 V MAX

\* For information on specific and custom LED, please contact Customer Service.

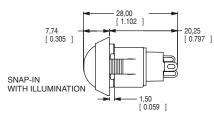
NOTE:

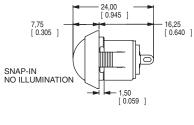
For bi-color LED's the polarity must be reversed to alternate the color



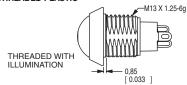
#### BUSHING STYLE

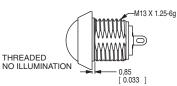
S SNAP-IN



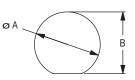








#### PANEL CUTOUT



PANEL THICKNESS	DIM A (± 0.05 mm)	DIM B (± 0.05 mm)
1 mm	13.70 mm	13.00 mm
[0.039 in]	[0.539 in]	[0.512 in]
2 mm	13.80 mm	13.00 mm
[0.079 in]	[0.539 in]	[0.512 in]
3 mm	13.90 mm	13.10 mm
[0.118 in]	[0.547 in]	[0.516 in]
THREADED BODY	13.70 mm	13.00 mm
MIN PANEL THICKNESS 1 mm	[0.539 in]	[0.512 in]



A 0.1mm min. chamfer on the leading edge of the mounting hole is recommended for snap-in version. 28 Jul 21 Dimensions are shown: mm (inches) Specifications and dimensions subject to change

Third Angle Projection

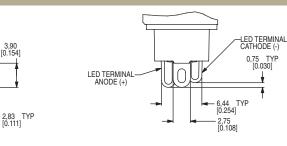
A-110

#### **AP Series Industrial Pushbutton Switch**

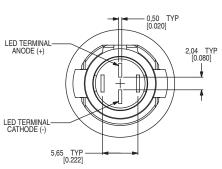
0,75 TYP [0.030]

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#### **TERMINATION**



\* Switching terminals are gold and LED terminals are silver



0,50 TYP [0.020]

2,83 TYP [0.111]

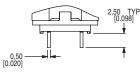
Ы

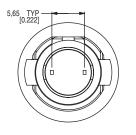
3,90 [0.154]

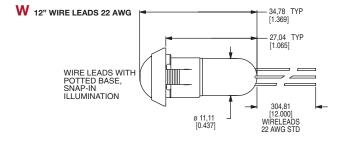
C PC TERMINALS

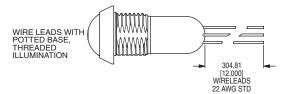
Z SOLDER LUG

\*\*\* Illumination not available with PC Terminals



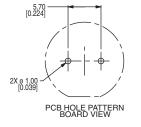


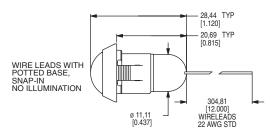


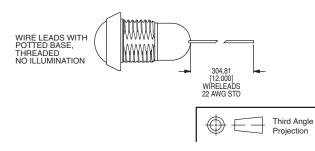








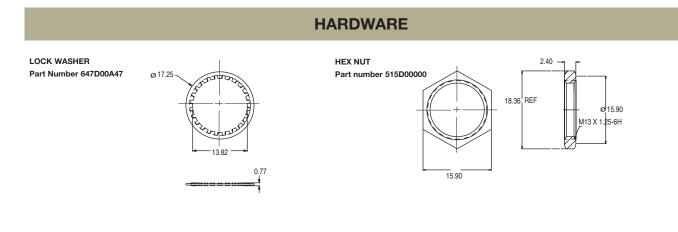




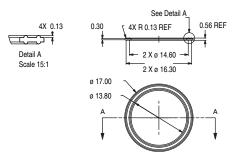
#### AP Series Industrial Pushbutton Switch

# CONTACT MATERIAL Image: Contact material B gold OPTION CODE CONTACT MATERIAL B Gold TERMINAL SEAL Image: Contact material

E EPOXY All models are epoxy sealed



PANEL SEAL Part Number 655D00000



Caps available on next page



ul 21

Dimensions are shown: mm (inches) Specifications and dimensions subject to change

Third Angle Projection

#### **AVAILABLE CAPS**

481D XX XXX





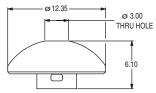


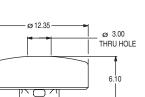


PART NUMBER	HOLE	STYLE
481DXX000	NO	DOME
481DXX001	YES	DOME
481DXX002	NO	EXTENDED DOME
481DXX003	YES	EXTENDED DOME
481DXX004	NO	CONCAVE
481DXX005	YES	CONCAVE

#### DOME

481DXX000 = NO HOLE 481DXX001 = HOLE



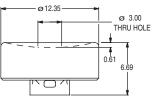


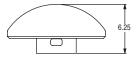


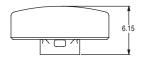
481DXX002 = NO HOLE 481DXX003 = HOLE

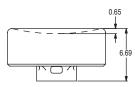
#### CONCAVE

481DXX004 = NO HOLE 481DXX005 = HOLE













# Pushbutton >

# Features/Benefits IP67 sealed 1 000 000 III

- 1,000,000 life cycle
- Illumination
- Threaded or snap-in mounting
- RoHS compliant

#### Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



# SpecificationsMateFUNCTION: SPST Momentary<br/>CONTACT ARRANGEMENT: N.O.HOUS<br/>BASEMOUNTING TYPE:<br/>Snap-in (no panel seal)<br/>Threaded body (hex nut, lock washer, and panel seal gasket provided)<br/>Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)ACTUMechanical<br/>OPERATING LIFE: 1,000,000 cyclesTERM<br/>MOVATOTAL TRAVEL: 2.1 + 0.2 mmTERM

TOTAL TRAVEL: 2.1 ± 0.2 mm OPERATING POINT 1.55 ± 0.25 mm OVER TRAVEL: 0.6 min. OPERATING FORCE: 4N ± 1N standard configuration; other force option 2N ± 0.5N VIBRATION: 10-500 Hz 10g Max SHOCK: 60g 11ms sawtooth wave

Electrical

CONTACT RATING: 200mA @ 24 V DC resistive (500,000 cycles) 100mA @ 50 V DC resistive (500,000 cycles) 400mA @ 32 V AC resistive (500,000 cycles) 125mA @ 125 V AC resistive (1,000,000 cycles)

DIELECTRIC STRENGTH: 1000 V AC min. INSULATION RESISTANCE: 1 G  $\Omega$  @ 500 VDC INITIAL CONTACT RESISTANCE 50 m $\Omega$  max (without wire leads) BOUNCE TIME: <5 ms

#### Materials HOUSING: PBT

ACTUATOR: Illuminated: Clear polycarbonate INTERNAL SEAL: Silicone rubber TERMINALS: Copper alloy, gold over silver plating MOVABLE CONTACT: Copper alloy, gold over silver plating

TERMINAL SEAL: Epoxy WIRE LEADS: UL1569 Black 22 AWG

Operating Environment OPERATING TEMPERATURE: -40°C to 85°C ESD PROTECTION: 20 KV min.

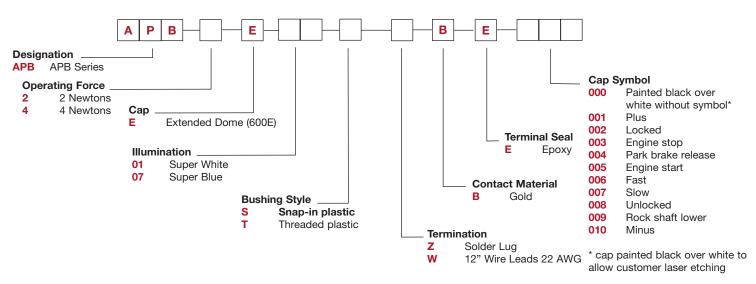
**Process Environment** 

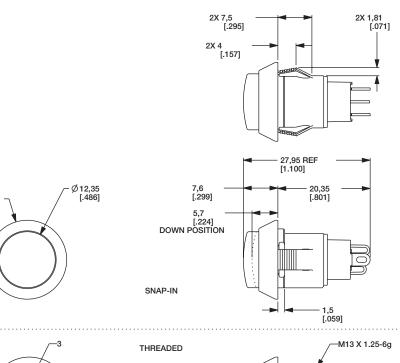
SEALING: IP67 for threaded body IP65 for snap-in version (no panel seal)

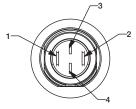
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box.



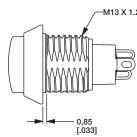




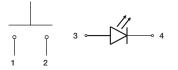
Ø17,4 [.685]



SPST-NO-DB



ELECTRICAL SCHEMATIC



ØA

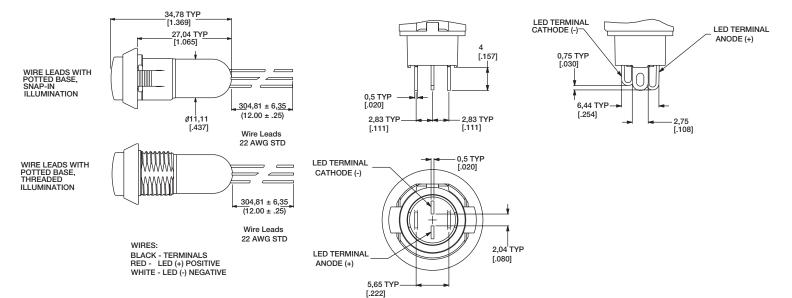
PANEL THICKNESS	DIM A (±0.05 MM)	DIM B (±0.05 MM)
1 MM	13.70 MM	13.00 MM
[0.039 IN]	[0.539 IN]	[0.512 IN]
2 MM	13.80 MM	13.00 MM
[0.079 IN]	[0.539 IN]	[0.512 IN]
3 MM	13.90 MM	13.10 MM
[0.118 IN]	[0.547 IN]	[0.516 IN]
THREADED BODY	13.70 MM	13.00 MM
MIN PANEL THICKNESS 1 MM	[0.539 IN]	[0.512 IN]

A 0.1 MM MIN CHAMFER ON THE LEADING EDGE OF MOUNTING HOLE IS RECOMMENDED FOR SNAP-IN VERSION.









**TERMINATION** 

Z SOLDER LUG

#### CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL
В	Gold

TERMINAL SEAL

E EPOXY All models are epoxy sealed

**B** GOLD



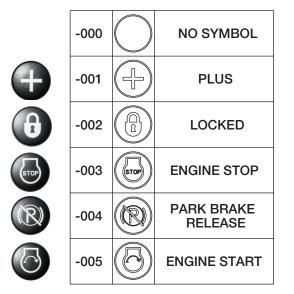
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

 $\bigoplus$ 

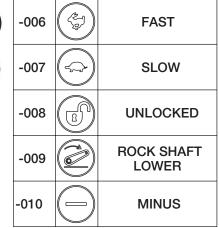
Third Angle

Projection

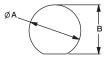
#### **CAP SYMBOLS**







#### PANEL CUTOUT

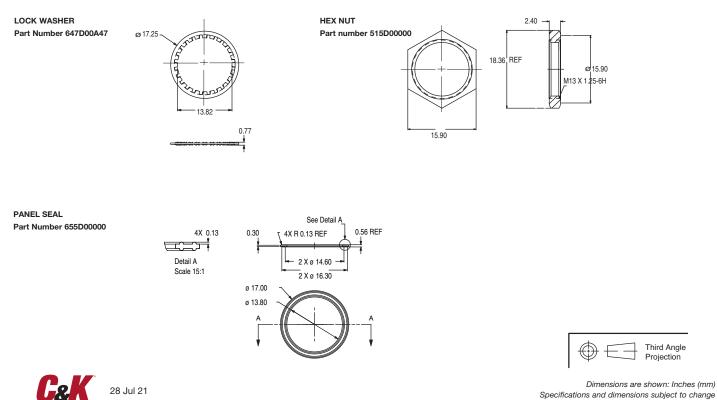


#### Panel Orientation Flat indicates bottom

See chart on previous page for dimensions

NOTES: 1. ALL GRAPHICS MUST BE POSITIONED AS SHOWN, PERPENDICULAR TO ALIGNMENT FEATURE ON UNDERSIDE OF CAP. 2. GRAPHIC MARKING MUST BE ALIGNED WITH THE FLAT FEATURE ON THE UNDERSIDE OF THE CAP AS SHOWN, TOLERANCE ±3<sup>8</sup>

HARDWARE



#### Features/Benefits

- IP68 sealed
- 1,000,000 life cycle
- Multiple housing styles
- Capable of up to 5A resistive load
- Wirelead options available
- RoHS compliant

#### Specifications

FUNCTION: SPDT Double Break (Form Z) Momentary CONTACT ARRANGEMENT: N.O. and N.C. MOUNTING TYPE: Threaded front or rear mount and slot mount TOROUE SPEC FOR THREADED BODY: Do not exceed 50 in-by

TORQUE SPEC FOR THREADED BODY: Do not exceed 50 in-lbs (5.65 N-m)

#### Mechanical

OPERATING LIFE: 1,000,000 cycles TOTAL TRAVEL:  $1.6 \pm 0.15$  mm OPERATING POINT  $0.9 \pm 0.25$  mm OVER TRAVEL: 0.45 min. OPERATING FORCE:  $8N \pm 1.5N$ VIBRATION: 10-500 Hz 10g Max SHOCK: 50g 11ms sawtooth wave

#### Electrical

CONTACT RATING: Option G - Gold over Silver 10mA/5 VDC (1,000,000 cycles) Option Q - Silver 1A/32 VDC resistive (100,000 cycles) 5A/32 VDC resistive (25,000 cycles) 3A/32 VDC resistive (25,000 cycles)

#### **Typical Applications**

- Harsh environments
- Off-Road
- Industrial
- Transportation
- Military



#### Electrical (cont.)

DIELECTRIC STRENGTH: 1000 V AC for 1 min. INSULATION RESISTANCE: 1 G  $\Omega$  @ 500 VDC INITIAL CONTACT RESISTANCE 50 m $\Omega$  max (without wire leads) BOUNCE TIME: <5 ms

#### Materials

HOUSING: 6061-T6 Aluminum, black or clear anodized BASE: PBT CAP: PBT ACTUATOR: PBT INTERNAL SEAL: Silicone rubber TERMINALS: Copper with silver nickel inlay, silver plating MOVABLE CONTACT: Copper alloy, gold over silver plating TERMINAL SEAL: Epoxy

#### **Operating Environment**

OPERATING TEMPERATURE: -40°C to +85°C ESD PROTECTION: 15KV min.

