

FEATURES

- RoHS and Lead-Free compliance
- Wide variety of switching functions: SPDT, DPDT, 3PDT, 4PDT
- Vertical, right angle and vertical right angle mounting brackets
- Customization available

RS PRO Miniature Toggle Switches

RS Stock No.: 209-9350, 209-9347, 209-9348, 394-459, 734-7012



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Miniature Toggle Switches

Similar Products

Products

RS Stock No.	Brand	Switch Function	Terminal Type	Terminal Plating	Actuator Type	Bushing Type
2099350	RS PRO	SP ON-OFF-ON	Solder Lug	SILVER	10.41 High	7.52 High, Flat (torque)
2099347	RS PRO	DP ON-NONE-ON	Solder Lug	SILVER	10.41 High	7.52 High, Flat (torque)
2099348	RS PRO	DP ON-OFF-ON	Solder Lug	SILVER	10.41 High	7.52 High, Flat (torque)
394459	RS PRO	SP ON-NONE-ON	Solder Lug	SILVER	10.41 High	8.89 High, Keyway (thd)
7347012	RS PRO	4P ON-ON-ON	PC thru-hole	SILVER	10.41 High	8.89 High, Keyway (non-thd)

SWITCH FUNCTION									
NO. POLES	UL/CSA MODEL NO.	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS / SCHEMATIC			
			POS.1	POS.2	POS.3	POS.1	POS.2	POS.3	
SP	Q1111	1MS1	ON	NONE	ON		N/A		
	Q1112	1MS2	ON	NONE	(ON)	2-3		2-1	
	Q1113	1MS3	ON	OFF	ON				
	Q1114	1MS4	(ON)	OFF	(ON)	1-2 (COMMON)		1-3 (COMMON)	
	Q1115	1MS5	ON	OFF	(ON)				
DP	Q1121	1MD1	ON	NONE	ON		N/A		
	Q1122	1MD2	ON	NONE	(ON)	2-3,5-6		2-1,5-4	
	Q1123	1MD3	ON	OFF	ON				
	Q1124	1MD4	(ON)	OFF	(ON)	1-2 (COMMON)		1-3 (COMMON)	
	Q1125	1MD5	ON	OFF	(ON)				
	Q1126	1MD6	ON	ON	ON				
	▲ Q1127	1MD7	(ON)	ON	(ON)	2-3,5-6	2-3,5-4	2-1,5-4	
	▲ Q1128	1MD8	ON	ON	(ON)				
3P	Q1131	1M31	ON	NONE	ON			N/A	
	Q1132	1M32	ON	NONE	(ON)			2-1,5-4,8-7	
	Q1133	1M33	ON	OFF	ON				
	Q1134	1M34	(ON)	OFF	(ON)	1-2 (COMMON)		1-3 (COMMON)	
	Q1135	1M35	ON	OFF	(ON)				
	4P	Q1141	1M41	ON	NONE	ON			N/A
		Q1142	1M42	ON	NONE	(ON)	2-3,5-6,8-9,11-12		2-1,5-4,8-7,11-10
		Q1143	1M43	ON	OFF	ON			
Q1144		1M44	(ON)	OFF	(ON)	1-2 (COMMON)		1-3 (COMMON)	
Q1145	1M45	ON	OFF	(ON)					
Q1146	1M46	ON	ON	ON					
▲ Q1147	1M47	(ON)	ON	(ON)	2-3,5-6,8-9,11-12	2-3,5-4,8-9,11-10	2-1,5-4,8-7,11-10		
▲ Q1148	1M48	ON	ON	(ON)					

() = MOMENTARY
 ▲ Please check the availability in advance before order

Product Description

1M series toggle switches offer a variety of switching functions, SPDT, DPDT, 3PDT, 4PDT and contact rating up to 5A with UL certification and RoHS compliance. The operating temperature range between -40°C and 85°C. Other than 90 degree and 180 degree design on the terminal, we also provide different shape of handles and accessories in order to fit in different application.

Multiple actuator colors and discrete LED illumination options can help the switch stand out or fade into the background.

All of this aesthetic versatility along with IP67 level of seal allows the PA series to be used across a wide variety of applications and operating conditions.

