Pushbuttons
Product Selection Guide

Pushbutton									
Series	**ELUM**	**EP**	**TP**	**E020**	**8020**	**E010**	**8060**	**8500**	**KM**
Switch Type	Mom./ Latching	Tiny	Tiny	Snap-acting Mom.	Snap-acting Mom.	Miniature	Alternate Action	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 Options									
Thru-hole	•	•	•	•	•	•	•	•	•
Vertical		•	•	•	•	•	•	•	•
Right Angle	•	•	•	•	•	•	•	•	•
Surface Mount	•	•							
Panel Mount			•		•	•	•	•	•
Page No.	A-3	A-9	A-15	A-21	A-29	A-46	A-52	A-62	A-67

Pushbutton							
Series	**8600**	**8700**	**GP**	**PN**	**PHA**	**F**	**NE-18**
Switch Type	Micro-miniature	Over Travel	Ultra-miniature	Alternate & Mom. Action	Short Stroke	Alternate & Mom. Action	Mains / Power
Poles/Throws	SPST	SPST	SPST, SPDT	SPDT, DPDT, 4PDT	DPDT, 4PDT, 6PDT	DPDT, 4PDT, 6PDT, 8PDT, 10PDT	DPST, DPDT Varied
Max. Current	500 mA	1 Amp	0.4 V	200 mA	100 mA	500 mA	6 A
Process Sealed			•				
PCB Mount Options							
Thru-hole	•	•	•	•	•	•	•
Vertical	•	•	•				
Right Angle			•	•	•	•	•
Surface Mount			•				
Panel Mount	•	•				•	•
Page No.	A-71	A-74	A-77	A-81	A-84	A-88	A-98

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**

®**UL** ®**CSA**®

Models Available

Typical Applications

- **Instrumentation**
- **Computer peripherals**
- **Telecommunications equipment**

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.

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

OPERATING TEMPERATURE: 8X2X MODELS: –30ºC to 75ºC. U8X1 MODELS: –30ºC to 65ºC.

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.

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 slodering 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.

Switch Function
8121	SPDT On-Mom. 1 Amp
8125	SPDT On-Mom. 0.4VA
8221	DPDT On-Mom. 1 Amp
8225	DPDT On-Mom. 0.4VA
8321	3PDT On-Mom. 1 Amp
8325	3PDT On-Mom. 0.4VA
8421	4PDT On-Mom. 1 Amp
8425	4PDT On-Mom. 0.4VA

Note: UL/CSA models available, see page A-30 and A-31.

Actuator or Plunger
S	Plunger
NONE	Snap-in
J80	Snap-in
J81	Snap-in w/frame
J82	Snap-in w/frame for LED
J83	Snap-in w/frame & flush cap
J84	Snap-in w/frame for LED, flush cap
J85	Snap-in w/frame & LED
J95	PC w/V-bracket & LED
L	Plunger
M	Snap-fitting plunger

Bushing
D9	.280" high, keyway
H	.250" high, flat
NONE	No bushing choice required
D	.280" high, keyway
D2	.288" high, flat
D3	.180" high
D8	.288" high, flat
H9	.250" high, flat, hi torque
Y	.350" high, keyway
Y3	6.35mm high, keyway, hi torque
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 Color
2	Black	**4**	Orange
NONE	Models without caps	**5**	Yellow
1	White	**6**	Green
3	Red	**7**	Blue
		9	Gray

Frame Color
2	Black
NONE	Models without frame
1	White
3	Red
5	Yellow
6	Green
9	Gray