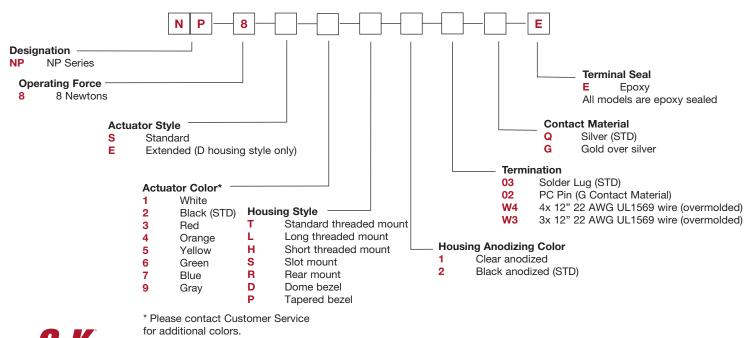
#### Process Environment

#### SEALING: IP68

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

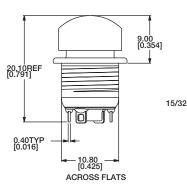
#### **Build-A-Switch**

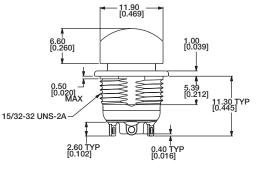
To order, simply select desired option from each category and place in the appropriate box.

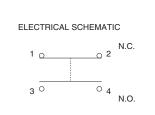


www.ckswitches.com

#### **STANDARD VIEW**





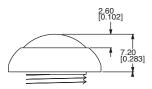


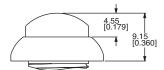
#### **OPERATING FORCE**

OPTION CODE	OPERATING FORCE
8	8 N

#### **ACTUATOR STYLE**

S STANDARD





E EXTENDED (D HOUSING STYLE ONLY)

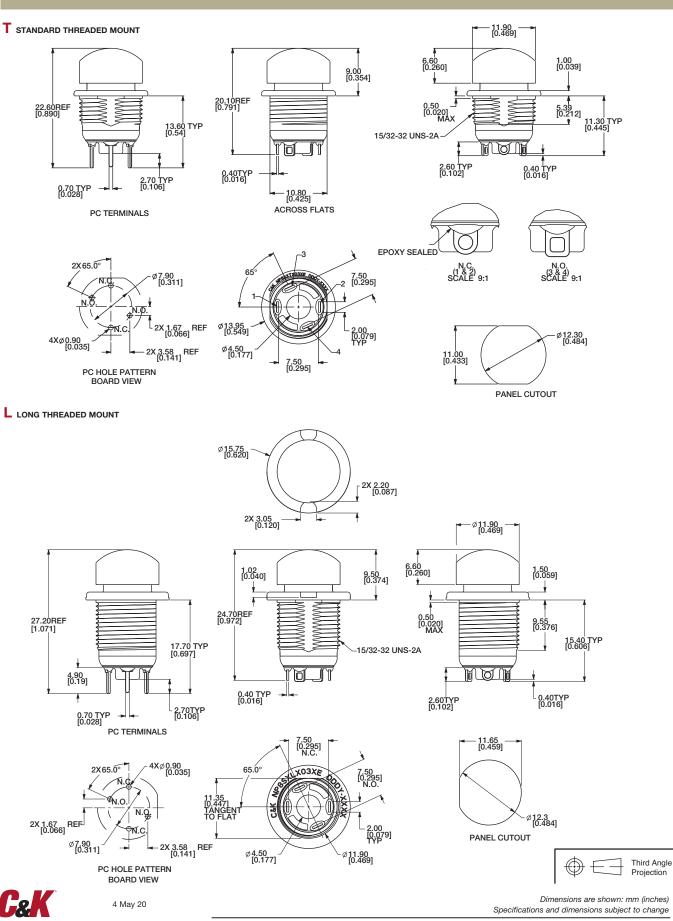
#### **ACTUATOR COLOR**

OPTION CODE	ACTUATOR COLOR
1	White
2	Black
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

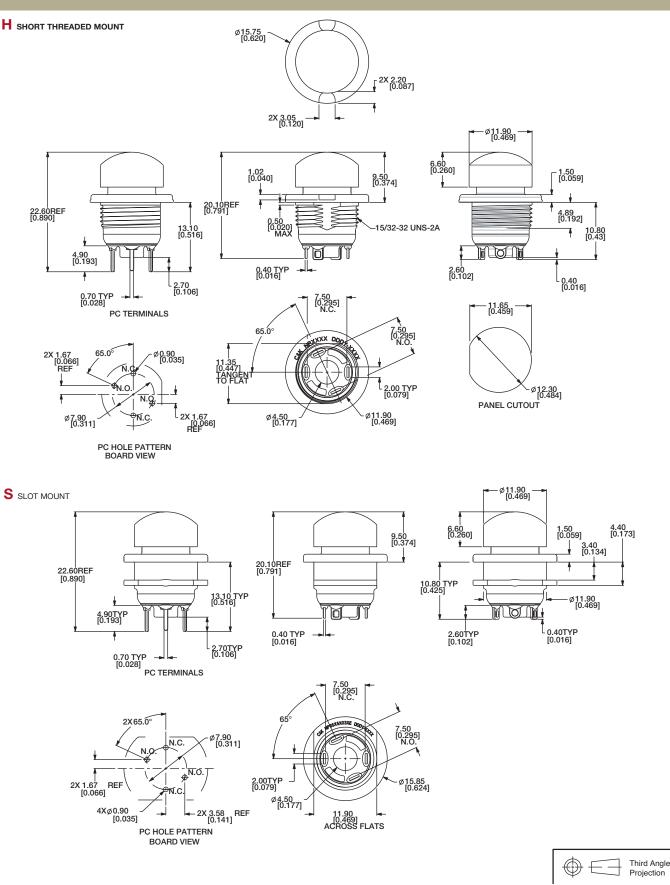
For additional colors please contact Customer Service.



# HOUSING STYLE



#### **HOUSING STYLE**

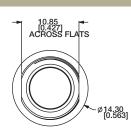


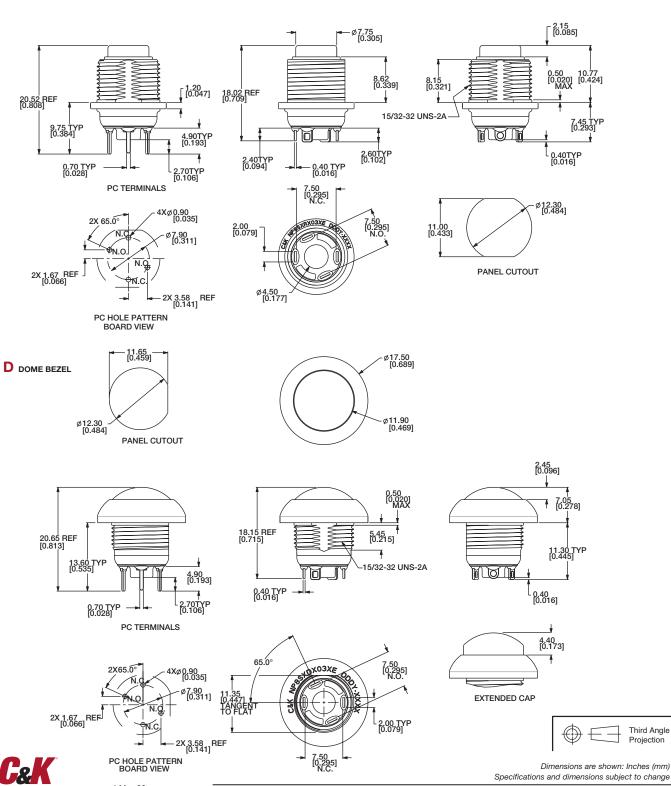
**C&K** 

4 May 20

#### **HOUSING STYLE**

#### R REAR MOUNT

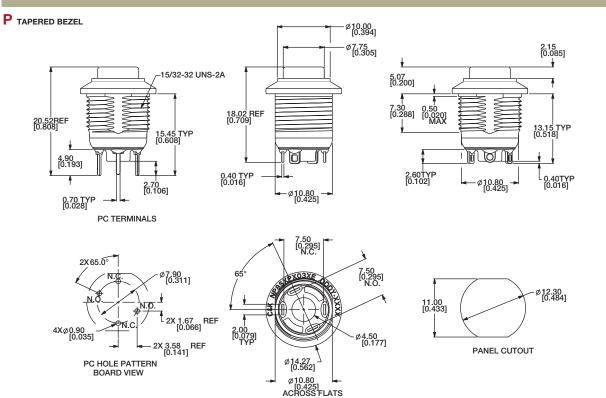




Third Angle

Projection

HOUSING STYLE

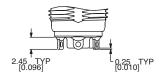


#### HOUSING ANODIZING COLOR

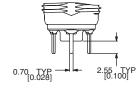
OPTION CODE	ANODIZING COLOR
1	Clear anodized
2	Black anodized (STD)

#### TERMINATION

#### 03 SOLDER LUG (STD)



02 PC PIN (G CONTACT MATERIAL)

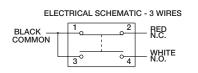




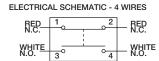
**C**&K

#### Pushbutton > **TERMINATION** M 14.70 [0.579] BEF 14.20 [0.559 BEF 9.65 [0.380] REF 14.70 [0.579] 18.80 [0.740] REF I Ŧ Щ 302.80±12.70 [11.92±0.50] Ш $\square$ $\square$ $\square$ (SEE SCHEMATICS)

W3 3X 12" 22 AWG UL1569 WIRE (OVERMOLDED)



W4 4X 12" 22 AWG UL1569 WIRE (OVERMOLDED)



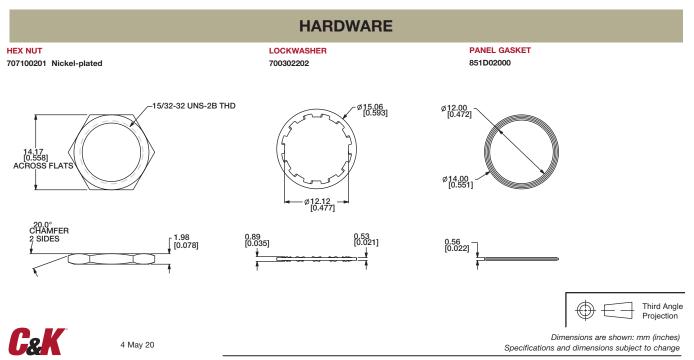
#### **CONTACT MATERIAL**

OPTION CODE	CONTACT MATERIAL
Q	Silver (STD)
G	Gold over Silver

#### **TERMINAL SEAL**

E EPOXY

All models are epoxy sealed



14.70 [0.579] REF

Specifications and dimensions subject to change

#### **PNP Series Sealed Pushbutton Switch**

#### **Typical Applications**

- Control Grips
- **Off-Road Panels**
- Heavy Equipment
- Industrial Instruments
- Lifts
- **Conveyor Controls**



**RoHS** compliant

1,000,000 life cycle

Up to 5A resistive load

Multiple housing styles

options are also available

Features/Benefits

•

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•

back

#### **Specifications**

FUNCTION: SPST, SPDT Double Break (Form Z) Momentary CONTACT ARRANGEMENT: N.O. and N.C. MOUNTING TYPE: Threaded front mount TORQUE SPEC FOR THREADED BODY: Do not exceed 10 in-lbs (1.35 N-m)

Snap-Action provides positive tactile feed-

IP68 sealed to endure harsh environments

Various termination types and wirelead

#### Mechanical

OPERATING LIFE: 1,000,000 cycles TOTAL TRAVEL: 2 mm max. OPERATING POINT 0.9 ± 0.25 mm OVER TRAVEL: 0.25 mm min. OPERATING FORCE: 3N ± 1.5N 8N ± 1.5N VIBRATION: 10-500 Hz 10g Max SHOCK: 50g 11ms sawtooth wave

#### Electrical

CONTACT RATING: Option "Q" Silver 5A/32 VDC resistive (25,000 cycles) 3A/32 VDC resistive (25,000 cycles) Option "G" Gold over Silver 10mA/5 VDC resistive (1,000,000 cycles)

# DIELECTRIC STRENGTH: 1000 V AC for 1 min.

INSULATION RESISTANCE: 1 G Ω @ 500 VDC INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads) BOUNCE TIME: <5 ms

#### Materials

HOUSING: PBT/PC BASE: PBT CAP: PBT ACTUATOR: PBT **INTERNAL SEAL: Silicone rubber** TERMINALS: Copper with silver nickel inlay, silver plating MOVABLE CONTACT: Copper alloy, gold over silver plating **TERMINAL SEAL: Epoxy** 

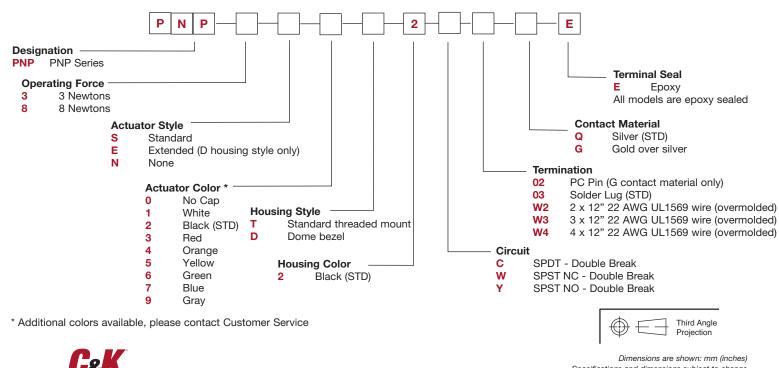
#### **Operating Environment**

OPERATING TEMPERATURE: -40°C to +85°C ESD PROTECTION: 15KV min. SEALING: IP68

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

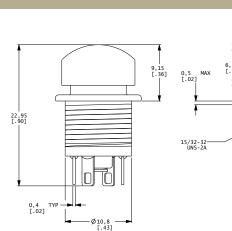
#### **Build-A-Switch**

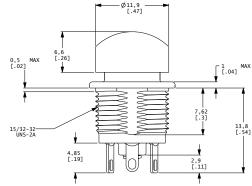
To order, simply select desired option from each category and place in the appropriate box.



