### Features/Benefits

- Multi-pole and multi-position
- Wide variety of actuator and termination options
- Epoxy terminal-seal compatible with bottom wash cleaning
- RoHS compliant models available

# Typical Applications

- **Telecommunications**
- Instrumentation
- Medical equipment





# **Specifications**

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 5 AMPS @ 120 V AC or 28 V DC; 2 AMPS @ 250 V AC. See page F-15 for additional ratings.

ELECTRICAL LIFE: 7X01 and UX1 models: 100,000 make-and-break cycles at full load. All other models: 40,000 cycles.

Anti-rotation, .687" high,

15/32 bushing

CONTACT RESISTANCE: Below 10 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: 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).

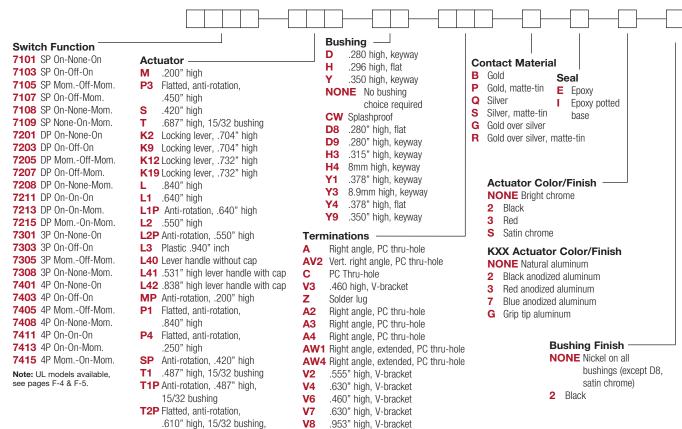
## For materials see page F-5.

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

NOTE: Specifications 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 F-5 thru F-17. For additional options not shown in catalog, consult our Customer Service Center.





.750" long, wire wrap

W1 .964" long, wire wrap

W3 .425" long, wire wrap

W4 1.062" long, wire wrap

W5 1.305" long, wire wrap

**Z3** Quick connect

1.150" high, V-bracket

V21 .555" high, snap-in V-bracket

V41 .630" high, snap-in V-bracket

V71 .630" high, snap-in V-bracket

V81 .953" high, snap-in V-bracket

.460" high, snap-in V-bracket

**V**9

V31

**Miniature Toggle Switches** 

diallyl phthalate (DAP) (UL 94V-0). ACTUATOR: Brass, chrome plated.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

7000 Series

SWITCH SUPPORT: Brass or steel, tin plated.

END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page F-15 for additional contact materials.

CENTER CONTACTS & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See above for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & Locking Ring: Brass, nickel plated.

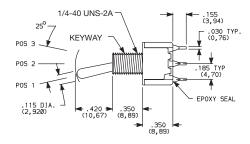
Lockwasher: Steel, nickel plated.

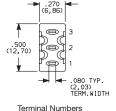
NOTE: Materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

# **SWITCH FUNCTION**

			SWITCH FUNCTION			CONNECTED TERMINALS				
			POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3		
NO.		UL** MODEL	KEYWAY 7	KEYWAY 7	KEYWAY 7	KEYWAY 7	KEYWAY 7	KEYWAY 7		
POLES	MODEL NO.	NO.							SCHEMATIC	
	7101	U11	ON	NONE	ON	2-3	N/A	2-1		
	7103	U13	ON	OFF	ON					
SP	7105	U15	мом.	OFF	мом.	2-3	OPEN	2-1	₹2 (COMM)	
3F	7107	U17	ON	OFF	MOM.				1 ● 🕽	
	7108	U18	ON	NONE	мом.	2-3	N/A	2-1		
	7109	U19	NONE	ON	мом.	N/A	2-3	2-1	SPDT	