LED Color
3	Red
NONE	Models without LED
5	Yellow
6	Green

Terminations
A	Right angle, PC thru-hole	**A4**	Right angle, PC thru-hole, reversed terminals	**V2**	.555" high, V-bracket
AV2	Vertical right angle, PC thru-hole	**A6**	Right angle, PC thru-hole	**V3**	.460" high, V-bracket
C	PC Thru-hole	**AV**	Vertical right angle, PC thru-hole	**V4**	.630" high, V-bracket
Z	Solder lug	**AV1**	Vertical right angle, PC thru-hole	**V6**	.460" high, V-bracket
A2	Right angle, PC thru-hole	**AV3**	Vertical right angle, snap-in, PC thru-hole	**V7**	.630" high, V-bracket
A3	Right angle, snap-in, PC thru-hole	**R**	Right angle with PCB	**V8**	.953" high, V-bracket
		R2	Right angle with PCB, reversed terminals	**V9**	1.150" high, V-bracket

V31	.460" high, snap-in V-bracket
V61	.460" high, snap-in V-bracket
W	.750" long, wire wrap
W1	.964" long, wire wrap
W3	.425" long, wire wrap
W4	1.062" long, wire wrap
Z3	Quick connect

8020 Series
Snap-acting Momentary Pushbutton Switches

SWITCH FUNCTION

NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION POS. 1	SWITCH FUNCTION POS. 2	CONNECTED TERMINALS POS. 1	CONNECTED TERMINALS POS. 2	SCHEMATIC
			C&K marking on opposite side		C&K marking on opposite side		
SP	**8121**	**U811**	ON	MOM.	1-3	1-2	SPDT
	8125		ON	MOM.			

SPDT

C&K MARKING ON OPPOSITE SIDE
1/4±40 UNS-2A
.122 DIA. (3,10Ø)
EPOXY SEAL
.030 x .080 TYP. (0,76) (2,03)
.185 TYP (4,70)
.218 (5,54)
.250 (6,35)
.410 (10,41)
.155 (3,94)

.500 (12,70)
3 NC
2 NO
1 COMM.
.270 (6,86)

Terminal Nos.
For Reference Only

Part number shown: 8121SHZGE

DP	**8221**	**U821**	ON	MOM.	1-3,4-6	1-2,4-5	DPDT
	8225		ON	MOM.			

DPDT

C&K MARKING ON OPPOSITE SIDE
1/4±40 UNS-2A
.122 DIA. (3,10Ø)
.060 (1,52)
EPOXY SEAL
.030 x .080 TYP. (0,76) (2,03)
.185 TYP (4,70)
.218 (5,54)
.250 (6,35)
.410 (10,41)
.155 (3,94)

.190 (4,83)
.040 (1,02)
.500 (12,70)
6 3 NC
5 2 NO
4 1 COMM.
.450 (11,43)

Terminal Nos.
For Reference Only

Part number shown: 8221SHZGE

3P	**8321**	**U831**	ON	MOM.	1-3,4-6,7-9	1-2,4-5,7-8	3PDT
	8325		ON	MOM.			

3PDT

C&K MARKING ON OPPOSITE SIDE
1/4±40 UNS-2A
.122 DIA. (3,10Ø)
.060 (1,52)
EPOXY SEAL
.030 x .080 TYP. (0,76) (2,03)
.185 TYP (4,70)
.218 (5,54)
.250 (6,35)
.475 (12,07)
.155 (3,94)

.190 TYP. (4,83)
.040 TYP. (1,02)
.500 (12,70)
9 6 3 NC
8 5 2 NO
7 4 1 COMM.
.650 (16,51)

Terminal Nos.
For Reference Only

Part number shown: 8321SHZGE

MOM. = Momentary

*U811 thru U841 model numbers ® **UL** ® **SP** ® with all options (except R, R2 terminations) when ordered with G ,L 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.