APPLICATIONS:

- telecommunications and networking equipment (wireless network cards, handheld devices, reset switches)
- instrumentation (shut-off switches, controllers)
- industrial controls (grips, joysticks, power supplies)
- test and measurement equipment
- elevator controls
- food processing equipment
- boat and marine control panels
- medical equipment (wheelchair motor switch)
- off-highway and construction equipment

Miniature Toggle Switches

- security systems and metal detectors

Specifications

SPECIFICATIONS

CONTACT RATING: Dependent upon contact material See page 11.

MECHANICAL LIFE: 40,000 make-and-break cycles.

CONTACT RESISTANCE: 10m Ω max. initial @ 2-4VDC
100mA for both silver and gold plated contacts.

INSULATION RESISTANCE: 1,000 M Ω min.

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

OPERATING TEMPERATURE: -40°C to 85°C.

MATERIALS

CASE: Diallyl phthalate (DAP) (UL94v-0).

ACTUATOR: Brass,chrome plated.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

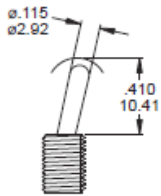
SWITCH SUPPORT: Brass, tin plated.

CONTACT / TERMINALS: Copper alloy, Silver or gold plated.

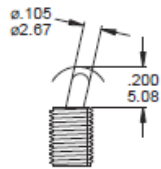
Miniature Toggle Switches

Actuator Options

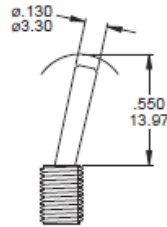
T1 STD



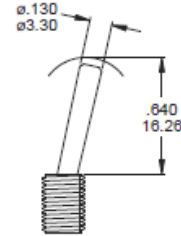
T2



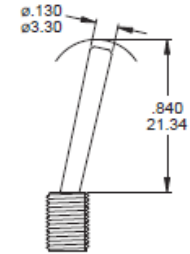
T3



T4



T5

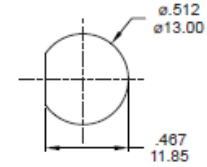
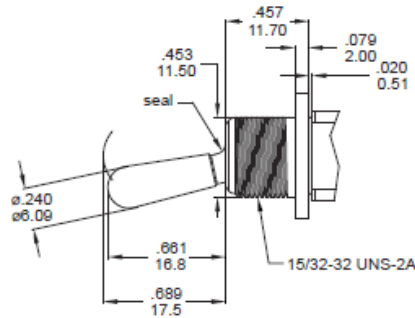
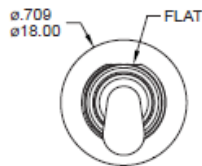


NOTE : T1 ~ T5 Actuator shown with standard B1 Bushing ;
 Add .070 (1.78) for B3 Bushing ;
 Subtract .020 (0.51) for B6 Bushing ;
 Std for M1 , M2 Terminal sub .016 (0.40) for M6 , M7 , VSX (Exclude B1/B2 bushing)

T88B52

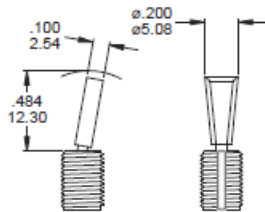
SPLASH PROOF

Std SPDT for M1.M2 Terminal

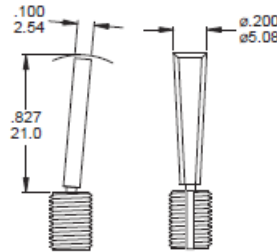


PANEL MOUNTING
 Without locking ring (Flat)

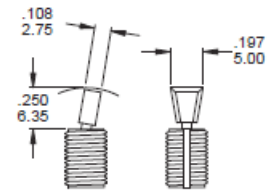
T6 FLATTED WITH ANTIROTATION



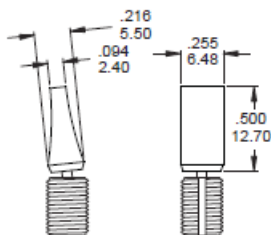
T61



T63



T62



Plastic No.Color :

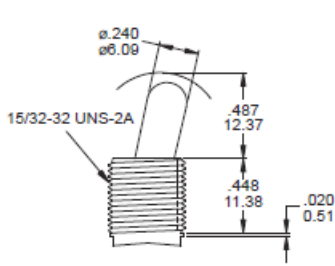
ITEM NO	COLOR
1	White
2	Black (Std)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

* Besides standard color,
 other colors need to check
 stocks available.