#### **SPDT**

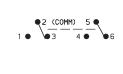




For Reference Only

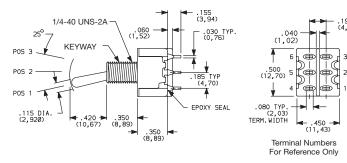
Part number shown: 7101SYZBF

	7201	U21	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4
	7203	U23	ON	OFF	ON			
	7205	U25	мом.	OFF	мом.	2-3,5-6	OPEN	2-1,5-4
DP	7207	U27	ON	OFF	мом.			
DP	7208	U28	ON	NONE	мом.	2-3,5-6	N/A	2-1,5-4
	7211 *	U211 *	ON	ON	ON			
	7213 *	U213 *	ON	ON	мом.	2-3,5-6	2-3,5-4	2-1,5-4
	7215 *	U215 *	мом.	ON	мом.			



DPDT

### DPDT



MOM. = Momentary \* Wiring for 3-way switch

Part number shown: 7201SYZQE

\*\* U11-U415 model nos.

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



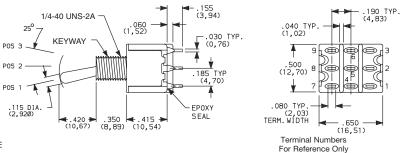


# **Miniature Toggle Switches**

#### SWITCH FUNCTION CONNECTED TERMINALS POS. 1 POS. 2 POS. 3 POS. 1 POS. 2 POS. 3 KEYWAY KEYWAY UL\*\* MODEL NO. POLES MODEL NO NO. SCHEMATIC 7301 **U31** ON NONE ON 2-3,5-6,8-9 N/A 2-1,5-4,8-7 7303 **U33** ON OFF ON 7305 **U35** мом. OFF мом. OPEN 2-3.5-6.8-9 2-1.5-4.8-7 7307 **U37** ON OFF MOM 7308 **U38** NONE 2-3,5-6,8-9 2-1,5-4,8-7 3PDT

\_\_\_\_

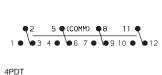
3PDT



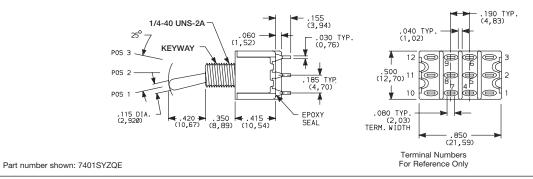
Part number shown: 7301SYZQE

	7401	U41	ON	NONE	ON	2-3,5-6,8-9,11-12	N/A	2-1,5-4,8-7,11-10	
	7403	U43	ON	OFF	ON				
	7405	U45	мом.	OFF	мом.	2-3,5-6,8-9,11-12	OPEN	2-1,5-4,8-7,11-10	
4P	7408	U48	ON	NONE	мом.	2-3,5-6,8-9,11-12	N/A	2-1,5-4,8-7,11-10	
41	7411*	U411*	ON	ON	ON				
	7413*	U413*	ON	ON	мом.	2-3,5-6,8-9,11-12	2-3,5-4,8-9,11-10	2-1,5-4,8-7,11-10	
	7415*	U415*	мом.	ON	мом.				۱.

**SWITCH FUNCTION** 



4PDT



IOM. = Momentary

\*\* Wiring for 3-way switch

\*\* U11-U415 model nos. calls with all options when ordered with G, Q, R or S contact material.



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



F-5

.2006" HIGH <sup>1</sup>

MP ANTIROTATION. .2006" HIGH <sup>2,3</sup>

**L, L1, L2** .8406", .6406", .5506" HIGH <sup>1</sup>

L1P. L2P ANTIROTATION.

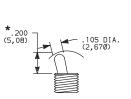
.8406", .6406", .5506" HIGH <sup>2,3</sup>

L

DIM 'A'

.840 (21,34)

.640 (16,26) .550 (13,97)



M actuator standard when ordered with all terminations except C, W-W5, Z & Z3. Caps are available separately, see page F-16.