Third Angle Projection
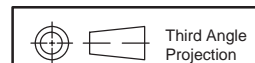
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change
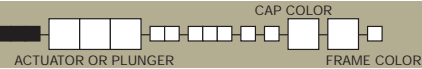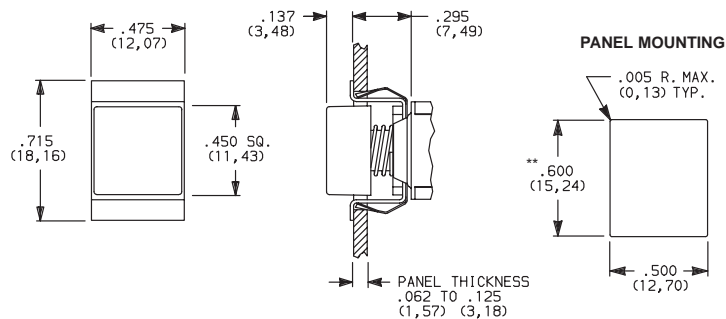
SWITCH FUNCTION

NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
			C&K marking on opposite side		C&K marking on opposite side		
4P	**8421**	**U841**	ON	MOM.	1-3,4-6,7-9,10-12	1-2,4-5,7-8,10-11	1 ● ____ 4 ●(COMM) 7 ● ____ 10 ● / 3● ●2 6● ●5 9● ●8 12● ●11 4PDT
	8425		ON	MOM.			

4PDT
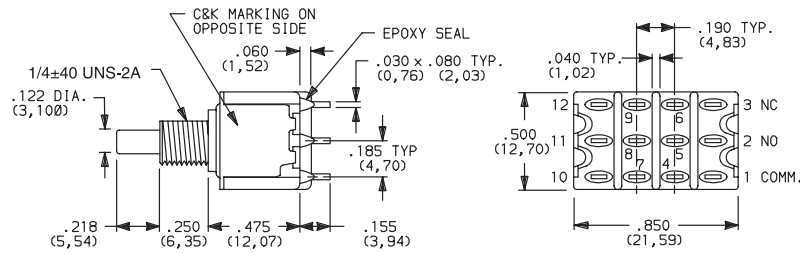
Part number shown: 8421SHZGE

C&K MARKING ON OPPOSITE SIDE
EPOXY SEAL
1/4±40 UNS-2A
.122 DIA. (3,100)
.060 (1,52)
.030 x .080 TYP. (0,76) (2,03)
.185 TYP (4,70)
.218 (5,54)
.250 (6,35)
.475 (12,07)
.155 (3,94)

.190 TYP. (4,83)
.040 TYP. (1,02)
.500 (12,70)
12 9 6 3 NC
11 8 7 5 4 2 NO
10 1 COMM.
.850 (21,59)

Terminal Nos.
For Reference Only

MOM. = Momentary

* U811 thru U841 model numbers ®**RU** ®**CSA**® with all options (except R, R2 terminations) when ordered with G, L 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.

ACTUATOR—SNAP-IN FRONT MOUNT

ACTUATOR OR PLUNGER

CAP COLOR

FRAME COLOR

J80 SNAP-IN

.475 (12,07)
.715 (18,16)
.137 (3,48)
.295 (7,49)
.450 SQ. (11,43)

PANEL MOUNTING
.005 R. MAX. (0,13) TYP.
** .600 (15,24)
.500 (12,70)

PANEL THICKNESS .062 TO .125 (1,57) (3,18)

NOTE: No frame color choice required.

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

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

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

J81 SNAP-IN WITH FRAME

.615 (15,62)
.765 (19,43)
.090 (2,29)
.062 (1,57)
.280 (7,11)
.450 SQ. (11,43)

PANEL MOUNTING
.005 R. MAX. (0,13) TYP.
** .600 (15,24)
.500 (12,70)

PANEL THICKNESS .047 TO .125 (1,19) (3,18)
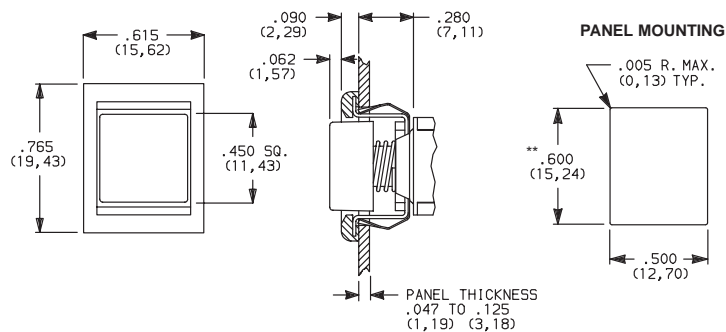
NOTE: Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only.

** Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.
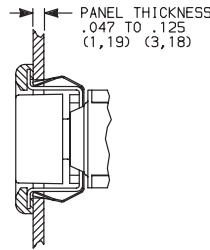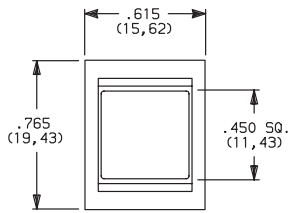
Third Angle Projection

C&K

8020 Series
Snap-acting Momentary Pushbutton Switches

ACTUATOR—SNAP-IN FRONT MOUNT

CAP COLOR
ACTUATOR OR PLUNGER   FRAME COLOR
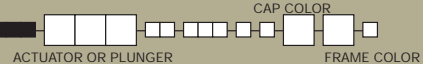
J83   SNAP-IN WITH FRAME AND FLUSH CAP
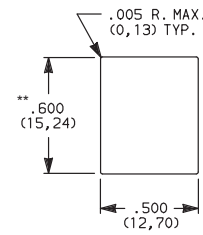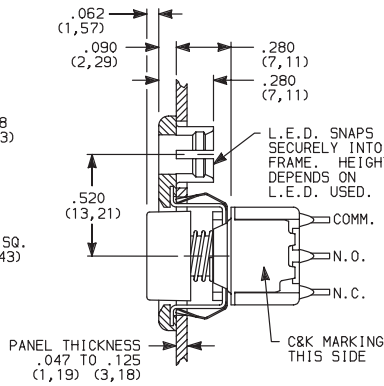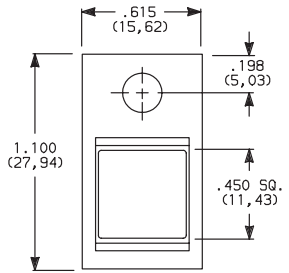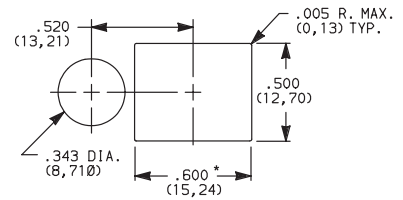
.615 (15,62)
.765 (19,43)
.450 SQ. (11,43)

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

PANEL MOUNTING

.005 R. MAX. (0,13) TYP.
**.600 (15,24)
.500 (12,70)

J82   SNAP-IN WITH FRAME FOR LED

.615 (15,62)
.198 (5,03)
1.100 (27,94)
.450 SQ. (11,43)

.062 (1,57)
.090 (2,29)
.280 (7,11)
.280 (7,11)
.520 (13,21)
PANEL THICKNESS .047 TO .125 (1,19) (3,18)

L.E.D. SNAPS SECURELY INTO FRAME. HEIGHT DEPENDS ON L.E.D. USED.
COMM.
N.O.
N.C.
C&K MARKING THIS SIDE

PANEL MOUNTING

.520 (13,21)
.343 DIA. (8,71Ø)
.005 R. MAX. (0,13) TYP.
.500 (12,70)
.600 * (15,24)

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

LED not included.
For LED information, see page A-45.