3 Dec 20

#### **PNP Series Sealed Pushbutton Switch**





**STANDARD VIEW** 





#### **OPERATING FORCE**

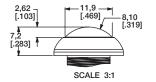
OPTION CODE	OPERATING FORCE
3	3 N
8	8 N

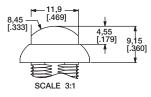
#### **ACTUATOR STYLE**

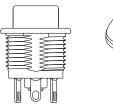
S STANDARD

E EXTENDED (D HOUSING STYLE ONLY)

N NO CAP

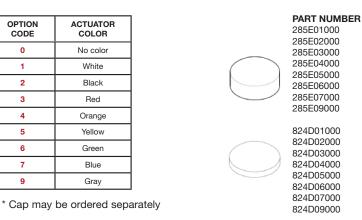








#### **ACTUATOR COLOR**



#### COLOR White Black Red Orange Yellow Green Blue Gray White Black Red Orange Yellow Green Blue Gray

Dimensions are shown: mm (inches)

Specifications and dimensions subject to change

C&K

OPTION

CODE

0

1

2

3

4

5

6

7

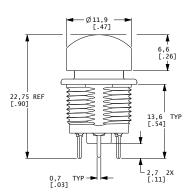
9

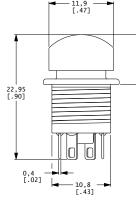
#### **PNP Series Sealed Pushbutton Switch**

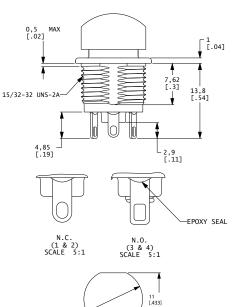
#### **HOUSING STYLE**

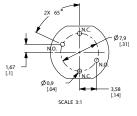
9,15 [.36]

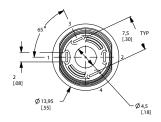
#### T STANDARD THREADED MOUNT

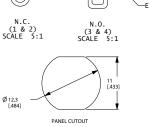




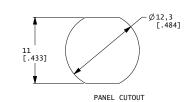


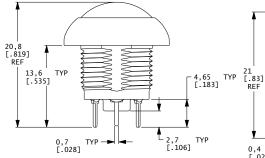


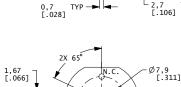


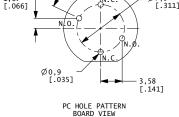


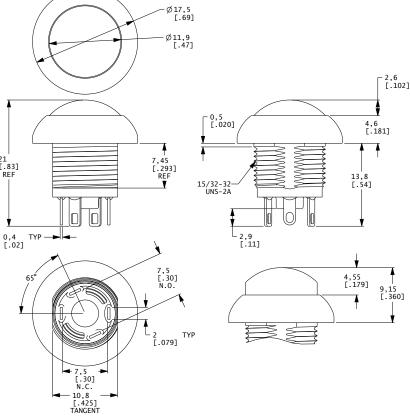
D DOME BEZEL

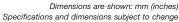












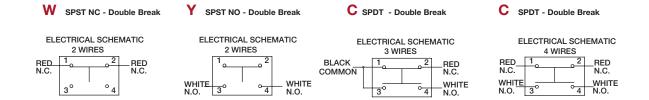
**C**&K

#### **PNP Series Sealed Pushbutton Switch**

Ļ.	Seal
Α	
Pushbutton	

OPTION	
CODE	COLOR
2	Black (STD)

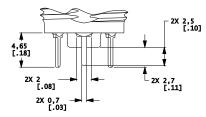
#### CIRCUIT

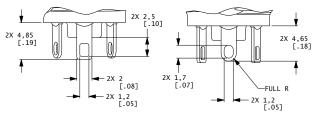


#### **TERMINATION**

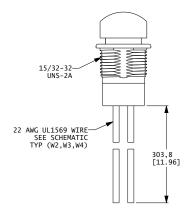
02 PC PIN



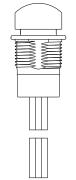




W2 2 x 12" 22 AWG UL1569 wire (overmolded)

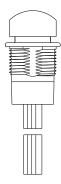


<u>Ce</u>K



W3 3 x 12" 22 AWG UL1569 wire (overmolded)

W4 4 x 12" 22 AWG UL1569 wire (overmolded)





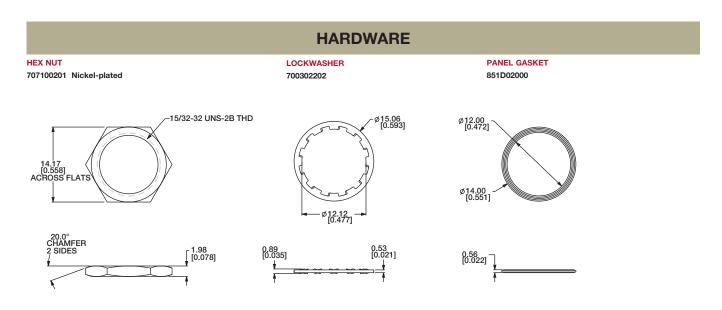
Pushbutton

#### **CONTACT MATERIAL**

OPTION CODE	CONTACT MATERIAL
Q	Silver (STD)
G	Gold over silver

#### **TERMINAL SEAL**

E EPOXY All models are epoxy sealed





#### ATP16 Series Anti-Vandal Sealed Pushbutton Switch

#### Features/Benefits Typ

- Momentary or Lock version
- IP67 sealed

Pushbutton >

- Rated at 2A / 36 Vdc
- 1,000,000 life cycle
- Various colors of LED illuminate indicator
- Choices of actuator with ring or power logo
- RoHS compliant

#### Specifications

FUNCTION: SPST CONTACT ARRANGEMENT: N.O. MOUNTING TYPE: Threaded front panel mount TORQUE FOR THREADED BODY: 11.5 kgf/cm

#### Mechanical

OPERATING LIFE: Momentary 1,000,000 cycles Lock 100,000 cycles TOTAL TRAVEL: Momentary 2.0 mm; Lock 2.3 mm OPERATING FORCE: 4.5 ± 1.5N

#### Electrical

CONTACT RATING: 2A / 36Vdc OPERATING LIFE: Make-and-break cycles at full load 200,000 (Momentary) 100,000 (Lock)

DIELECTRIC STRENGTH: 2,000 V RMS @ sea level INSULATION RESISTANCE: 1,000 M $\Omega$  min. @ 500 VDC INITIAL CONTACT RESISTANCE : 50 m $\Omega$  max @1A 12VDC

#### **Typical Applications**

- Alarm, safety and security systems
- Intercom "push-to-talk" devices
- Automatic food and drink vending machines
- Parking lot ticket machines & ticket paying stations
- Industrial Instruments

#### Materials

BUSHING: Stainless steel / Aluminum alloy, anodized BASE: PBT (UL 94-A0), Nylon 6/6 (lock version) ACTUATOR: PC (UL 94-V2); POM (lock version) INTERNAL ASSEMBLY: POM / PA66 SPRING: Steel SEALING / O-ring: Silicone (Translucent) / Silicone TERMINALS / CONTACT: Brass, Silver or gold plated HEX NUT: Brass (Nickel plated)

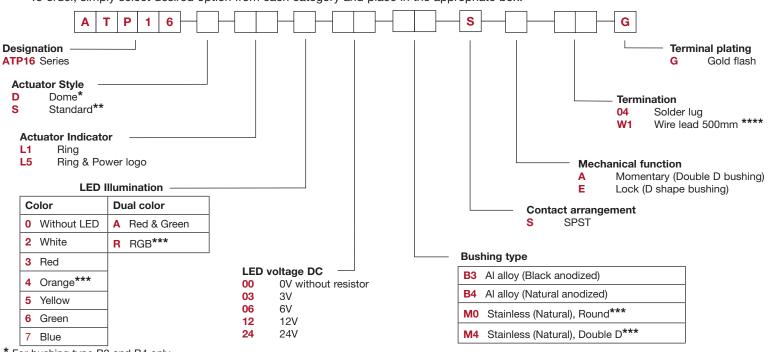
#### **Operating Environment**

OPERATING TEMPERATURE: -20°C to +70°C SEALING / PROTECTION: IP67

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box.



\* For bushing type B3 and B4 only.

\*\* Available on bushing type M0 & M4 only.

\*\*\* Available on momentary function only.

\*\*\* Available upon request, please consult your sales representative for details.

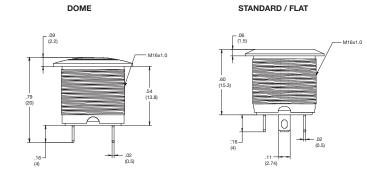


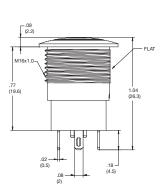
#### **STANDARD VIEW**

#### MOMENTARY



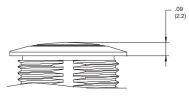
Pushbutton



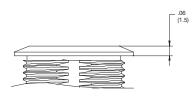


#### **ACTUATOR STYLE**



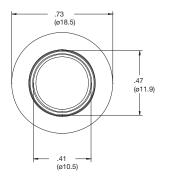


S STANDARD / FLAT

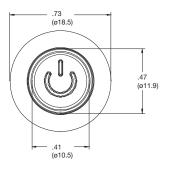


#### **ACTUATOR INDICATOR**

L1 RING



L5 RING & POWER



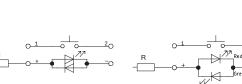


DUAL COLOR LED

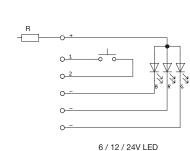
#### CIRCUIT

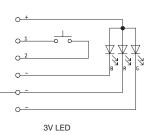
#### MOMENTARY





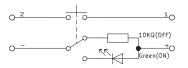
SINGLE COLOR LED



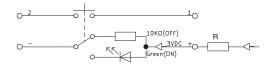


#### LOCK

SINGLE COLOR LED



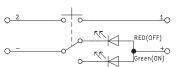




RGB LED

R

DUAL COLOR LED

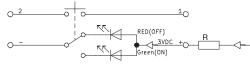


3V LED

R: Resistor value is according to the LED voltage applied.

Resistor value (Apply LED Voltage)
LED input 3 VDC, 47 ohms (Red/Yellow/Orange LED type only)
LED input 6 VDC, 180 ohms
LED input 12 VDC, 470 ohms
LED input 24 VDC, 1000 ohms

Ohms value of resistance tolerance: ±5%



6 / 12 / 24V LED

6 / 12 / 24V LED



LOCK

 $\bigcirc$ 

.18 (4.5)

.02 — (0.5)

+)





04 SOLDER LUG

MOMENTARY

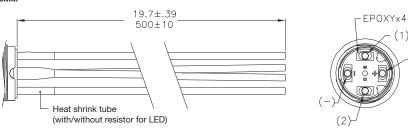
.02 (0.5)

> .130 (3.30)

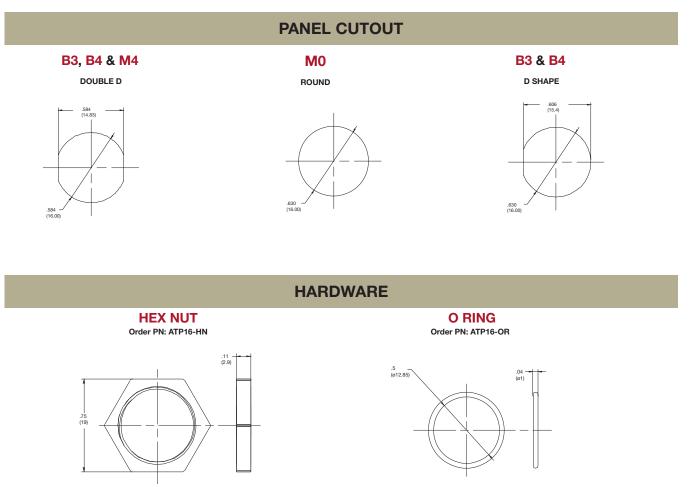
.11 \_\_\_\_\_\_(2.74)

 $\bigcirc$ 

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\* Available upon request, please consult your sales representative for details.





DimenDimensionshowshown(ihodhees) (mm) Specißopationisationalsciencessidopsculopedtalogehange

#### **ATPS19** Series **Anti-Vandal Short-Body Sealed Pushbutton Switch**

## NEW

#### Features/Benefits • Momentary systems IP67 sealed & IK10 (Stainless steel bushing)

- Rated at 2A / 36 Vdc
- 1,000,000 mechanical lifecycles
- Various colors of LED illuminate indicator
- Choices of actuator with ring or power logo
- RoHS compliant

#### Specifications

Pushbutton >

FUNCTION: SPST CONTACT ARRANGEMENT: N.O. MOUNTING TYPE: Threaded front panel mount TORQUE FOR THREADED BODY: 11.5 kgf/cm

#### Mechanical

MECHANICAL LIFE: 1,000,000 cycles TOTAL TRAVEL: 1.8 ± 0.2 mm OPERATING FORCE: 4.5 ± 1.5N

#### Electrical

CONTACT RATING: 2A / 36Vdc

ELECTRICAL LIFE: Make-and-break cycles at full load 200,000 DIELECTRIC STRENGTH: 2,000 V RMS @ sea level INSULATION RESISTANCE: 1.000 MΩ min. @ 500 VDC INITIAL CONTACT RESISTANCE : 50 mΩ max @1A 12VDC

#### Typical Applications

- Alarm, safety & security
- Intercom "push-to-talk" devices
- Automatic food & drink vending machines
- Parking lot ticket machines & ticket paying stations
- Industrial instruments

#### **Materials**

**BUSHING: Stainless steel** BASE: PA66, white (UL 94-V0) ACTUATOR: PC, translucent (UL 94-V2), std steel INTERNAL ASSEMBLY: PC, transparent (UL 94V2) SPRING: Steel SEALING / O-ring: Silicone (Translucent) / Silicone TERMINALS / CONTACT: Brass, gold flash plated / Brass, silver alloy HEX NUT: Brass (Nickel plated)

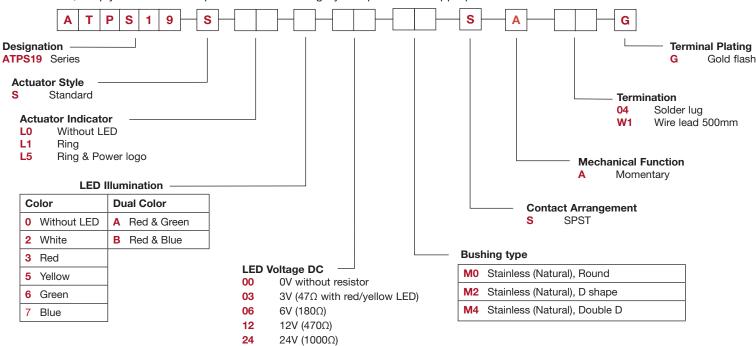
#### **Operating Environment**

OPERATING TEMPERATURE: -20°C to +70°C SEALING / PROTECTION: IP67

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

#### **Build-A-Switch**

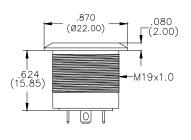
To order, simply select desired option from each category and place in the appropriate box.