NOTE: T6,T61,T62 ,T63 use with B11, B12, B15,
 B16 bushing only.

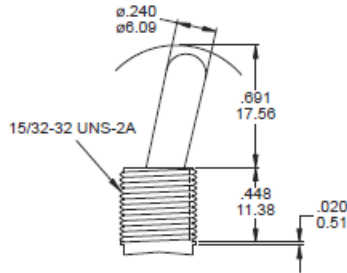
Miniature Toggle Switches

T7



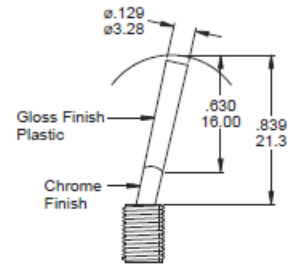
Use with B13 bushing
Use with B18,B20 the lever is antirotation and the size of lever is 13.00mm

T8



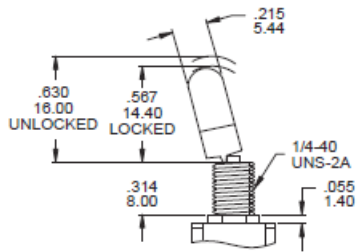
Use with B13 bushing
Use with B18,B20 the lever is antirotation and the size of lever is 18.00mm

T9

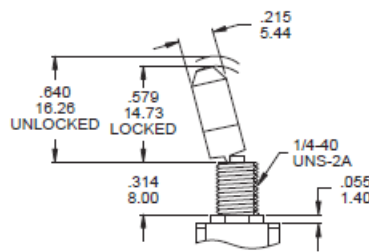


B1 / B2 bushing std
with black(T92) and red(T93) color only(std.)

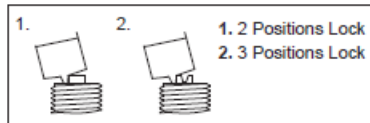
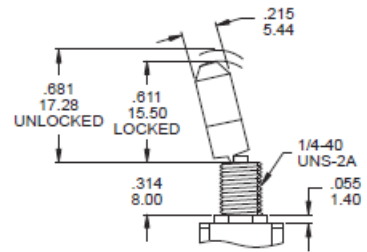
TL1B25 THD STD
B26 NON-THD



TL2B25 THD STD
B26 NON-THD



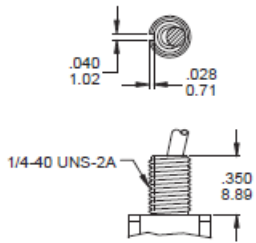
TL3B25 THD STD
B26 NON-THD



Miniature Toggle Switches

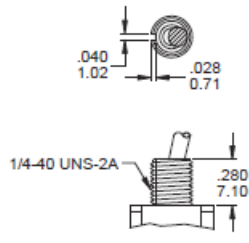
BUSHING OPTIONS

B1 THD STD
B2 NON-THD



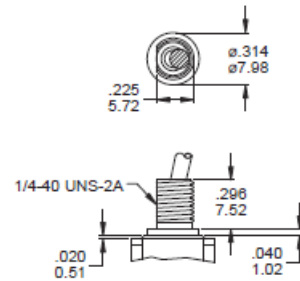
Subtract .016 (0.40) for M6, M7 and VS2-5 termination options.

B3 THD
B4 NON-THD

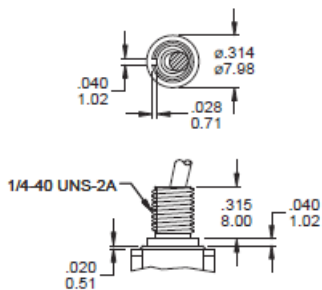


B4 is standard for M6, M7 and VS2-5 termination options.