\*P3 FLATTED WITH ANTIROTATION,

.4506" HIGH 2,3

.130 DIA. (3,300) OPTION \*DIM. 'A' L1, L1P L2, L2P

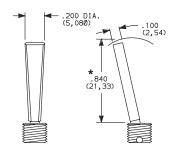
Caps are available separately, see page F-16.

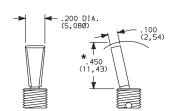
 $^{*}P4$  FLATTED WITH ANTIROTATION, .2506" HIGH

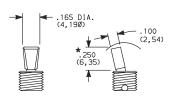


S actuator standard when ordered with C, W-W5, Z & Z3 terminations. Caps are available separately, see page F-16.

\*P1 FLATTED WITH ANTIROTATION, .8406" HIGH <sup>2,3</sup>



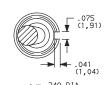


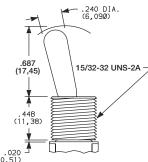


\*Dress nut part number 709901201 supplied standard with threaded bushing. (Part number 709903201 with metric threaded bushings.)

.687 (17,45)6 HIGH 1,2

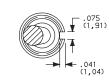
ANTIROTATION, .687 (17,45) HIGH, 15/32 BUSHING 1,2,3

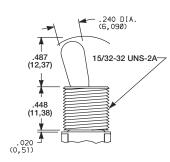




**T1** .487 (12,37)6 HIGH <sup>1,2</sup>

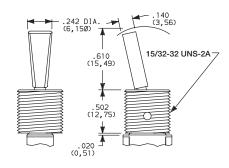
ANTIROTATION, .487 (12,37) HIGH, 15/32 BUSHING <sup>1,2,3</sup>





T<sub>2</sub>P FLATTED, ANTIROTATION, .6106" HIGH, 15/32 BUSHING 1,2,3





Bushing option code not required unless CW splashproof bushing ordered. TP & T1P actuators not available with CW splashproof bushing. All TXX actuators not available on single pole models with A-A4, AW1-AW4 terminations.

Bushing option code not required. T2P actuator not available with CW splashproof bushing or single pole models with A-A4. AW1-AW4 terminations.

- <sup>1</sup> L, L1, L2, M, S & TXX actuators not available with Y1 bushing.
- $^2$  L1P, L2P, MP, P1, P3, P4, SP & TXX actuators available with D8 & H4 bushing.
- <sup>3</sup> Antirotation: Provides anti-'push-in' feature on
- \* Add .070 (1,78) for D, D8 & D9 bushings, subtract .020 (0,51) for H3 bushing.

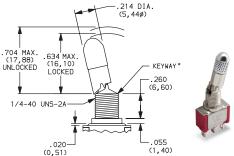
OPTION CODE	ACTUATOR FINISH
NONE	BRIGHT CHROME-With Nickel Plated Bushing
2	BLACK
S	SATIN CHROME

NOTE: Black hardware is supplied when either black actuators or bushings are specified. For additional hardware, see Technical Data.





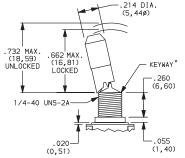
LOCKING LEVER, .704" HIGH (unthreaded)



Replaces K, K8

K12 LOCKING LEVER, .732" HIGH (threaded) LOCKING LEVER, .732" HIGH

(unthreaded) .214 DIA. (5,44ø)



Replaces K1, K18

OPTION CODE	ACTUATOR CAP FINISH	
NONE	NATURAL ALUMINUM-With Nickle Plated Bushing	
2	BLACK ANODIZED ALUMINUM	
3	RED ANODIZED ALUMINUM	
7	BLUE ANODIZED ALUMINUM	
G	GRIP TIP ALUMINUM	

# \* All KXX models including KXXCW have a keyway



-01 Models



-03 & -11 Models 3 Position lock



Locking Positions

-05, -09 & -15 Models 1 Position lock



-07 & -13 Models 2 Position lock



-08 Models 1 Position lock

OPTION

CODE

NONE

2

3

NOTE: To prevent accidental actuation, toggle must be lifted before being actuated. When released, toggle will lock in place. Overtightening mounting nut may cause actuator to bind.