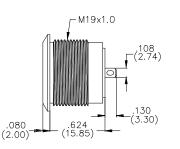






#### STANDARD

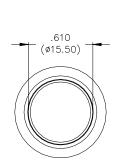


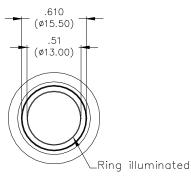


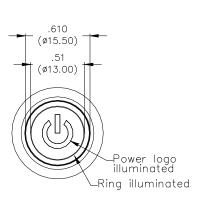
#### **ACTUATOR INDICATOR**



L1 RING







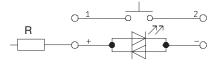
L5 RING & POWER

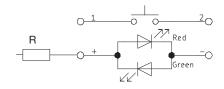
CIRCUIT

#### MOMENTARY

SINGLE COLOR LED

DUAL COLOR LED





R: Resistor value is according to the LED voltage applied.

Resistor value (Apply LED Voltage)
LED input 3 VDC, 47 ohms (Red/Yellow LED type only)
LED input 6 VDC, 180 ohms
LED input 12 VDC, 470 ohms
LED input 24 VDC, 1000 ohms

Ohms value of resistance tolerance: ±5%

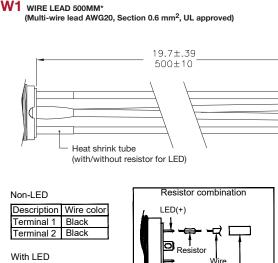


#### **ATPS19 Series** NEW Anti-Vandal Short-Body Sealed Pushbutton Switch

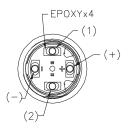
### 04 SOLDER LUG .02 (0.5) $\bigcirc$ 11 -(2.74)

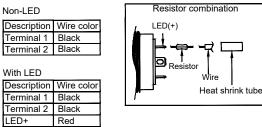
.130

(3.30)



**TERMINATION** 





\* Special length, please consult your sales representative for details.

**PANEL CUTOUT** 





D SHAPE

Black

Black

Red

Green

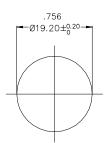
Terminal 1

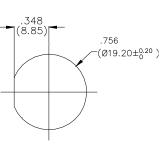
Terminal 2

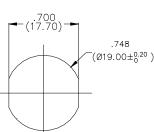
LED+

LED-



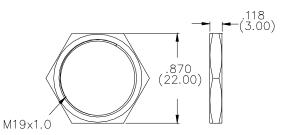




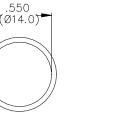


HARDWARE













#### **ATP19** Series **Anti-Vandal Sealed Pushbutton Switch**

<ul> <li>Features/Benefits</li> <li>Momentary or Lock version</li> <li>IP67 sealed &amp; IK10 (Stainless steel bushing)</li> <li>Capable of up to 3A resistive load</li> <li>50,000 life cycle at full load</li> <li>Various colors of LED illuminate indicator</li> <li>Choices of pushbutton with symbol on spot, ring or power logo</li> </ul>	Typical Applications• Control Panels including car park and traffic light• Industrial Instruments• Lifts / Escalator• Communication equipment• Alarm, safety and security systems
<b>Specifications</b> FUNCTION: Single pole and double poles CONTACT ARRANGEMENT: N.O. and N.C. MOUNTING TYPE: Threaded front panel mount TORQUE FOR THREADED BODY: 5-14 Nm	Materials BUSHING: Stainless steel / Nickel plated brass / Aluminum alloy BASE: PBT (UL 94-A0), PC (UL 94-V2) ACTUATOR: PC (UL 94-V2); Stainless steel / Nickel plated brass / Aluminum alloy INTERNAL ASSEMBLY: POM / PA66
Mechanical OPERATING LIFE: Momentary 1,000,000 cycles Self-lock 500,000 cycles TOTAL TRAVEL: about 3.2 mm	SPRING: Steel SEALING / O-ring: Silicone TERMINALS: Brass with silver or gold plated CONTACT: Copper, silver plated

#### **Operating Environment**

OPERATING TEMPERATURE: -20°C to +55°C SEALING / PROTECTION: IP67 / IK10 (Stainless steel bushing)

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

#### Electrical CONTACT RATING: Ith 5A/250VAC

3A / 250VAC 3A / 28VDC

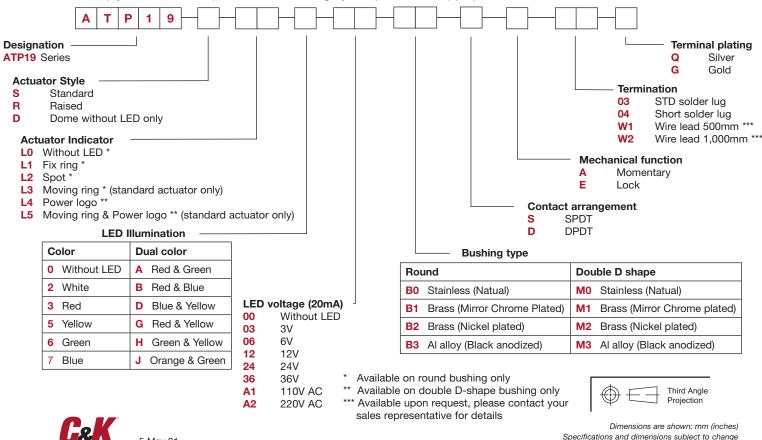
OPERATING FORCE: 1 pole 2.5 ± 1N

OPERATING LIFE: 50,000 make-and-break cycles at full load DIELECTRIC STRENGTH: 2,000 V RMS @ sea level INSULATION RESISTANCE: 1,000 MΩ min. @ 500 VDC INITIAL CONTACT RESISTANCE : 50 mΩ max @1A 12VDC

2 pole 3.5 ± 1N

#### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box.





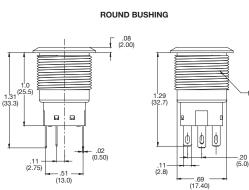
**A** Pushbutton

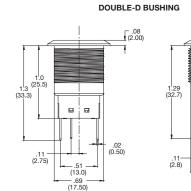
#### ATP19 Series Anti-Vandal Sealed Pushbutton Switch

#### **STANDARD VIEW**

M19x1



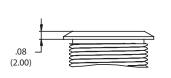


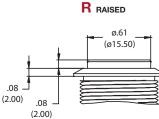


#### 1.29 (32.7) (32.

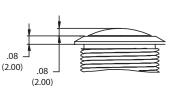
#### ACTUATOR STYLE

S STANDARD

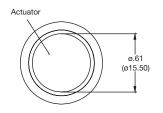




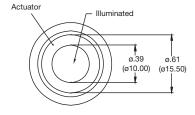




LO WITHOUT LED



L2 SPOT

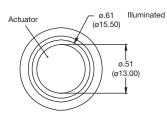


5 May 21

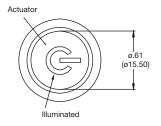
6.2

#### L1 FIX RING

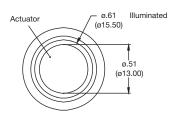
**ACTUATOR INDICATOR** 



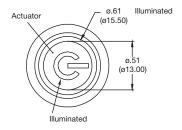
L4 FPOWER LOGO



L3 MOVING RING



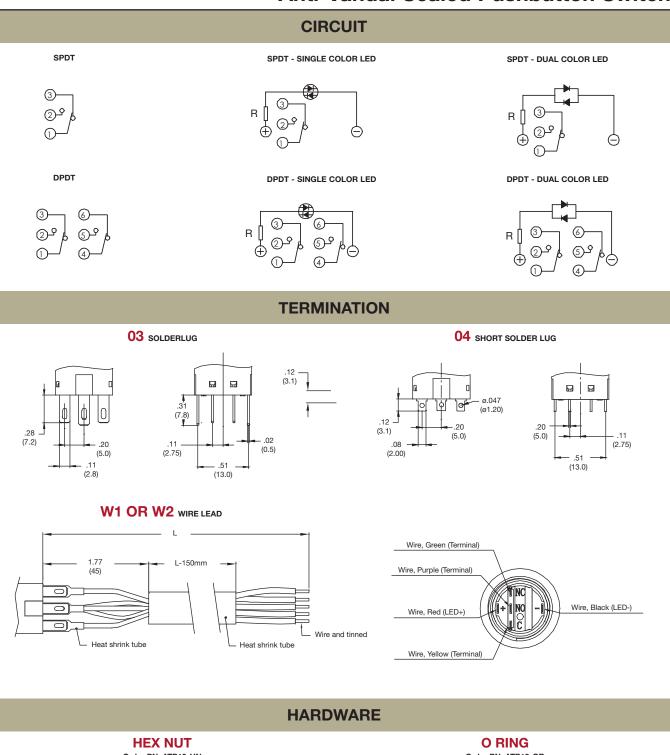
L5 POWER & MOVING RING

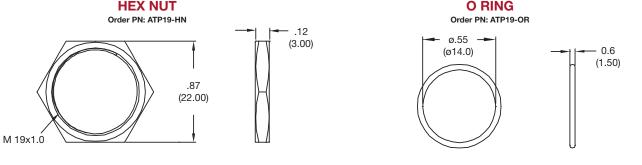


Dimensions are shown: mm (inches) Specifications and dimensions subject to change

www.ckswitches.com

#### ATP19 Series Anti-Vandal Sealed Pushbutton Switch







#### ATPS22 Series Anti-Vandal Short-Body Sealed Pushbutton Switch

#### Typical Applications

- Alarm, safety & security systems
- Intercom "push-to-talk" devices
- Automatic food & drink vending machines
- Parking lot ticket machines & ticket paying stations
- Industrial instruments

#### Materials

BUSHING: Stainless steel BASE: PA66, white (UL 94-V0) ACTUATOR: PC, translucent (UL 94-V2), std steel INTERNAL ASSEMBLY: PC, transparent (UL 94V2) SPRING: Steel SEALING / O-ring: Silicone (Translucent) / Silicone TERMINALS / CONTACT: Brass, gold flash plated / Brass, silver alloy HEX NUT: Brass (Nickel plated)

#### **Operating Environment**

OPERATING TEMPERATURE: -20°C to +70°C SEALING / PROTECTION: IP67

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

#### 

Features/Benefits

RoHS compliant

Specifications

FUNCTION: SPST

Rated at 2A / 36 Vdc

1,000,000 mechanical lifecycles

MOUNTING TYPE: Threaded front panel mount

TORQUE FOR THREADED BODY: 11.5 kgf/cm

• Momentary

Pushbutton >

MECHANICAL LIFE: 1,000,000 cycles TOTAL TRAVEL: 1.8 ± 0.2 mm OPERATING FORCE: 4.5 ± 1.5N

CONTACT ARRANGEMENT: N.O.

#### Electrical

CONTACT RATING: 2A / 36Vdc

ELECTRICAL LIFE: Make-and-break cycles at full load 200,000 DIELECTRIC STRENGTH: 2,000 V RMS @ sea level INSULATION RESISTANCE: 1,000 MΩ min. @ 500 VDC INITIAL CONTACT RESISTANCE : 50 mΩ max @1A 12VDC

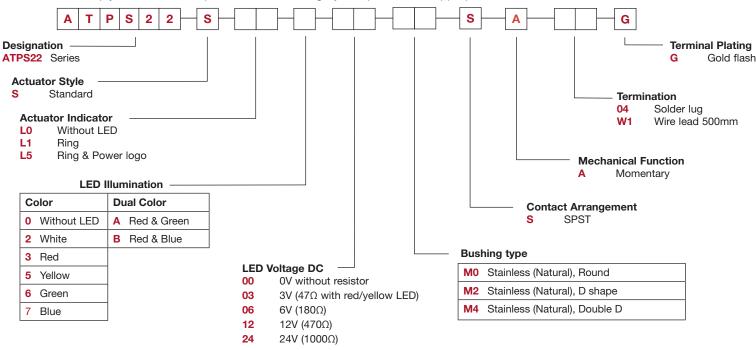
IP67 sealed & IK10 (Stainless steel bushing)

• Various colors of LED illuminate indicator

Choices of actuator with ring or power logo

#### **Build-A-Switch**

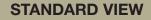
To order, simply select desired option from each category and place in the appropriate box.



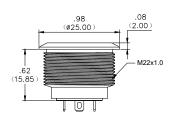


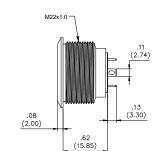


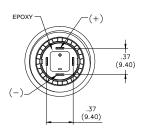
## NEW



#### STANDARD





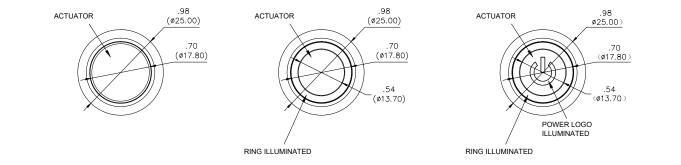


#### **ACTUATOR INDICATOR**

LO WITHOUT LED

L1 RING

L5 RING & POWER



#### CIRCUIT

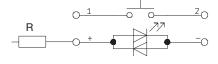
#### MOMENTARY

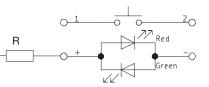
WITHOUT LED

SINGLE COLOR LED

DUAL COLOR LED







R: Resistor value is according to the LED voltage applied.

Resistor value (Apply LED Voltage)
LED input 3 VDC, 47 ohms (Red/Yellow LED type only)
LED input 6 VDC, 180 ohms
LED input 12 VDC, 470 ohms
LED input 24 VDC, 1000 ohms

Ohms value of resistance tolerance: ±5%



.02 (0.5)

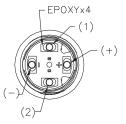
.130

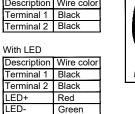
(3.30)

 $\bigcirc$ 

#### **ATPS22 Series** NEW Anti-Vandal Short-Body Sealed Pushbutton Switch

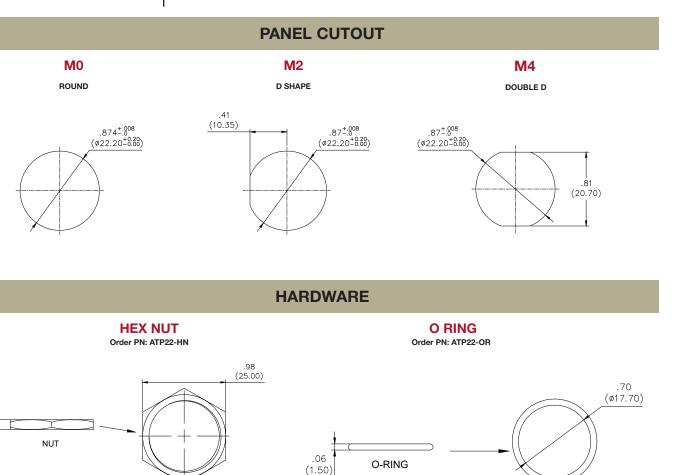






Vire Heat shrink tube

\* Special length, please consult your sales representative for details.