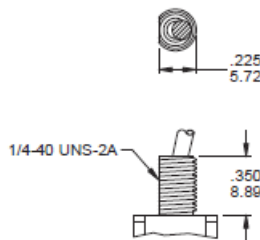
B5 HIGH TORQUE



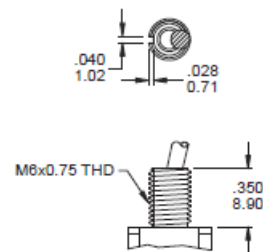
B6 HIGH TORQUE



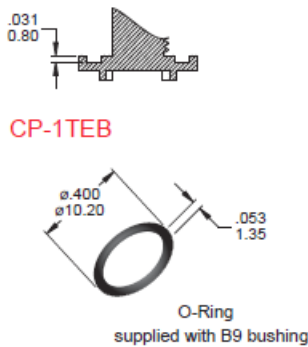
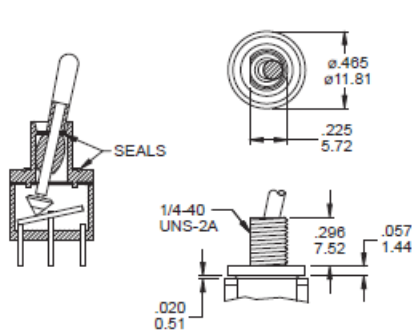
B7 THD STD



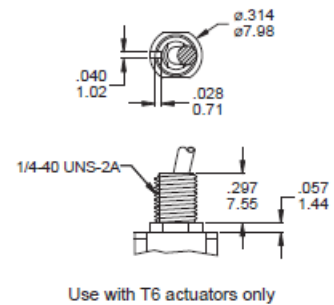
B8 METRIC THD



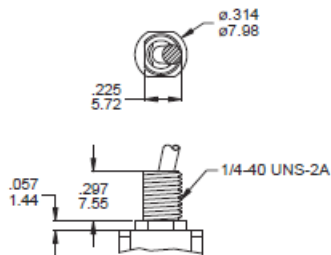
B9 SPLASH PROOF



B11 THD STD
B12 NON-THD

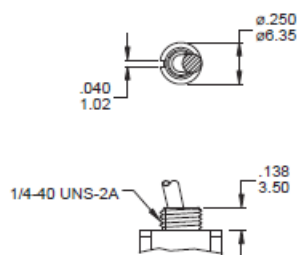


B15 THD STD
B16 NON-THD

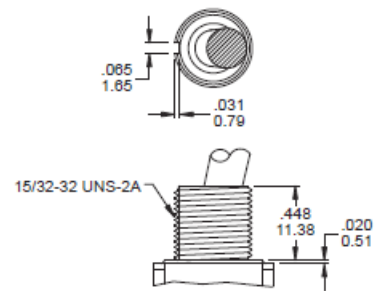


Use with T6 actuators only

B17



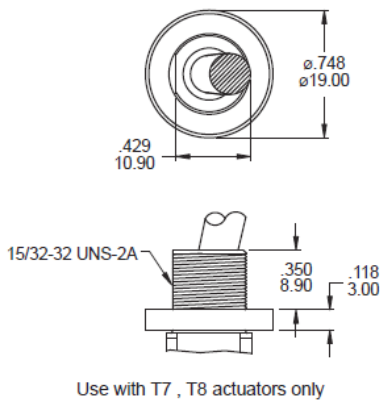
B13



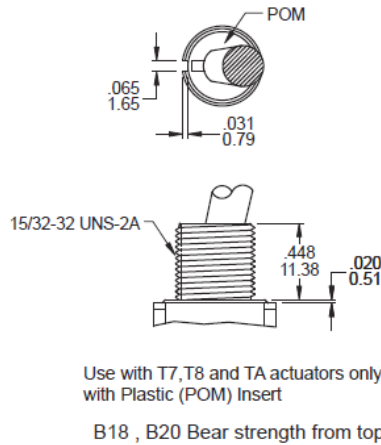
Use with T7, T8 actuators only
B13 Bear strength from top of actuator up to 10kg aside up to 15kg