Locking levers supplied with bushing shown.

Bushing option code not required unless CW splashproof bushing ordered.

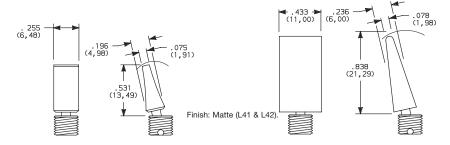
### L40 LEVER HANDLE WITHOUT CAP



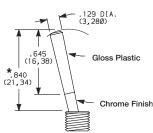
No color choice required

L41 PLASTIC LEVER HANDLE WITH ANTIROTATION AND CAP, P/N 4810

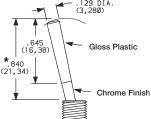




#### L3 PLASTIC .940" HIGH



<sup>\*</sup> Add .070 (1,78) for D, D8 & D9 bushings, subtract .020 (0,51) for H3 bushing.



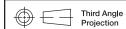
NOTE: Lever handle for L41 & L42 actuators supplied, but not installed. For interchangeability, order L40 actuator option and lever handles separately, see page F-16. L4X actuators not available with H4, Y1, Y4 bushings. Antirotation: Provides anti-'push-in' feature on actuator.

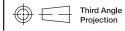
BLACK

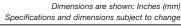
RED

PLASTIC ACTUATOR COLORS

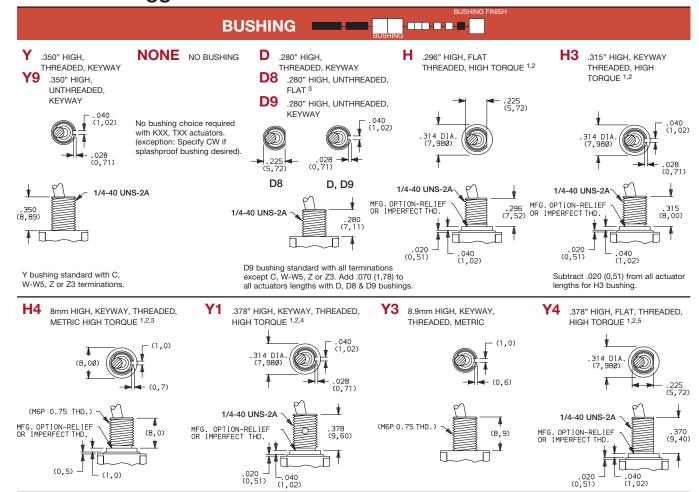
No Actuator Color (L40 option)

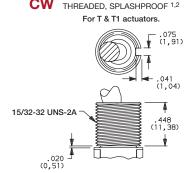






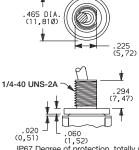






IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal standard External bushing seal available separately from APM Hexseal, part # MFS-60064.

#### For actuators other than T, T1 and KXX.



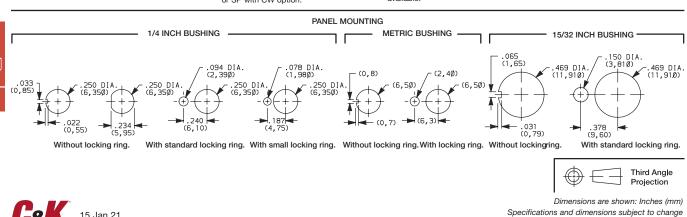
IP67 Degree of protection, totally protected against dust, full-scale voltage protection, temporary immersion. Internal actuator seal and external bushing seal washer standard. IP65 degree of protection for LXP, MP, PX or SP with CW option.