.12

(3.00)

#### ATP22 Series Anti-Vandal Sealed Pushbutton Switch

#### Features/Benefits

#### Momentary or Lock version

- IP67 sealed & IK10 (Stainless steel bushing)
- Capable of up to 3A resistive load
- 50,000 life cycle at full load
- Various colors of LED illuminate indicator
- Choices of pushbutton with symbol on spot, ring or power logo

#### **Specifications**

FUNCTION: Single pole and double poles CONTACT ARRANGEMENT: N.O. and N.C. MOUNTING TYPE: Threaded front panel mount TORQUE FOR THREADED BODY: 5-14 Nm

#### Mechanical

#### OPERATING LIFE: Momentary 1,000,000 cycles Self-lock 500,000 cycles

TOTAL TRAVEL: about 3.2 mm OPERATING FORCE: 1 pole  $2.5 \pm 1N$ 2 pole  $3.5 \pm 1N$ 

#### Electrical

CONTACT RATING: Ith 5A/250VAC 3A / 250VAC 3A / 250VAC 3A / 28VDC OPERATING LIFE: 50,000 make-and-break cycles at full load DIELECTRIC STRENGTH: 2,000 V RMS @ sea level INSULATION RESISTANCE: 1,000 M $\Omega$  min. @ 500 VDC INITIAL CONTACT RESISTANCE : 50 m $\Omega$  max @1A 12VDC

#### **Typical Applications**

- Control Panels including car park and traffic light
- Industrial Instruments
- Lifts / Escalator
- Communication equipment
   Alarm, safety and security systems



#### Materials

BUSHING: Stainless steel / Aluminum alloy BASE: PBT (UL 94-A0), PC (UL 94-V2) ACTUATOR: PC; Stainless steel / Aluminum alloy INTERNAL ASSEMBLY: POM / PA66 SPRING: Steel SEALING / O-ring: Silicone TERMINALS: Brass with silver or gold plated CONTACT: Copper, silver plated

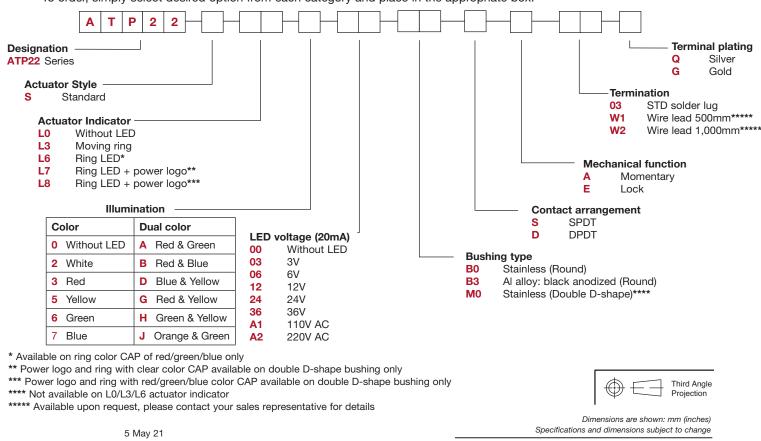
#### **Operating Environment**

OPERATING TEMPERATURE: -20°C to +55°C SEALING / PROTECTION: IP67 / IK10 (Stainless steel bushing)

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

#### **Build-A-Switch**

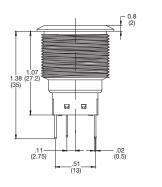
To order, simply select desired option from each category and place in the appropriate box.

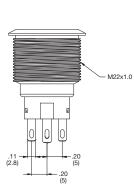


# ☐ A Pushbutton

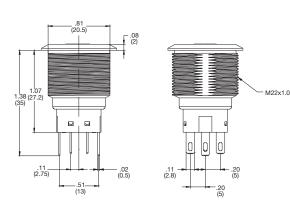
#### **STANDARD VIEW**

ROUND BUSHING



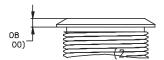


DOUBLE-D BUSHING



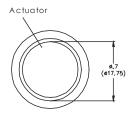
#### **ACTUATOR STYLE**



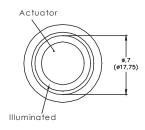


#### **ACTUATOR INDICATOR**

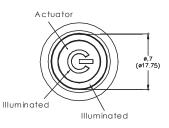




#### L3 & L6 RING LED



#### L7 & L8 POWER & RING





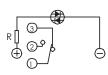
### CIRCUIT

SPDT - SINGLE COLOR LED

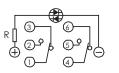
SPDT

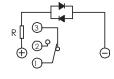
DPDT





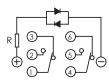
DPDT - SINGLE COLOR LED





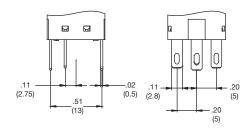
SPDT - DUAL COLOR LED

DPDT - DUAL COLOR LED

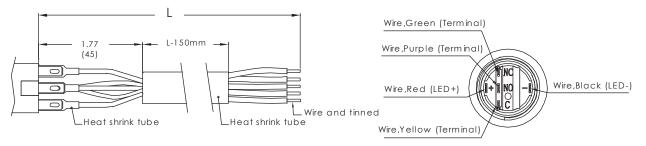


### **TERMINATION**

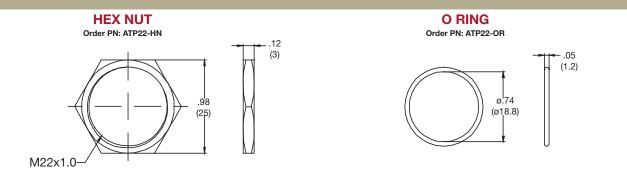
**03** SOLDERLUG



### W1 OR W2 WIRE LEAD



HARDWARE





# A Pushbutton

### Features/Benefits

- Illuminated display
- Small size •
- Cold lighting
- Tactile feed back

### Typical Applications

• Avionic



### Mechanical

ACTUATION FORCE: 5,5 N ± 0,5 N MAXIMUM FORCE: 80 N TRAVEL TO CONTACT: 1,2 ± 0,1 mm OVERTRAVEL: >0,3 mm TOTAL TRAVEL: 1,5 ± 0,1 mm LIFE EXPECTANCY: 10<sup>6</sup> operations 28 V - 10 mA WEIGHT: 2 grams VIBRATION: ± 0.45mm from 33 Hz to 75 Hz ACCELERATION: 10 g max

### Electrical

CONTACTS: Gold plated VOLTAGE: Max 100 V - Min 20 mV DC CARRYING CURRENT: Max 250 mA - Min 50 µA SWITCHING CURRENT: Max 50 mA - Min 50 uA MAX SWITCHING POWER: 1 W CONTACT RESISTANCE:  $< 50 \Omega$ DIELECTRIC STRENGTH: 500 V rms INSULATION RESISTANCE (100 V): > 5000 M  $\Omega$ BOUNCE: < 3 ms SWITCHING OF 2 POLES MATCHING: < 10 ms

### **Environmental Data**

STORAGE TEMPERATURE: -55°C TO 85°C OPERATING TEMPERATURE: -30°C TO 85°C TEMPERATURE OF KEY TO CAP: < Ambiant +25°C HUMIDITY TEST: 21 days (-40°C - 93% HR) ALTITUDE PRESSURE: From 20 hPa to 1070 hPa

### Soldering Data

MANUAL SOLDERING: 250°C / 2s SEALING: According to IP64

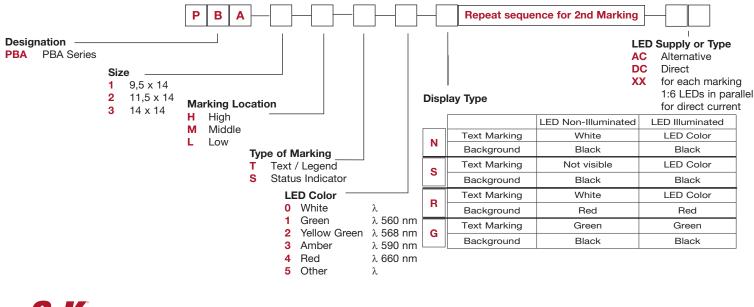
### Plastic Material

Housing and Cap: UL-94 V0

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Buil	d-A-	Swit	tch

To order, simply select desired option from each category and place in the appropriate box.



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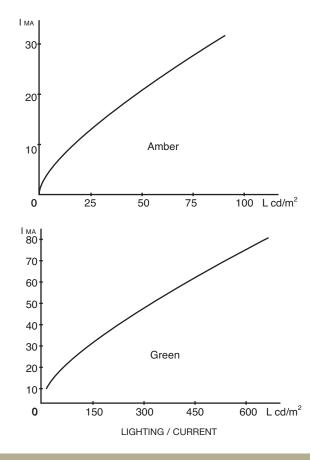
### PBA Series Illuminated Pushbutton

### LIGHTING DATA

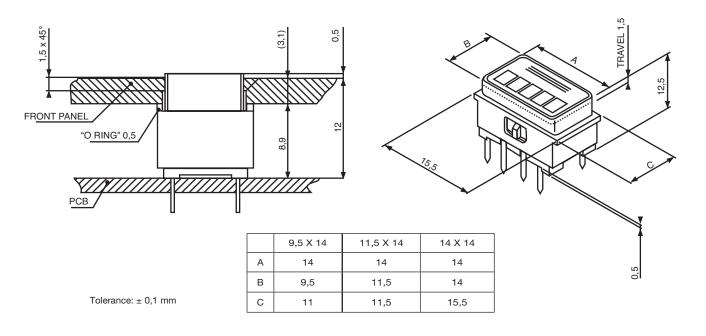
The legends of function and the status indicator can be illuminated separately.

Color		Amber	Green
Wave Length		586 < I < 592	555 < l < 560
Current Max		80 mA	80 mA
Chromaticity	X Y	0,54 < X < 0,58 0,40 < Y < 0,44	0,30 < X < 0,40 0,6 < Y
Contrast Min.		1,2	0,85

For other colors and displays, please contact Customer Service.

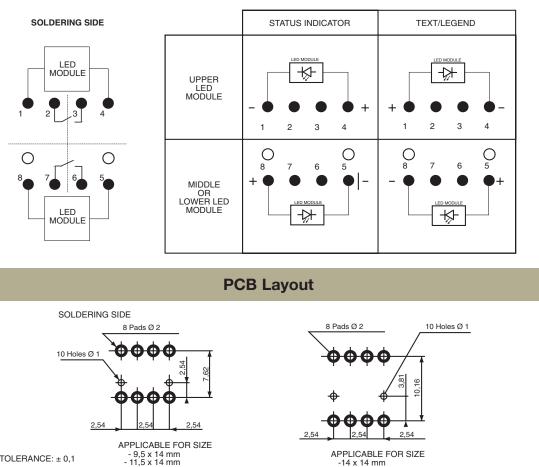


### **DIMENSIONS** (applicable for any size)



### **PBA Series Illuminated Pushbutton**

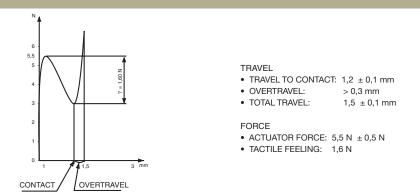
### LED MODULE LAYOUT



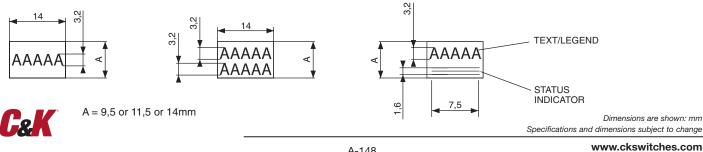
TOLERANCE: ± 0,1

### **TACTILE EFFECT**

-14 x 14 mm



1 or 2 markings are available in any combination of text / legend or status indicator.



### PS-12G Series Pushbutton Switches

### Features/Benefits

- Latching pushbutton
- Non-shorting with lock
- 5 mm travel
- SPDT

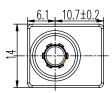
### Typical Applications

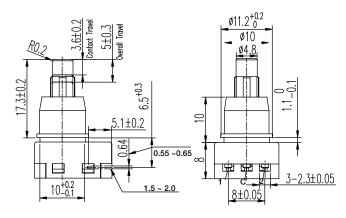
- Automotive interior lighting
- Computer peripherals
- Appliances





PART NUMBER	PACKAGING	SCHEMATIC
PS-12G01	200 pieces	





### Dimensions

FOOTPRINT: 14 X 16.8 mm HEIGHT: 18 mm

### **Specifications**

CONTACT RATING: 1A @ 14 VDC INITIAL CONTACT RESISTANCE: 100 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 20,000 cycles with load OPERATING FORCE: 400 ± 100 gf OPERATING POSITION: 3.6 ± 0.2 mm TOTAL TRAVEL: 5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

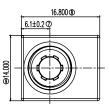
KNOB: POM (UL 94HB) HOUSING: PBT (UL 94V-0) COVER: PBT (UL 94V-0) ROTOR: PBT (UL 94V-0) SLIDER: POM (UL 94HB) TERMINAL: Phospher bronze, silver plated SPRING: Stainless steel CONTACT: Phospher bronze, silver plated

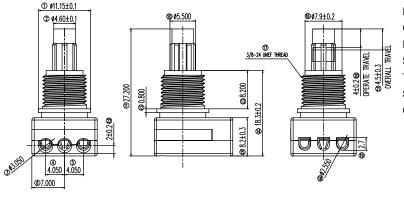


### PS-12G Series Pushbutton Switches



PART NUMBER	PACKAGING	SCHEMATIC
PS-12G03	200 pieces	





TYCO .062 Commercial Pin and Socket Connector PT# 770983-1

### Dimensions

FOOTPRINT: 14 X 16.8 mm HEIGHT: 18.3 mm

### Specifications

CONTACT RATING: 2.2A @ 14.5 VDC INITIAL CONTACT RESISTANCE: 50 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 20,000 cycles with load OPERATING FORCE: 650 ± 300 gf OPERATING POSITION: 4.00 ± 0.2 mm TOTAL TRAVEL: 4.5 ± 0.3 mm

OPERATING TEMPERATURE: -40°C to 85°C

### Materials

KNOB: POM (UL 94HB) HOUSING: PBT & PA (UL 94V-0) COVER: PBT (UL 94V-0) ROTOR: PBT (UL 94V-0) SLIDER: POM (UL 94HB) TERMINAL: Brass, silver plated SPRING: Stainless steel CONTACT: Phospher bronze, silver plated