Miniature Toggle Switches

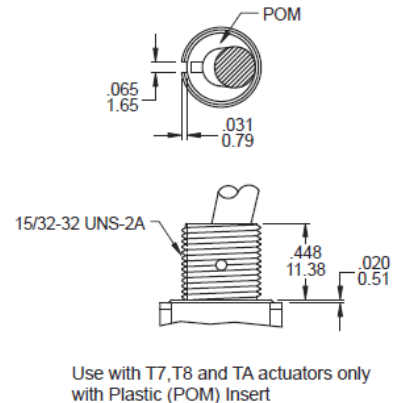
B14 SPLASH PROOF



B18

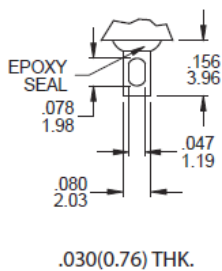


B20

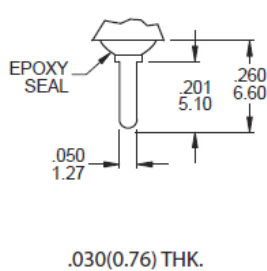


TERMINATION OPTIONS

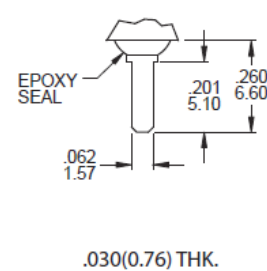
M1 Solder lug



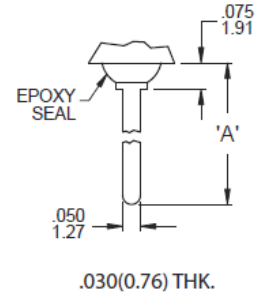
M2 PC Thru-hole



M3 Quick connect



M5 Wire Wrap



OTHER TERMINATION OPTIONS

M6 Right angle P.C. Mount

M7 Vertical right angle P.C. Mount

VS2 Vertical bracket P.C. Mount

VS3 Vertical bracket P.C. Mount

VS5 Vertical bracket P.C. Mount

M6N Right angle P.C. Mount

with snap-in bracket

V2N Vertical bracket P.C. Mount

with snap-in bracket

OPTION CODE	DIM. 'A'
M51	.736 (18.70)
M52	.953 (24.20)
M53	.415 (10.55)
M54	1.062 (26.97)

CONTACT MATERIAL OPTIONS

	CONTACT PLATING	TERMINAL PLATING	RATINGS
Q	Silver	Silver	5 Amps with resistant load @ 120VAC or 28VDC
C	Gold over Silver	Gold over silver	2 Amps with resistant load @ 250VAC
R	Gold	Gold	0.4 Volt - Amps (VA) max. @ 20V max. (AC or DC)

SOLDERING PROCESSES

MANUAL SOLDERING: Use soldering iron of 30 watts, controlled at 350°C approximately 5 seconds while applying solder.

WAVE SOLDERING: Recommended Soldering Temperature: 270 ± 5°C

Duration of Solder Immersion: Max 5 sec. (PCB is 1.6mm in thickness)

Miniature Toggle Switches

Reliability Performance

Resistance Humidity	<p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made :</p> <p><input type="checkbox"/>Temperature : $40\pm 2^{\circ}\text{C}$.</p> <p><input type="checkbox"/>Relative Humidity : 90~95%.</p> <p><input type="checkbox"/>Time : 96 hours.</p>
The Salt Testing	<p>Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made :</p> <p><input type="checkbox"/>Temperature : $35\pm 2^{\circ}\text{C}$.</p> <p><input type="checkbox"/>The ratio of salt-water : 5%.</p> <p><input type="checkbox"/>The spray amount of salt- water : 1~2 ml/h.</p> <p><input type="checkbox"/>Time : 48 hours.</p>
Shock Test	<p>Shall be shocked in accordance with Method 213B condition A of MIL-STD-202F</p> <ul style="list-style-type: none"> ➤ Acceleration; 50g ➤ Action time: $11\pm 1\text{m}$ seconds. ➤ Testing Direction: 6 sides. ➤ Test Cycle: 3 times in each direction.
Operating Life	<p>Measurements shall be made following the test forth below:</p> <ul style="list-style-type: none"> ➤ 3A@120VAC resistive load – silver plated. 1A@250VAC resistive load – silver plated. <p>0.4VA max@ 20VAC max resistive load – gold plated.</p> <ul style="list-style-type: none"> ➤ Rate of Operation: 6-8operation cycles per minute. ➤ Electronics Life Test: 6,000 cycles. <p>Mechanical Life Test: 40,000 cycles.</p>
Soldering Temperature	<p>Manual Soldering :</p> <p>Soldering Temperature : Max.350°C</p> <p>Continuous Soldering Time : Max. 5 seconds.</p> <p>2. WAVE Soldering :</p> <p>Soldering Temperature:$260\pm 5^{\circ}\text{C}$.</p> <p>Duration of Solder Immersion:</p> <p>5 ± 1 seconds</p>