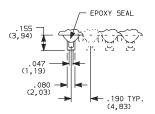
OPTION CODE	BUSHING FINISH
NONE	NICKEL on all bushings except 'D8' satin chrome.
2	BLACK

# <sup>1</sup> Will withstand 12 in.-lbs. of torque with no distortion.

- <sup>2</sup> CW. H, H3, H4, Y1 & Y4 bushings not available on single pole models with A4 terminations.
- <sup>3</sup> D8 & H4 bushings available only with L, L1, L2, M & S actuators.
- <sup>4</sup> Y1 bushing available only with LXP, MP, PX & SP actuators.
- <sup>5</sup> Y4 bushing not available with L4X actuators.

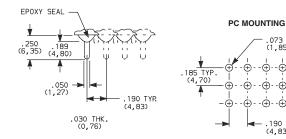
NOTE: Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Black hardware is supplied when either black bushings or actuators are specified. Optional mounting nut and locking ring styles and finishes





.030 (0,76) Thk.

C PC THRU-HOLE

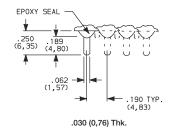


# SPDT thru 4PDT

Not available with P, R or S contact materials.

## SPDT thru 4PDT

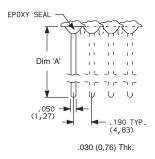
## **Z3** QUICK CONNECT



# SPDT thru 4PDT

Not available with P, R or S contact materials. Mating quick connector available, order part number 530100000, page F-16.

# W, W1, W3, W4, W5 WIRE WRAP



OPTION CODE	DIM 'A'
w	.750 (19,05)
W1	.964 (24,48)
W3	.425 (10,80)
W4	1.062 (26,97)
W5	1.305 (33,15)

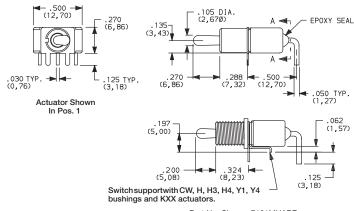
.073 DIA. (1,850) TYP.

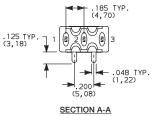
.190 TYP.

(4,83)

# SPDT thru 4PDT

# A RIGHT ANGLE, PC THRU-HOLE





Terminal Nos. For Reference Only

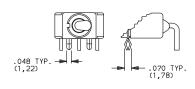


7101MD9ABE Horizontal Actuation **SPDT** 

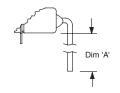
Part No. Shown: 7101MHABE

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

### AW1, AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE

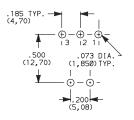


Not available with I seal option. Terminal bend radii and lead-in manufacturing option.



OPTION CODE	DIM 'A'
AW1	.72 (18,3)
AW4	.83 (21,1)

#### PC MOUNTING

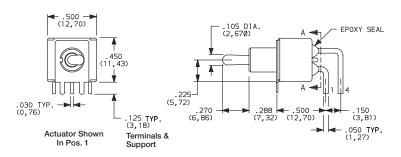


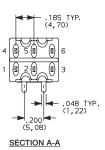






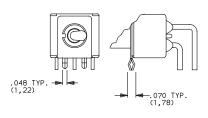
7201MD9ABE Horizontal Actuation **DPDT** 

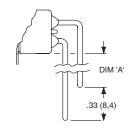




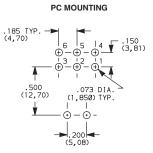
A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

**AW1, AW4** RIGHT ANGLE, EXTENDED, PC THRU-HOLE





OPTION CODE	DIM 'A'
AW1	.40 (10,2)
AW4	.50 (12,7)

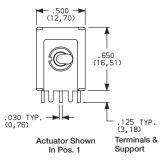


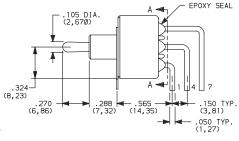
Not available with I seal option. Terminal bend radii and lead-in manufacturing option.