J84   SNAP-IN WITH FRAME FOR LED, FLUSH CAP
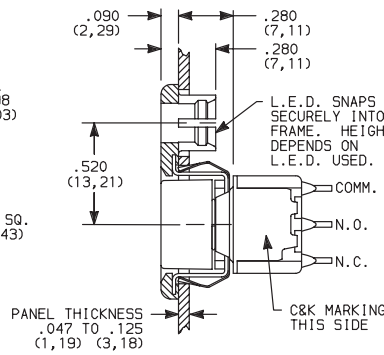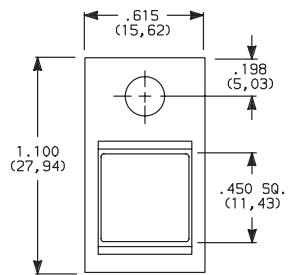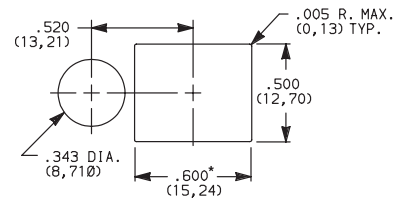
.615 (15,62)
.198 (5,03)
1.100 (27,94)
.450 SQ. (11,43)

.090 (2,29)
.280 (7,11)
.280 (7,11)
.520 (13,21)
PANEL THICKNESS .047 TO .125 (1,19) (3,18)

L.E.D. SNAPS SECURELY INTO FRAME. HEIGHT DEPENDS ON L.E.D. USED.
COMM.
N.O.
N.C.
C&K MARKING THIS SIDE

PANEL MOUNTING

.520 (13,21)
.343 DIA. (8,71Ø)
.005 R. MAX. (0,13) TYP.
.500 (12,70)
.600* (15,24)

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

LED not included.
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.
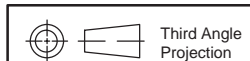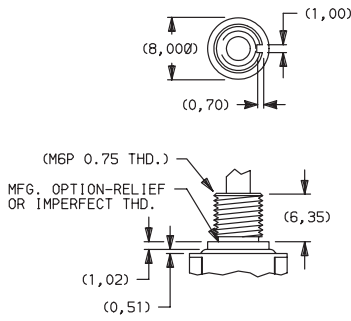
Third Angle Projection
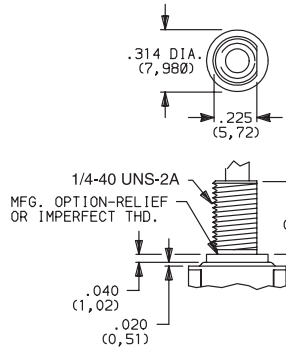
A

Pushbutton

BUSHING

Y3   6.35mm THREADED, KEYWAY
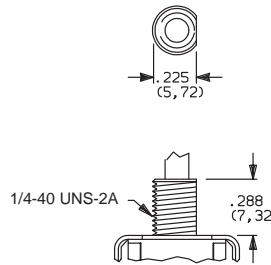
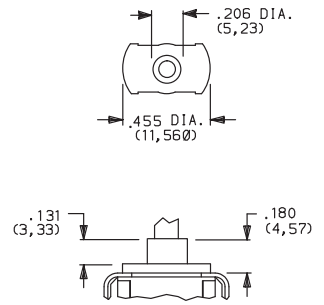**Y4**   .378" HIGH THREADED, FLAT

D2   .288" HIGH THREADED, FLAT

D8   .288" HIGH UNTHREADED, FLAT
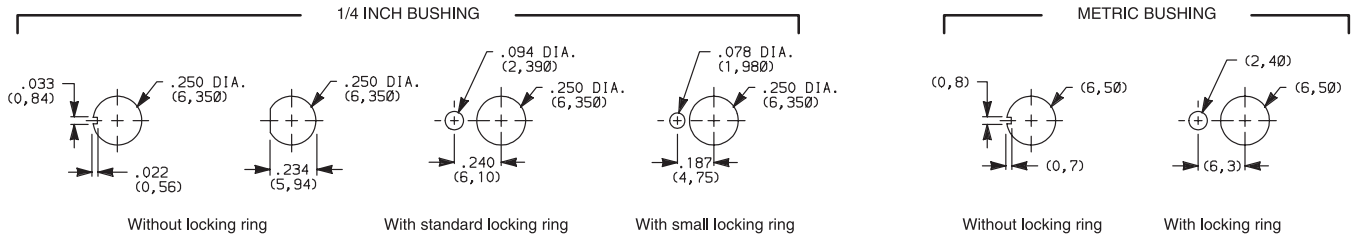
D3   .180" HIGH UNTHREADED