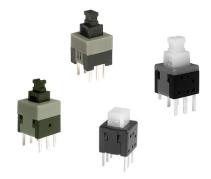


### Features/Benefits

- Compact miniature push switch
- Momentary or latching options
- Shorting or non-shorting
- DPDT

### **Typical Applications**

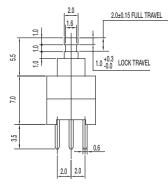
- Industrial
- Automotive
- Audio and visual equipment





PART NUMBER	PACKAGING	SCHEMATIC
PS-2203-L NS PA PS-2203-F NS PA	1,000 pieces 1,000 pieces	







6-00.9

### Dimensions

FOOTPRINT: 7.0 x 7.0 mm HEIGHT: 12.5 mm

### Specifications

CONTACT RATING: 0.1A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N) LOCK TRAVEL: 1 mm TOTAL TRAVEL: 2 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM Black HOUSING: PA Black COVER: POM Grey (latch) / White (Mom) TERMINAL: Brass, silver plated CONTACT CLIP: Phosphor bronze., silver plated SPRING: Stainless steel HOOK LOCK: Stainless steel (latch)



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PART NUMBER

**PS-2206-L NS PA** 

**PS-2206-F NS PA** 







PACKAGING

1,000 pieces

1,000 pieces

SCHEMATIC

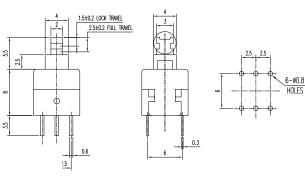
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3



PART NUMBER

PACKAGING

1,000 pieces

1,000 pieces

SCHEMATIC

⊸ ₽ 2

### **Dimensions**

FOOTPRINT: 8.0 x 8.0 mm HEIGHT: 13.5 mm

### **Specifications**

CONTACT RATING: 0.1A @ 30 VDC INITIAL CONTACT RESISTANCE: 70 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load **OPERATING FORCE:** 200 ± 100 gf (1.96 ± 0.98N) LOCK TRAVEL: 1.5 mm TOTAL TRAVEL: 2.5 mm OPERATING TEMPERATURE: -20°C to 70°C

### **Materials**

KNOB: POM Black HOUSING: PA Black COVER: POM Grey (latch) / White (Mom) TERMINAL: Brass, silver plated CONTACT CLIP: Phosphor bronze., silver plated SPRING: Stainless steel HOOK LOCK: Stainless steel (latch)

### Dimensions

FOOTPRINT: 5.8 x 5.8 mm HEIGHT: 7.5 mm

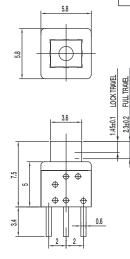
### **Specifications**

CONTACT RATING: 0.1A @ 30 VDC INITIAL CONTACT RESISTANCE: 80 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 150 ± 50 gf (1.47 ± 0.49N) LOCK TRAVEL: 1.45 mm TOTAL TRAVEL: 2.3 mm OPERATING TEMPERATURE: -20°C to 70°C

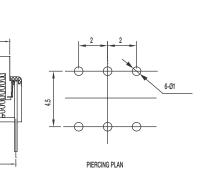
### Materials

KNOB: POM Natural (latch) / PA black HOUSING: PA Black COVER: PA Black TERMINAL: Brass, silver plated CONTACT CLIP: Phosphor bronze, silver clad SPRING: Stainless steel HOOK LOCK: Stainless steel (latch)





-2



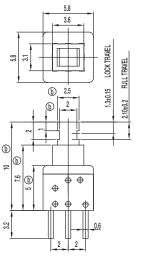
### Dimensions are shown: mm

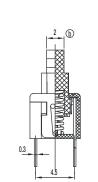
Specifications and dimensions subject to change

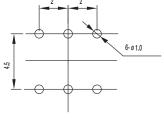
0.3



PART NUMBER	PACKAGING	SCHEMATIC
PS-221605-L NS PS-221605-F NS	1,000 pieces 1,000 pieces	







PIERCING PLAN

### Dimensions

FOOTPRINT: 5.8 x 5.8 mm HEIGHT: 10 mm

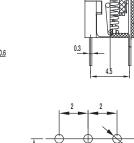
### Specifications

CONTACT RATING: 0.1A @ 30 VDC / 2A @ 2 VDC INITIAL CONTACT RESISTANCE: 80 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 150 ± 50 gf (1.47 ± 0.49N) LOCK TRAVEL: 1.3 mm A Pushbutton

TOTAL TRAVEL: 2.1 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

KNOB: POM Natural HOUSING: PA Black COVER: PC Grey TERMINAL: Bras, silver plated CONTACT CLIP: Phosphor bronze, silver clad SPRING: Stainless steel HOOK LOCK: Stainless steel (latch)



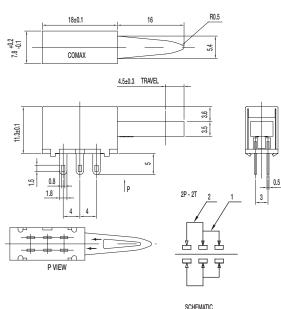
www.ckswitches.com



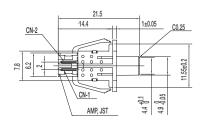
### Features/Benefits

- Miniature size
- Momentary or latching options
- Broad range of products

### PS-22105 DPDT NON-SHORTING



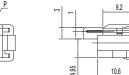
### PS-12C02-F NS SPST NON-SHORTING

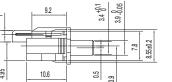


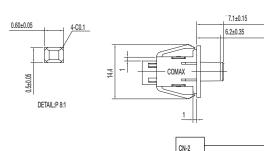
CN-1

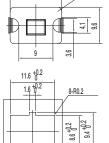
SCHEMATIC











0.8?1.0?1.2?1.6mm

PIERCING PLAN

### **Typical Applications**

- Industrial
- Automotive
- Audio and visual equipment
- Telecommunications

### Specifications

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 400 ± 150 gf (3.92 ± 1.47N) TOTAL TRAVEL: 4.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SECC KNOB: POM (UL 94HB) CONTACT PLATE: Silver clad SPRING: SUS TERMINAL: Silver plated

### Specifications

CONTACT RATING:  $100 \ \mu A \ @ 3 \ VDC \ min. / 10mA \ @ 5 \ VDC \ max$ INITIAL CONTACT RESISTANCE: 100 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 100,000 cycles with load OPERATING FORCE: 50 ± 15 gf (0.49 ± 0.147N) PRE-TRAVEL: 6.20 ± 0.35 mm OPERATING TEMPERATURE: -40°C to 85°C

### Materials

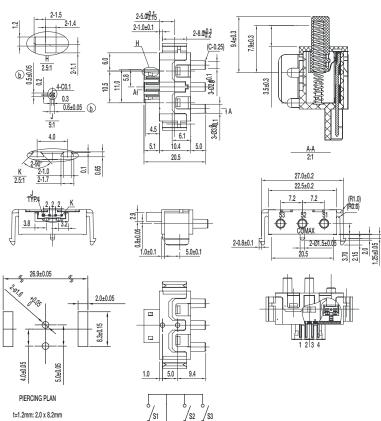
KNOB: POM (UL 94HB) COVER: PA (UL 94V-0) HOUSING: PA (UL 94V-0) SPRING: SUS TERMINAL: Silver plated

> Dimensions are shown: mm Specifications and dimensions subject to change

11 Jun 18

s and dimensions subject to change
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### PS-32C02-F NS 1P3T NON-SHORTING



### **Specifications**

CONTACT RATING: 100 µ A @ 3 VDC min. / 10mA @ 5 VDC max

INITIAL CONTACT RESISTANCE: 100 m ohms max.
INSULATION RESISTANCE: 100 M ohms min.
DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between open terminals and between the frame and terminal.
OPERATING LIFE: 100,000 cycles with load
OPERATING FORCE: 80 ± 20 gf (0.784 ± 0.196N)
PRE-TRAVEL: 1.5 ± 0.3 mm
OVER-TRAVEL: 3.5 ± 0.3 mm
TOTAL TRAVEL: 5 ± 0.3 mm
OPERATING TEMPERATURE: -20°C to 65°C

### Materials

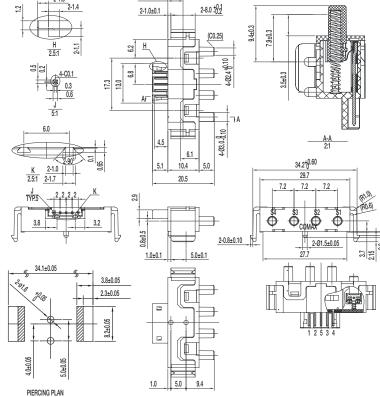
KNOB: POM (UL 94HB) COVER: PA (UL 94V-0) HOUSING: PA (UL 94V-0) SPRING: SUS TERMINAL: Silver plated

### **Specifications**

CONTACT RATING:  $100 \mu A @ 3 \text{ VDC min.} / 10\text{mA} @ 5 \text{ VDC max}$ INITIAL CONTACT RESISTANCE: 100 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 100,000 cycles with load OPERATING FORCE:  $80 \pm 20 \text{ gf}$  ( $0.784 \pm 0.196\text{N}$ ) PRE-TRAVEL:  $1.5 \pm 0.3 \text{ mm}$ OVER-TRAVEL:  $3.5 \pm 0.3 \text{ mm}$ TOTAL TRAVEL:  $5 \pm 0.3 \text{ mm}$ OPERATING TEMPERATURE:  $-20^{\circ}\text{C}$  to  $65^{\circ}\text{C}$ 

### **Materials**

KNOB: POM (UL 94HB) COVER: PA (UL 94V-0) HOUSING: PA (UL 94V-0) SPRING: SUS TERMINAL: Silver plated

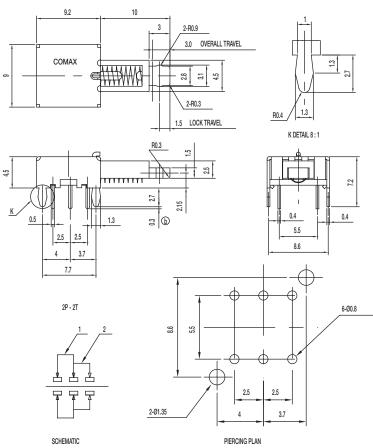


SCHEMATIC

PS-42C02-F NS 1P4T NON-SHORTING

2-5.0 +0.1

### PS-22C08-G10 NS DPDT NON-SHORTING



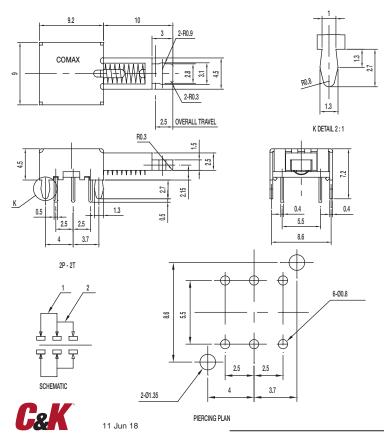
### Specifications

CONTACT RATING: 0.3A @ 30 VDC
INITIAL CONTACT RESISTANCE: 30 m ohms max.
INSULATION RESISTANCE: 100 M ohms min.
DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
OPERATING LIFE: 10,000 cycles without load
OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)
LOCK TRAVEL: 1.5 ± 0.3 mm
OVER-TRAVEL: 3 ± 0.3 mm
OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: SUS TERMINAL: Silver plated

### PS-22E08-G10 NS DPDT NON-SHORTING



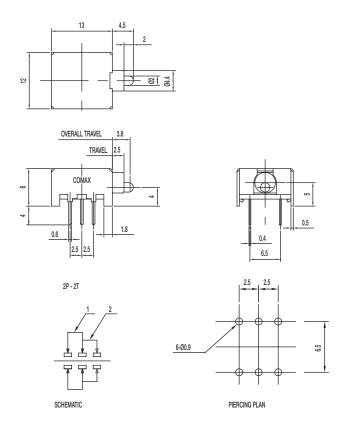
### Specifications

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles without load OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N) TOTAL TRAVEL: 2.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: SUS TERMINAL: Silver plated

### PS-22E09-G 4.5 NS DPDT NON-SHORTING



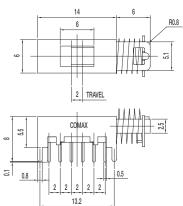
### **Specifications**

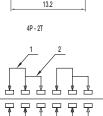
CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 70 ± 20 gf (0.686 ± 0.196N) TRAVEL: 2.5 ± 0.3 mm TOTAL TRAVEL: 3.8 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

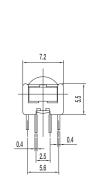
### Materials

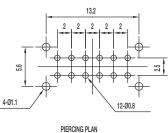
FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: SUS TERMINAL: Silver plated

### PS-42D09-NS 4P2T NON-SHORTING









### Specifications

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N) TRAVEL: 2 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

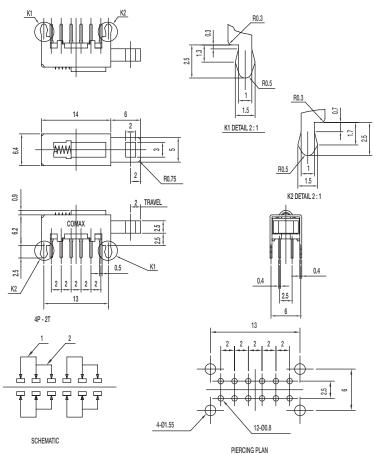
FRAME: SPCC KNOB: POM (UL 94HB) CONTACT PLATE: Silver plated SPRING: Steel TERMINAL: Silver plated



SCHEMATIC

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### PS-42D13-NS 4P2T NON-SHORTING



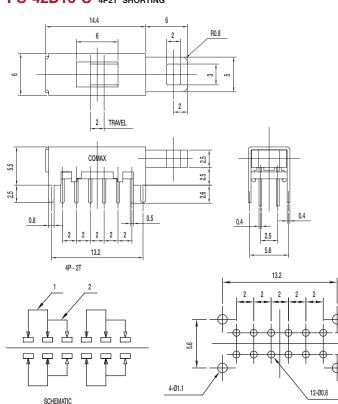
### Specifications

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N) TRAVEL: 2 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated

### PS-42D16-S 4P2T SHORTING



### Specifications

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE:  $60 \pm 30$  gf (0.59  $\pm$  0.29N) TRAVEL:  $2 \pm 0.3$  mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated TERMINAL: Silver plated