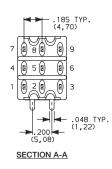
A RIGHT ANGLE, PC THRU-HOLE



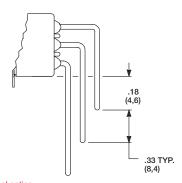
Horizontal Actuation **3PDT** 





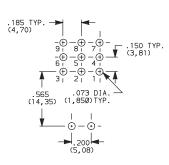


AW4 RIGHT ANGLE, EXTENDED, PC THRU-HOLE

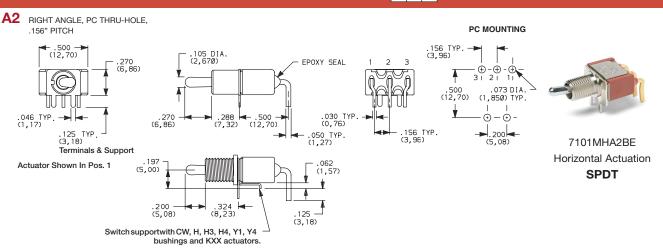


Not available with I seal option. Terminal bend radii and lead-in manufacturing option.

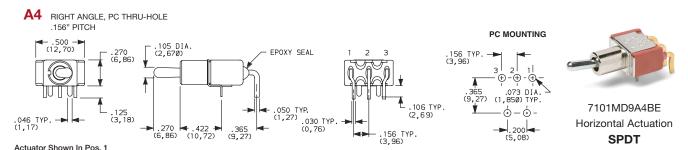
### PC MOUNTING



# TERMINATIONS ----

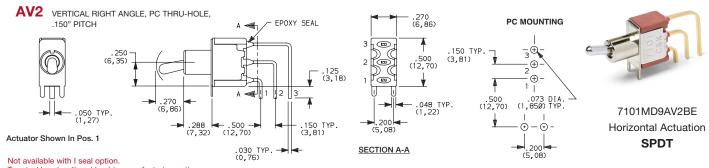


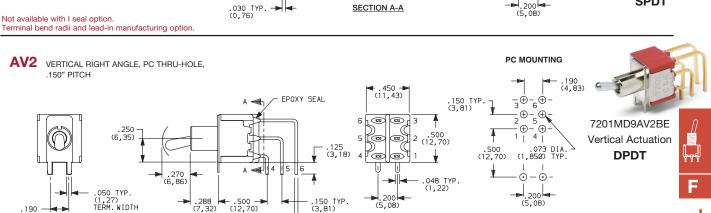
Not available with TXX actuators and I seal Part No. Shown: 7101MHA2BE Terminal bend radii and lead-in manufacturing option



Not available with KXX & TXX actuators, CW, H, H3, H4, Y1 & Y4 bushings, and I seal. Terminal bend radii and lead-in manufacturing option.

NOTE: The A4 option is available with any contact material and can be UL recognized and CSA certified. The PC pattern must clear switch support legs.





SECTION A-A

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

.288 (7,32)

- .500 -(12,70)



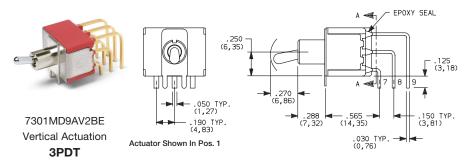
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change

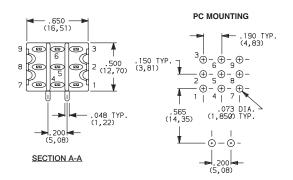
ا<sub>، 200</sub>4 (5, 08)

Actuator Shown In Pos. 1

.150 TYP.

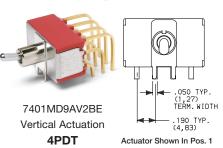
**AV2** VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH





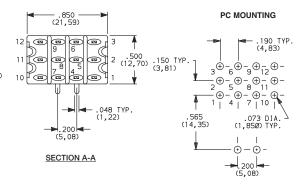
Not available with I seal option. Terminal bend radii and lead-in manufacturing option.

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



. 250 .125 (3,18) .150 TYP. .288 (7,32) - .565 -(14,35)

EPOXY SEAL



Not available with I seal option.