Y3 & Y4 bushings not available on single pole models with A3-A6, R, R2 terminations. Will withstand 12 in./lbs. of torque with no distortion.

D2, D8 bushings not available with C, W-W4, Z, Z3 terminations.

D3 bushing available with A, A2, A3, AV, AV2, AV3 and V2-V61 terminations only.

NOTE: No bushing option choice required when JXX actuator option is selected. When selecting bushing option, plunger selection must also be made, see previous page. Plunger lengths vary with bushing and termination options selected.

PANEL MOUNTING

1/4 INCH BUSHING

Without locking ring

With standard locking ring

With small locking ring

METRIC BUSHING

Without locking ring

With locking ring

NOTE: Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings.
Optional mounting nut and locking ring styles available, see section "Technical Data and Additional Hardware".
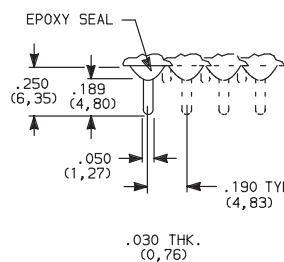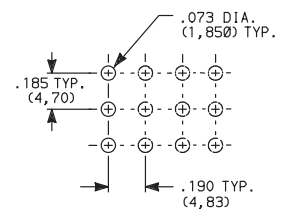
TERMINATIONS

Z   SOLDER LUG
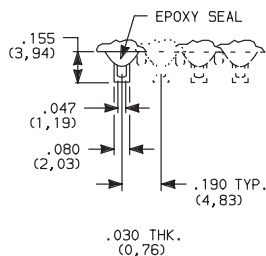
SPDT thru 4PDT

Not available with J95 actuator, P or R contact material.
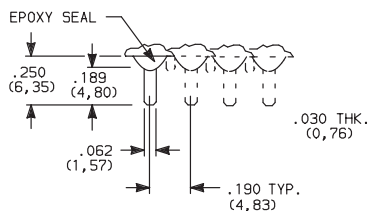
C   PC THRU-HOLE

PC MOUNTING

SPDT thru 4PDT

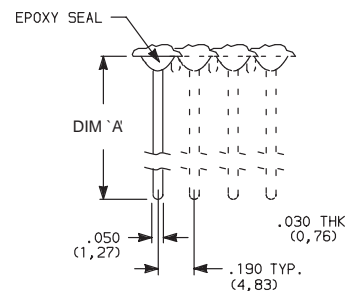Not available with J95 actuator option.

Z3   QUICK CONNECT

SPDT thru 4PDT

Not available with J95 actuator, P or R contact material. Mating quick connector available, order part number 530100000, page A-44.

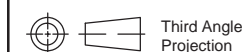**W W1, W3, W4**   WIRE WRAP

SPDT thru 4PDT

Not available with J95 actuator option.

OPTION CODE	DIM 'A'
W	.750 (19,05)
W1	.964 (24,49)
W3	.425 (10,80)
W4	1.062 (26,97)

Third Angle Projection

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

TERMINATIONS

V4, V9 VERTICAL MOUNT, V-BRACKET


```
.158
(4,01)

.180
(4,57)

C&K MARKING
ON OPPOSITE
SIDE

EPOXY SEAL

10  11  12
C   NO  NC

.020 TYP.
(0,51)
.185 TYP.
(4,70)
.030x.050 TYP.
(0,76)(1,27)
.620
(15,75)
```

```
.850
(21,59)
.122 DIA.
(3,10Ø)

.630
(16,00)

.185
(4,70)

.048 TYP.
(1,22)
.125
(3,18)
.320
(8,13)
```