> Dimensions are shown: mm Specifications and dimensions subject to change

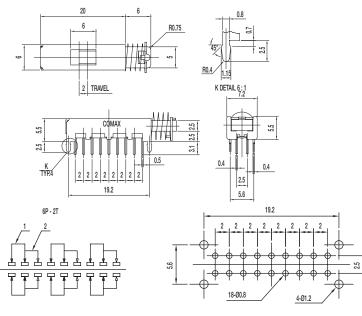
lions and dimensions subject to change

PIERCING PLAN

5.5

## CHIL: A Pushbutton

### PS-62D10-S 6P2T SHORTING



SCHEMATIC

PIERCING PLAN

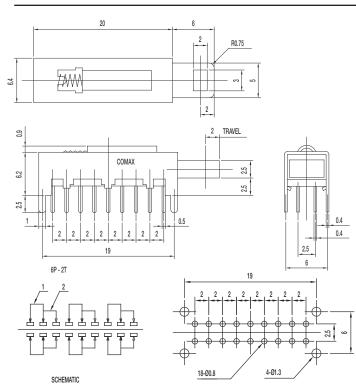
### Specifications

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N) TRAVEL: 2 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated

### PS-62D13-S 6P2T SHORTING



PIERCING PLAN

### Specifications

CONTACT RATING: 0.3A @ 30 VDC
INITIAL CONTACT RESISTANCE: 30 m ohms max.
INSULATION RESISTANCE: 100 M ohms min.
DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
OPERATING LIFE: 10,000 cycles with load
OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
TRAVEL: 2 ± 0.3 mm
OPERATING TEMPERATURE: -20°C to 70°C

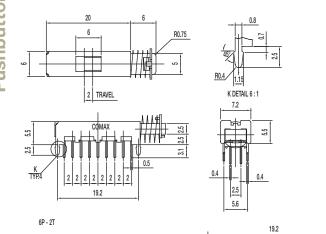
### Materials

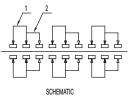
FRAME: SPCC KNOB: POM (UL 94HB) CONTACT PLATE: Silver plated SPRING: Steel TERMINAL: SUS



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PS-62D15-S 6P2T SHORTING





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PIERCING PLAN

4-01.2

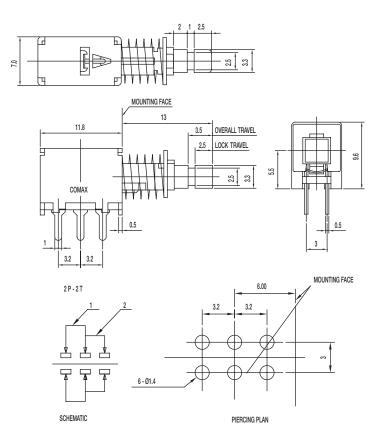
### **Specifications**

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N) TRAVEL: 2 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated

### PS-22E02-G13 S DPDT SHORTING WITH LOCK



### Specifications

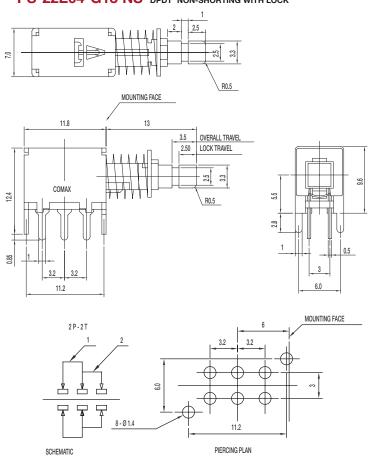
CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N) LOCK TRAVEL: 2.5 ± 0.3 mm TOTAL TRAVEL: 3.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

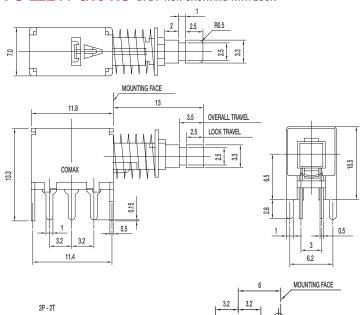
FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated

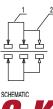


### PS-22E04-G13 NS DPDT NON-SHORTING WITH LOCK



### PS-22E44-G13 NS DPDT NON-SHORTING WITH LOCK







8-01.4

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11.4

PIERCING PLAN

### Specifications

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N) LOCK TRAVEL: 2.5 ± 0.3 mm TOTAL TRAVEL: 3.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated

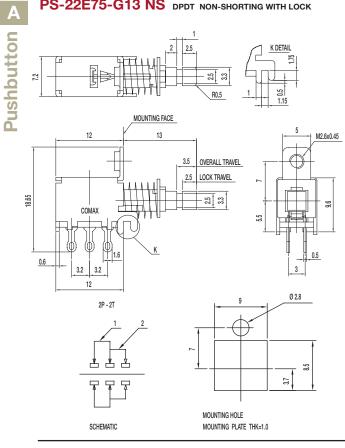
### **Specifications**

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N) LOCK TRAVEL: 2.5 ± 0.3 mm TOTAL TRAVEL: 3.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

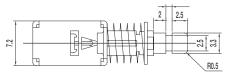
### Materials

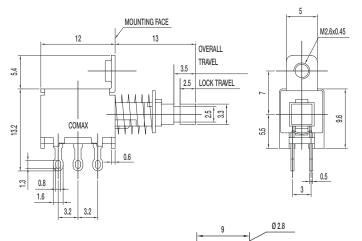
FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated

### PS-22E75-G13 NS DPDT NON-SHORTING WITH LOCK



### PS-22E95-G13 NS DPDT NON-SHORTING WITH LOCK







SCHEMATIC



8.5

### **Specifications**

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N) LOCK TRAVEL: 2.5 ± 0.3 mm TOTAL TRAVEL: 3.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### **Materials**

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel **TERMINAL: Silver plated** 

### **Specifications**

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N) LOCK TRAVEL: 2.5 ± 0.3 mm TOTAL TRAVEL: 3.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### **Materials**

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel **TERMINAL: Silver plated** 

CONTACT RATING: 0.3A @ 30 VDC

OPERATING LIFE: 10,000 cycles with load

OPERATING TEMPERATURE: -20°C to 70°C

INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between openterminals and between the frame

OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)

**Specifications** 

and terminal.

**Materials** 

FRAME: SPCC

SPRING: Steel

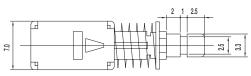
KNOB: POM (UL 94HB)

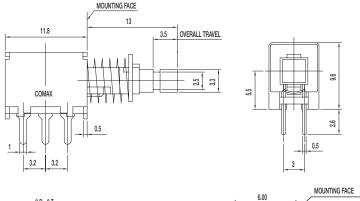
CONTACT: Silver plated

**TERMINAL: Silver plated** 

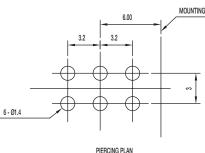
TOTAL TRAVEL: 3.5 ± 0.3 mm

### PS-22F02-G13 S DPDT SHORTING

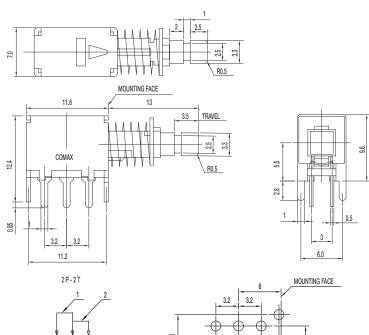




## 2P-2T



### PS-22F04-G13 NS DPDT NON\_SHORTING



### **Specifications**

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N) TOTAL TRAVEL: 3.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated



SCHEMATIC

PIERCING PLAN

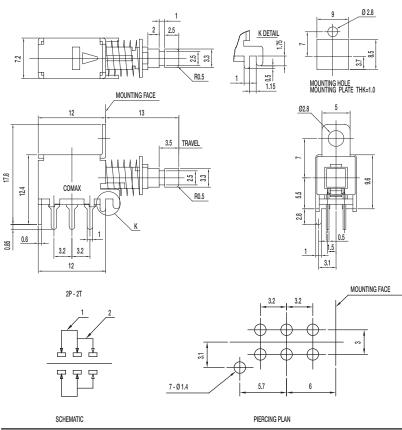
11.2

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### PS-22F24-G13 NS DPDT NON\_SHORTING



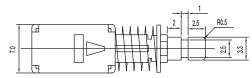
### Specifications

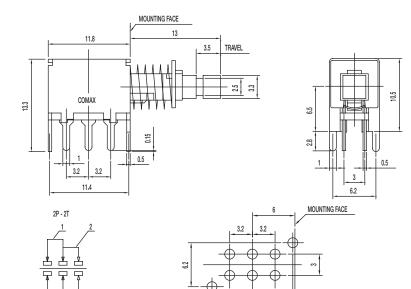
CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N) TOTAL TRAVEL: 3.5 ± 0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated

### PS-22F44-G13 NS DPDT NON\_SHORTING





8-Ø1.4

11.4

PIERCING PLAN

### **Specifications**

CONTACT RATING: 0.3A @ 30 VDC INITIAL CONTACT RESISTANCE: 30 m ohms max. INSULATION RESISTANCE: 100 M ohms min. DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal. OPERATING LIFE: 10,000 cycles with load OPERATING FORCE: 300  $\pm$  100 gf (2.94  $\pm$  0.98N) TOTAL TRAVEL: 3.5  $\pm$  0.3 mm OPERATING TEMPERATURE: -20°C to 70°C

### Materials

FRAME: SPCC KNOB: POM (UL 94HB) CONTACT: Silver plated SPRING: Steel TERMINAL: Silver plated



SCHEMATIC

### Features/Benefits

- Compact design
- Short stroke to latch
- Wide variety of actuator heights
- Adapted for medium power applications
- RoHS compliant and compatible

### Construction

FUNCTION: Momentary, Push-Push CONTACT ARRANGEMENT: PVA1: 2 make contacts (DPST) PVA2: 2 change over contacts (DPDT) SWITCHING MODE: Non-shorting TERMINALS: PC pins<sup>1</sup>

### Mechanical

TOTAL TRAVEL / LATCHING TRAVEL: OA: 2,4 mm EE: 2,4 / 1,5 mm ELECTRICAL TRAVEL: 0.8 mm (1.1 for PVA2 OA H5) OPERATING FORCE: 1,2N; 1,7N; 3,5N

### Process

SOLDERABILITY: Wave soldering, compatible with lead free soldering profile Hand soldering, 350°C for 3 seconds

Note: Specifications listed above are for switches with standard options. For information on specific and custom switches, please contact technical support using the "Ask a Specialist" option on the PVA product web page. $\downarrow$ 

### Typical Applications

- Automotive (air conditioning, lighting)
- Industrial
- Control panel



### Electrical

SWITCHING POWER MAX .: 3 W DC

SWITCHING VOLTAGE MAX .: 32 V DC

SWITCHING CURRENT MAX .: 100 mA DC\*

DIELECTRIC STRENGTH (50 Hz / 1 min): 1000 V between open contacts, PVA2: 750 V

INSULATION RESISTANCE:  $\geq 10^{10} \Omega$ 

BOUNCE TIME: ≤ 3 ms

### Environmental

OPERATING TEMPERATURE: -40°C to 85°C.<sup>2</sup>

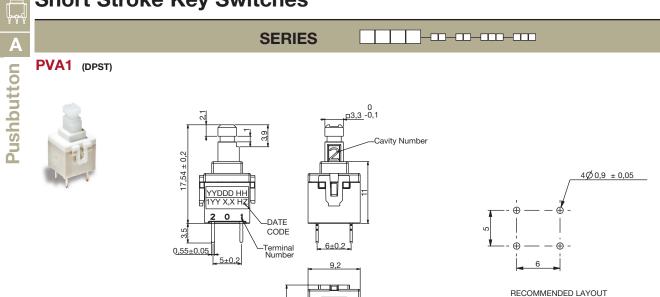
1) "Snap-in" contacts on request, Version SNA with pins bent inside (standard) 2) With button +70°C

### How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box. Some of the configurations may not be available or could require some development.

Switch Series ——						P V A			-	V 2				
PVA1	2 make-contacts (DPST) 2 changeover contacts (DPDT)													
		<b>chanical</b> Momenta Push-pua	ary			I <b>Height</b> 17,5 mm 23 mm 20,5 mm 15 mm 13 mm (mon	nentary & PVA	2 only)	Opera 1.2N 1.7N 3.5N	ting Force PVA1 only PVA2 only	Termina NONE SNA	<b>ation</b> Standard termin Snap-in termina		
Button									Γ					
Buttons must Shipped in bu		separately.					Button PE* PV*		But	tton Col	or			
*Compatible	with H1 and	H3 actuato	or models o	only.					GR BK	Green				
<b>J</b> &K		24 may 19										Sp		ns are shown: mm (inches) nensions subject to change

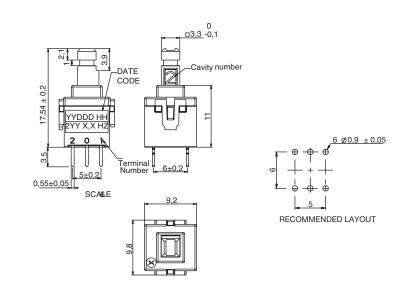
### PVA Short Stroke Key Switches



9.8

### PVA2 (DPDT)





### 

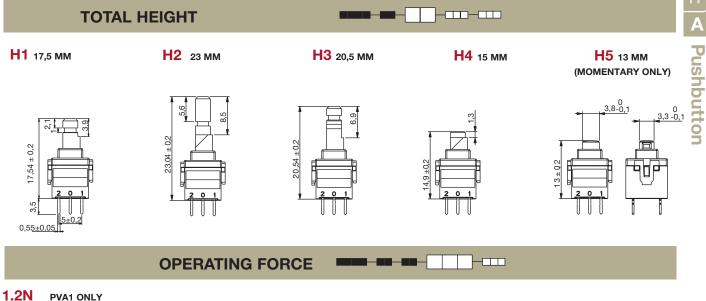
OPTION CODE	FUNCTION	ΟΑ	PVA1	PVA2 T	EE	PVA1	PVA2
AO	Momentary		0			$\overline{\langle}$	
EE	Push-Push	1	o /o ₂ o ₀o ₂'			1 ° · · · · · ° 2 1' ° · · · · · · · · · · · · · · · 2	