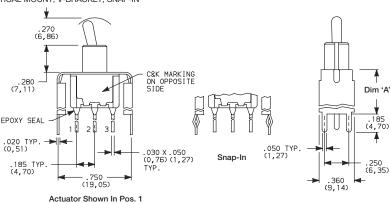
Terminal bend radii and lead-in manufacturing option.

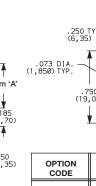
V2, V6, V7, V8 VERTICAL MOUNT, V-BRACKET

V21, V71, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN





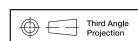




OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V6	.460 (11,68)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)

PC MOUNTING

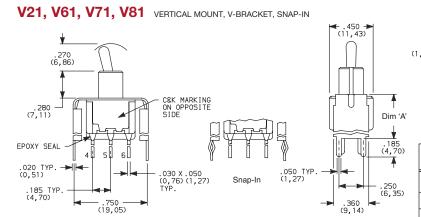
Not available with I seal option.



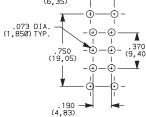
Dimensions are shown: Inches (mm) Specifications and dimensions subject to change



F-12



PC MOUNTING





OPTION CODE DIM 'A' V2, V21 .555 (14,10) V6, V61 .460 (11,68)

.630 (16,00)

.953 (24,21)

V7, V71

V8, V81

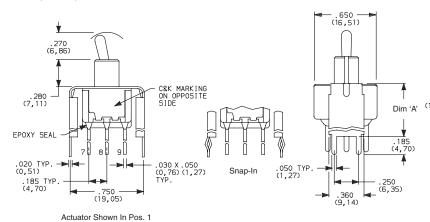
7201MD9\_BE **DPDT** 

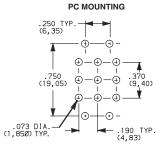
Actuator Shown In Pos. 1

Not available with I seal option

V2, V7, V8 VERTICAL MOUNT, V-BRACKET







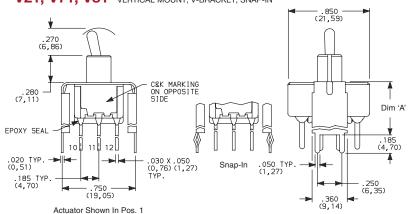


7301MD9\_\_BE 3PDT

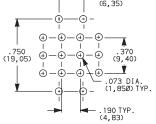
OPTION CODE	DIM 'A'
V2, V21	.555 (14,10)
V7, V71	.630 (16,00)
V8, V81	.953 (24,21)
	I

Not available with I seal option.





# PC MOUNTING

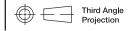


C HOLLY

OPTION DIM 'A' CODE V2, V21 .555 (14,10) V7, V71 .630 (16,00) V8, V81 .953 (24,21)

7401MD9 BE **4PDT** 

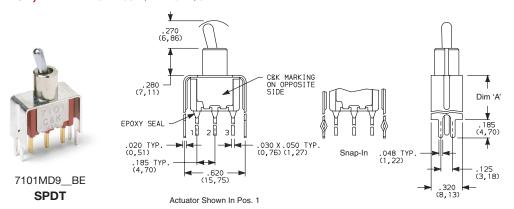
Not available with I seal option.



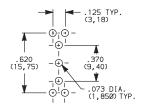
# TERMINATIONS ----

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

V31, V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN



#### PC MOUNTING

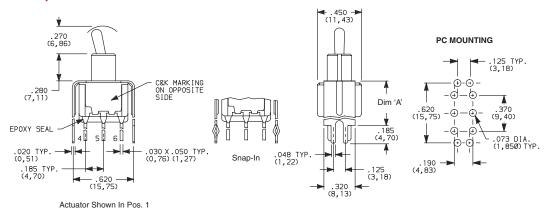


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
<b>V</b> 9	1.150 (29,21)

Not available with I seal option.