PC MOUNTING

```
.125 TYP.
(3,18)

.620
(15,75)
.370
(9,40)

.190
(4,83)
.073 DIA.
(1,850)
TYP.
```
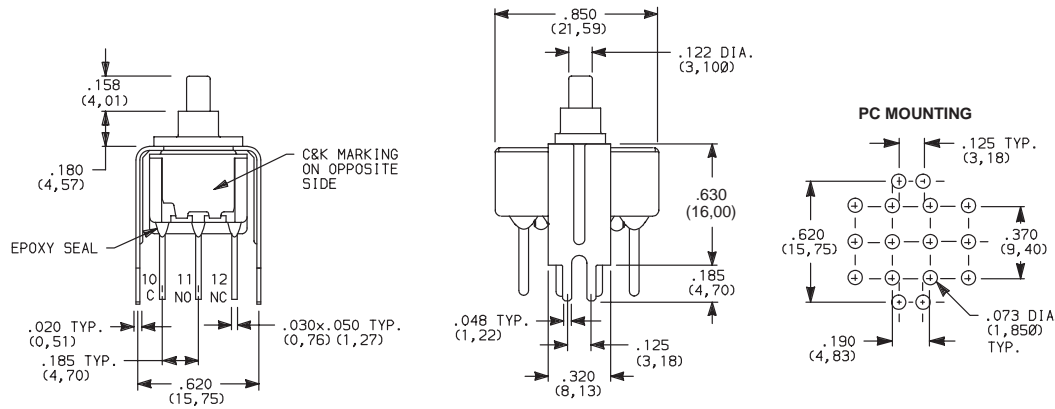
**8421SD3V4GE
4PDT**

OPTION CODE	DIM 'A'
V4	.630 (16,00)
V9	1.150 (29,21)

Not available with JXX actuators and I seal.

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS
B	GOLD [1]	GOLD [1]	LOW LEVEL/DRY CIRCUIT — 8x25 MODELS ONLY: 0.4 MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN [4]	
G	GOLD OVER SILVER [2,3]	GOLD [3]	LOW LEVEL/DRY CIRCUIT OR POWER — 8X21, U8X1 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN [4]	

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

[1] ALL CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
[2] N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
[3] COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
[4] 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 ®🆄🅻 🆂🅿® with all options (except R, R2 terminations) when ordered with mandatory G, R or L 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.

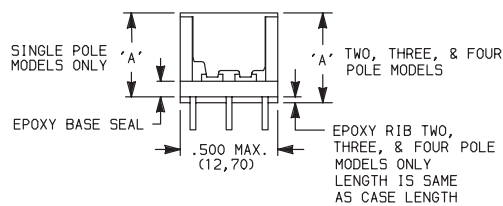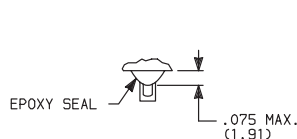P or R contact material not available with Z, Z3 terminations.
K, L and M options represent Non RoHS tin lead product and are not recommended for new designs. For additional information please contact Customer Service.
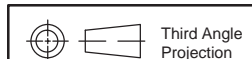
SEAL

E EPOXY SEAL


```
EPOXY SEAL
.075 MAX.
(1,91)
```

I EPOXY POTTED BASE

```
SINGLE POLE
MODELS ONLY
'A'

EPOXY BASE SEAL

.500 MAX.
(12,70)

'A' TWO, THREE, & FOUR
POLE MODELS

EPOXY RIB TWO,
THREE, & FOUR POLE
MODELS ONLY
LENGTH IS SAME
AS CASE LENGTH
```

NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

NOTE: Available with C, W-W4, Z, Z3 terminations only.

Third Angle Projection