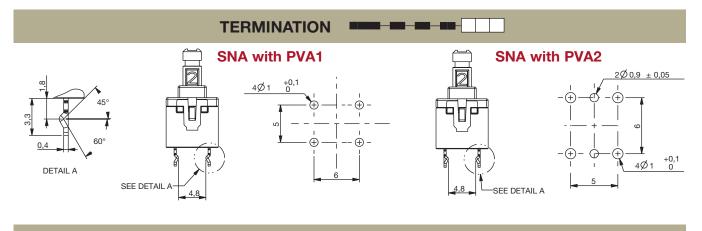
### **PVA Short Stroke Key Switches**

₩ \*\*

A



1.7N PVA2 ONLY 3.5N

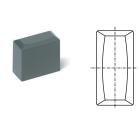


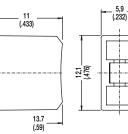
**BUTTONS** 

**PV** 

### BUTTONS MUST BE ORDERED SEPARATELY. SHIPPED IN BULK.

PE





OPTION CODE	COLOR
RD	Red
GY	Gray
BK	Black
WH	White



Dimensions are shown: mm (inches) Specifications and dimensions subject to change

9,7 (.382)

\_\_\_\_7\_\_. (.276)

ø7,4 (291)



### Specifications

FUNCTION: SPDT, DPDT CONTACT ARRANGEMENT: N.C. MOUNTING TYPE: Straight PCB terminals

### Mechanical

OPERATING LIFE: 1,000,000 cycles TOTAL TRAVEL: 2.2 mm OPERATING FORCE: 200  $\pm$  100 gf (SPDT) 300  $\pm$  150 gf (DPDT)

### Electrical

CONTACT RATING; See table on contact material OPERATING LIFE: 200,000 cycles on both gold & silver plating DIELECTRIC STRENGTH: 1,000 V AC for 1 min. INSULATION RESISTANCE: 100 M $\Omega$  min. @ 500 VDC INITIAL CONTACT RESISTANCE: 50 m $\Omega$  max. (silver contact) 100 m $\Omega$  max/ (gold contact)

### Features/Benefits

- Positive tactile feedback
- Momentary or Lock version
- SPDT & DPDT configuration
  - Gold or silver contact materials
- Choices of color on LED illumination
- 3 different CAP styles & sizes
- CAP with printed or etched logo\*

### **Typical Applications**

- Audio/video system
- Vending machine
- Kiosks
- Network equipment

### Materials

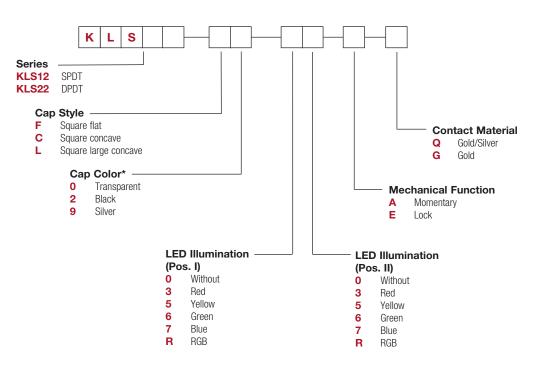
CASE: PA66+70G33L (Black) ACTUATOR: POM (White) CAP: PC SPRING: Black wire / Stainless steel SPRING PLATE: Phosphor bronze TERMINALS / CONTACT: Brass / Copper with silver or gold plated TERMINAL SEAL: Epoxy

Operating Environment OPERATING TEMPERATURE: -40°C to +85°C

Note: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

### **Build-A-Switch**

To order, simply select desired option from each category and place it in the appropriate box.



\* For CAP with logo or symbol, please contact your sales representative.

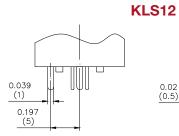
Specifications and dimensions subject to change

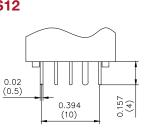
Dimensions are shown: mm

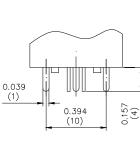
### NEW

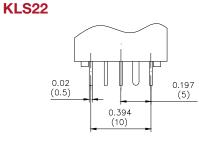
### KLS Illuminated SPDT/DPDT Pushbutton









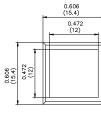


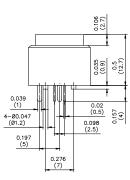
		SWITCH	FUNCTION	CONNECTED	TERMINALS	
		POS. 1	POS. 2	POS. 1	POS. 2	
NO. POLES	MODEL NO.					SCHEMATIC
		ON	(ON)		1.0	СОММ
SP	KLS12	ON	ON	1-3	1-2	SPDT N.C •3 2• N.O
DP	KLS22	ON	(ON)	1-3,4-6	1-2,4-5	COMM COMM
UP		ON	ON	1-3,4-0	1-2,4-3	DPDT N.C •3 2• N.O N.C •6 5• N.O

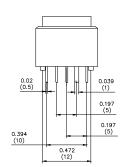
()=Momentary

CAP

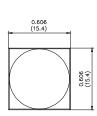
F SQUARE FLAT

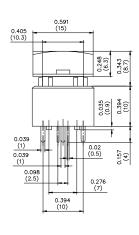


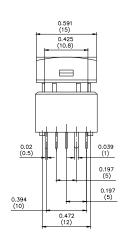




C SQUARE CONCAVE







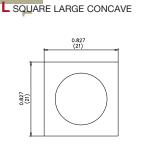


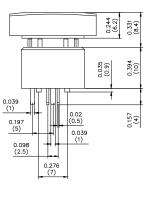
Specifications and dimensions subject to change

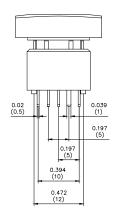
**C&K** 

Dimensions are shown: mm

### KLS Illuminated SPDT/DPDT Pushbutton





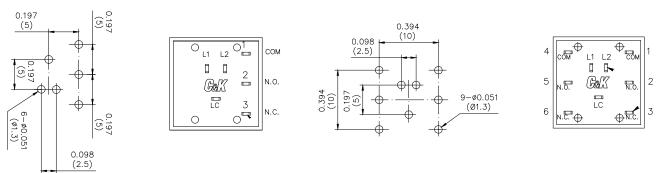


### **TERMINATION - PCB LAYOUT**

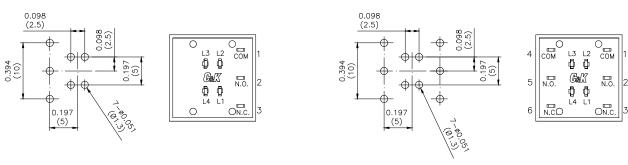
CAP











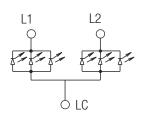
RGB

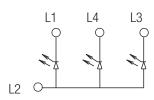






### LED CIRCUIT





**DUAL COLOUR** 

RGB

### **CONTACT MATERIAL**

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATING
Q	Copper / Gold <sup>1</sup> Brass / Silver <sup>2</sup>	Silver	25VDC 500 mA
G	Copper, Gold	Copper, Gold	28 VDC 100 mA

<sup>1</sup> Movable contact

<sup>2</sup> Stationary contact



**C**<sub>2</sub>K

### PLP16 Series Panel Mount LED Sealed Pushbutton Switch

### Features/Benefits

- Illuminated & non-illuminated type
- Momentary or lock version
- IP65 or IP40 sealed
- 1,000,000 life cycle
- Choices of colors on LED illumination
- Various actuator sizes and styles
- Withstand high shock and vibration application

### Specifications

FUNCTION: SPDT or DPDT CONTACT ARRANGEMENT: N.O. AND N.C. MOUNTING TYPE: Threaded front panel mount

### Mechanical

OPERATING LIFE: Momentary 1,000,000 cycles Lock 100,000 cycles TOTAL TRAVEL: 1.2 ± 0.3 mm OPERATING FORCE: 3.0 max.

### Electrical

CONTACT RATING: Ith 5A / 250 VAC 3A / 250 VAC 1A / 30 VDC OPERATING LIFE: Momentary 100,000 cycles Lock 50,000 cycles DIELECTRIC STRENGTH: 2,000 V RMS @ sea level

INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC INITIAL CONTACT RESISTANCE : 50 mΩ max. initial value

### Typical Applications

- Industrial control panel
- Off-road transportation
- Machine and equipment
- Production control indicator





NEW

### Materials

BUSHING: PEI BASE / LED holder: PBT ACTUATOR: PC INTERNAL ASSEMBLY: POM / PC SPRING: Steel (SUS304) SEALING / O-ring: Silicone TERMINALS / CONTACT: Brass (C2680) / Phosphorus Bronze, Silver or Gold over Silver plated

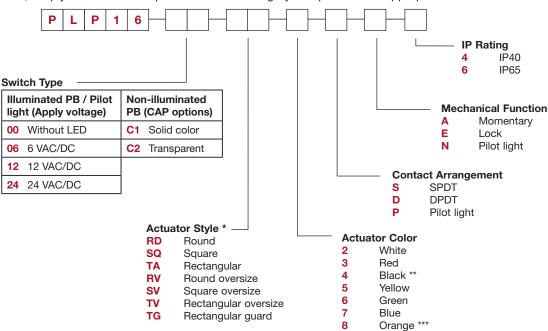
### **Operating Environment**

OPERATING TEMPERATURE: -25°C to 55°C SEALING / PROTECTION: IP65 or IP40

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

### **Build-A-Switch**

To order, simply select desired option from each category and place in the appropriate box.



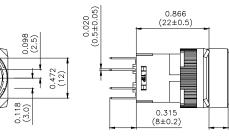
\* Pilot light & C2 CAP available on RD, SQ, or TA actuator style only \*\* For C1 CAP only

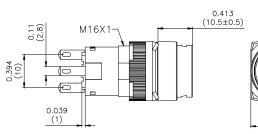
\*\*\* Not available on C1 CAP



### **STANDARD VIEW / SWITCH TYPE**

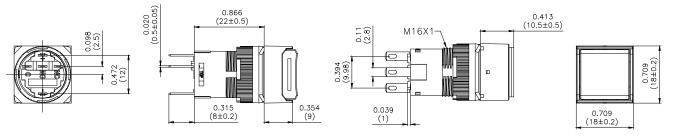
### ILLUMINATED Ø 5/8" (16 MM)





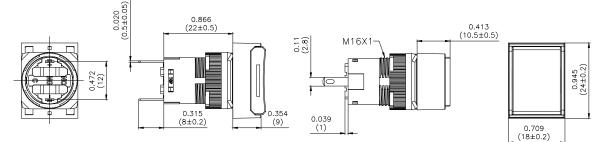


### PUSHBUTTON Ø 5/8" (16 MM)

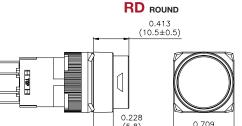


0.228 (5.8)

### PILOT LAMP Ø 5/8" (16 MM)

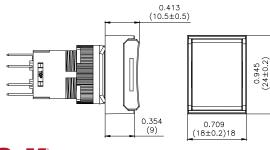


### **ACTUATOR STYLE / CAP SIZE**

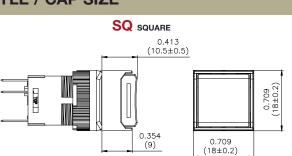




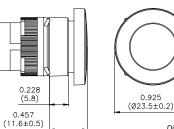








**RV** ROUND OVERSIZE



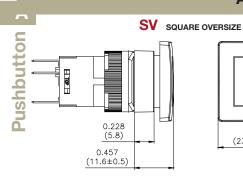
0.925 3.5±0.2)

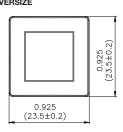
Dimensions are shown: mm (inches) Specifications and dimensions subject to change

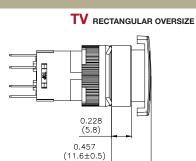
HTALH

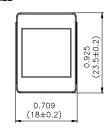
### **PLP16 Series** Panel Mount LED Sealed Pushbutton Switch





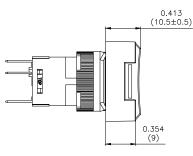


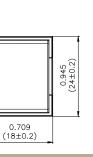




### TG RECTANGULAR WITH GUARD

**ACTUATOR STYLE / CAP SIZE** 





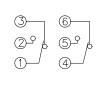
É

### **CONTACT ARRANGEMENT**

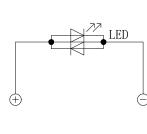




S SPDT

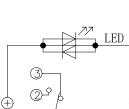


D DPDT

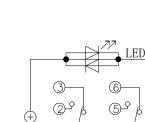


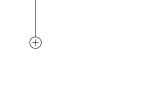
P PILOT LIGHT

ILLUMINATED



(-)



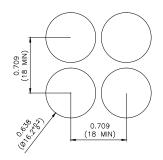


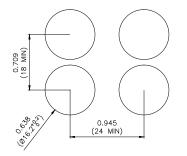
### **MOUNTING HOLES LAYOUT**

RECTANGULAR

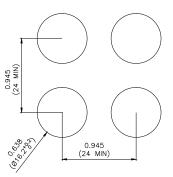
(PLUS FULL GUARD & OVERSIZE)

**ROUND / SQUARE** 





**OVERSIZE ROUND & SQUARE** 





Jounting panel thickness reference dia: 0.5-0.6 mm



**LED - LAMP RATING** 

Voltage Range		6V AC/DC ± 5%	12V AC/DC ± 10%	24V AC/DC ± 10%		
Rated Voltage		6V AC/DC	12V AC/DC	24V AC/DC		
Current Draw	DC	8 mA	8 mA	8 mA		
	AC	9 mA	9 mA	9 mA		
Lamp Base Color / Lamp	Body Resin Color	Illumination color / Porcelain white				
Life (reference value)		50,000 hours (brightness of LED lamp will half of the initial value when using DC only)				

## Pushbutton

### **ACCESSORY ORDERING INFORMATION**

### LED LAMP

	Rated Voltage	Ordering Code	
	6V AC/DC	PL06X *	
<ul> <li>Image: Image: Ima</li></ul>	12V AC/DC	PL12X *	
	24V AC/DC	PL24X *	

\* X = choice of LED color

х	Color		
2	White		
3	Red		
5	Yellow		
6	Green		
7	Blue		
8	Orange		

### SWITCH PROTECTIVE GUARD FOR IP65 (180° SPRING RETURN COVER)#

ROUND PCS651 SQUARE PCS652





RECTANGULAR PCS653



### SWITCH PROTECTIVE GUARD FOR IP40 & IP65 #

Rated	Cover Opening	For Actuator Type	Ordering Code	Rated	Cover Opening	For Actuator Type	Ordering Code
IP40	90°	Round / Square	PC401	IP65	90°	Round / Square	PC654
		Rectangular	PC402			Rectangular	PC655
	180°	Round / Square	PC403		180°	Round / Square	PC656
		Rectangular	PC404	$\bigcirc$		Rectangular	PC657

# Refer to spec for panel cutout dimensions and mounting instruction