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

V31, V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN





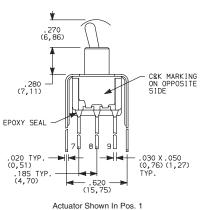
7201MD9\_BE **DPDT** 

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)
<b>V</b> 9	1.150 (29,21)

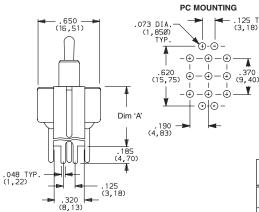
Not available with I seal option.

V4, V9 VERTICAL MOUNT, V-BRACKET

V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN



Snap-in





7301MD9\_\_BE **3PDT** 

OPTION CODE	DIM 'A'
V4, V41	.630 (16,00)
<b>V</b> 9	1.150 (29,21)

Not available with I seal option.



Third Angle Projection

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



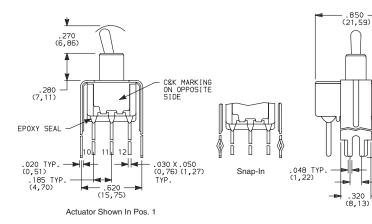
15 Jan 21

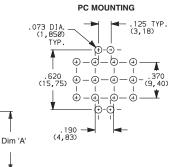
.185 (4,70)



V4, V9 VERTICAL MOUNT, V-BRACKET

V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN







7401MD9\_BE **4PDT** 

OPTION CODE	DIM 'A'
V4, V41	.630 (16,00)
<b>V</b> 9	1.150 (29,21)

Not available with I seal option.

# CONTACT MATERIAL

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

<sup>\*</sup> 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.
- $^{2}\ \mbox{END}$  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.
- $^{\rm 5}$  CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- <sup>6</sup> TERMINALS: Copper alloy, with matte tin alloy nickel plate.

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

U11-U415 model numbers c with all options when ordered with G, S, R, or Q contact material.

- 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.



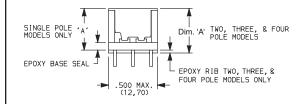


# SEAL HERE

**E** EPOXY SEAL



EPOXY POTTED BASE



DIM 'A' **POLES** .410 (10,41) DP .440 (11,18) 3P .505 (12,83) 4P .505 (12,83)

Compatible with "bottom-wash" PC board cleaning methods

Available with C, W-W5, Z & Z3 terminations only.

LENGTH IS SAME AS CASE LENGTH

# **AVAILABLE HARDWARE**

Cap

(17.45)



PART NO. 896801000 WHITE 896802000 BLACK 896803000 RED

Material: Polyethylene Finish: Matte

PART NO. 763701000

Сар

WHITE 763702000 BLACK 763703000 RED

Material: Vinvl Finish: Matte

PART NO.

Сар

706201000 WHITE 706202000 BLACK 706203000 RED

Material: Vinyl Finish: Matte

L41 Lever handle



L42 Lever handle



Fits Z3 Termination



PART NO.

481001000 WHITE 481002263 BLACK 481003000 RED

Material: Nylon Finish: Matte

PART NO.

481101000 WHITE 481102263 BLACK 481103000 RED

Material: Nylon Finish: Matte

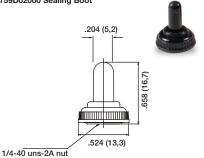
PART NO. 530100000

Available in loose pieces.

NOTE: Additional nuts, locking rings and lockwashers available separately.

Other colors available, consult Customer Service Center.

# 759D02000 Sealing Boot



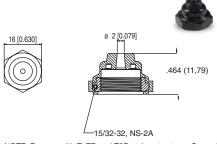
NOTE: For use with S actuator style when combined with D, H, H3, Y, and Y4 bushings

#### 703D02000 Sealing Boot



NOTE: For use with T and TP style actuators. Cannot be used for Switch Functions: 7103, 7203, 7303, 7403, 7107, 7207, 7307, 7407.

### 704D02000 Sealing Boot



NOTE: For use with T, TP and T2P style actuators. Cannot be used for Switch Functions: 7103, 7203, 7303, 7403, 7107, 7207, 7307, and 7407.