Miniature Toggle Switches

Temperature Profile

3. Frequency of Soldering Process 2 times max.(PCB is 1.6mm in thickness)
■ Precautions in Handling
Care should be exercised so that flux from the upper part of the printed circuit board does not adhere to the switch.

Additional Information

Custom Tariff Number	8536500000
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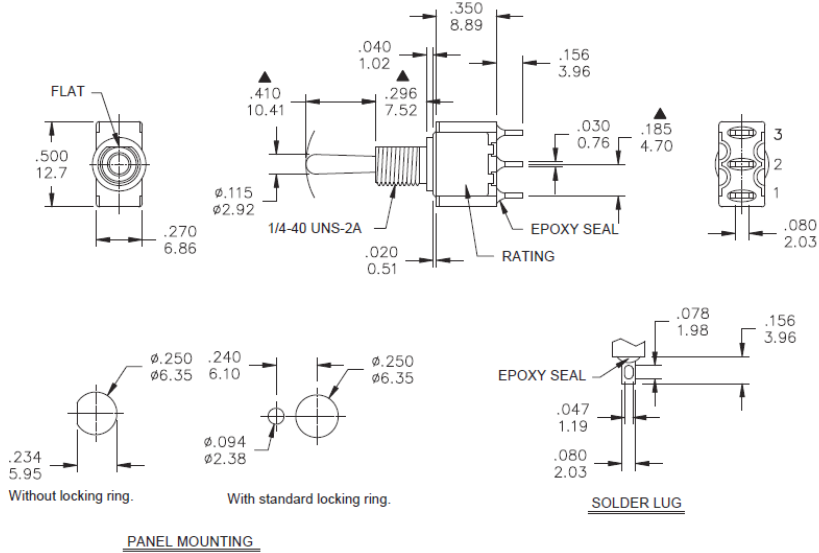
Approvals

Hazardous Area Certification	RoHS 2011/65/EU & 2015/863
Standards Met	IP 67

Miniature Toggle Switches

Stock No. 2099350

Drawing:



Model No.	POS.1	POS.2	POS.3
1MS3	ON	OFF	ON
Term. Comm.	2-3	OPEN	2-1
SCHEMATIC			

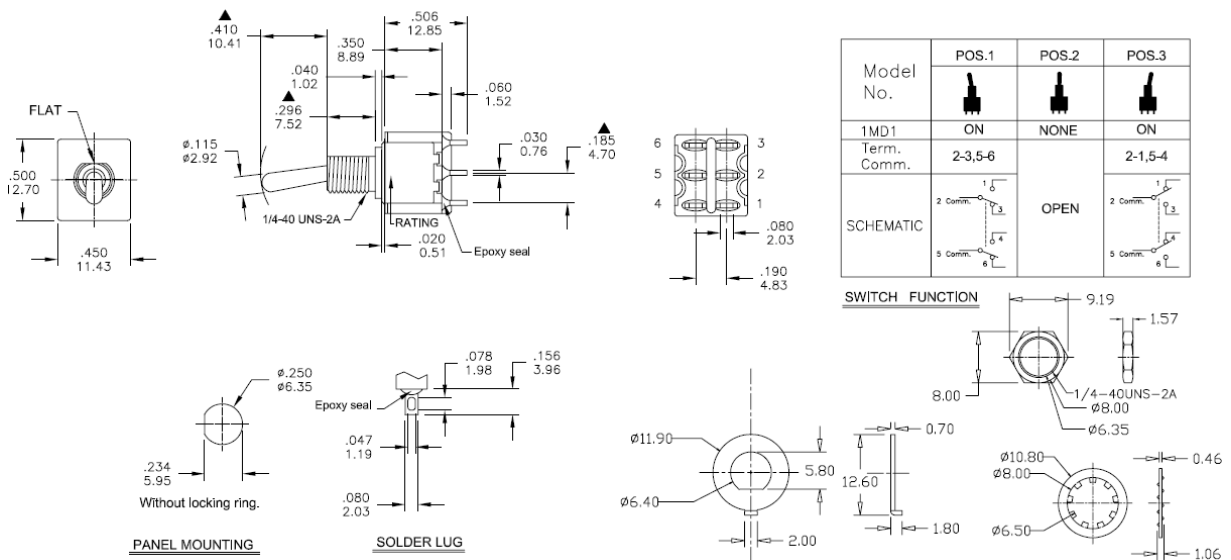
SWITCH FUNCTION

PART NO.	PART NAME	Q'TY
1	MNU-1M01A	1/4 INCH NUTS
2	MNU-1M11	LOCKING RING
3	MNU-1M03	LOCKING WASHER

FILE NAME: HARDWARE-0006

Stock No. 2099347

Drawing:



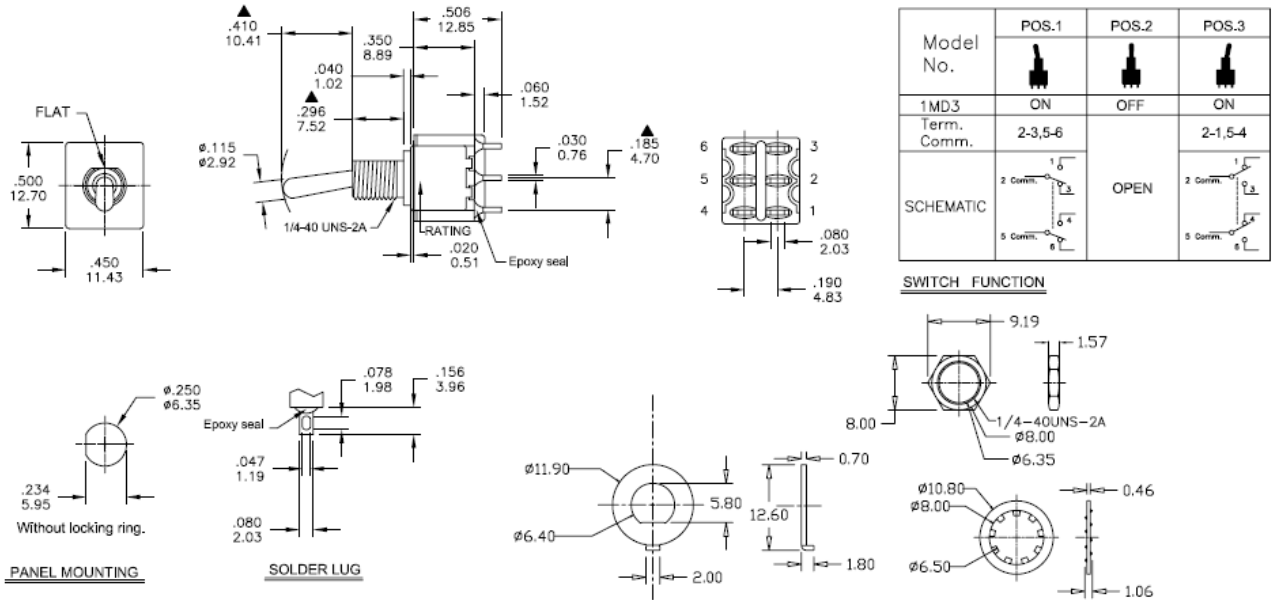
Model No.	POS.1	POS.2	POS.3
1MD1	ON	NONE	ON
Term. Comm.	2-3,5-6	OPEN	2-1,5-4
SCHEMATIC			

SWITCH FUNCTION

Miniature Toggle Switches

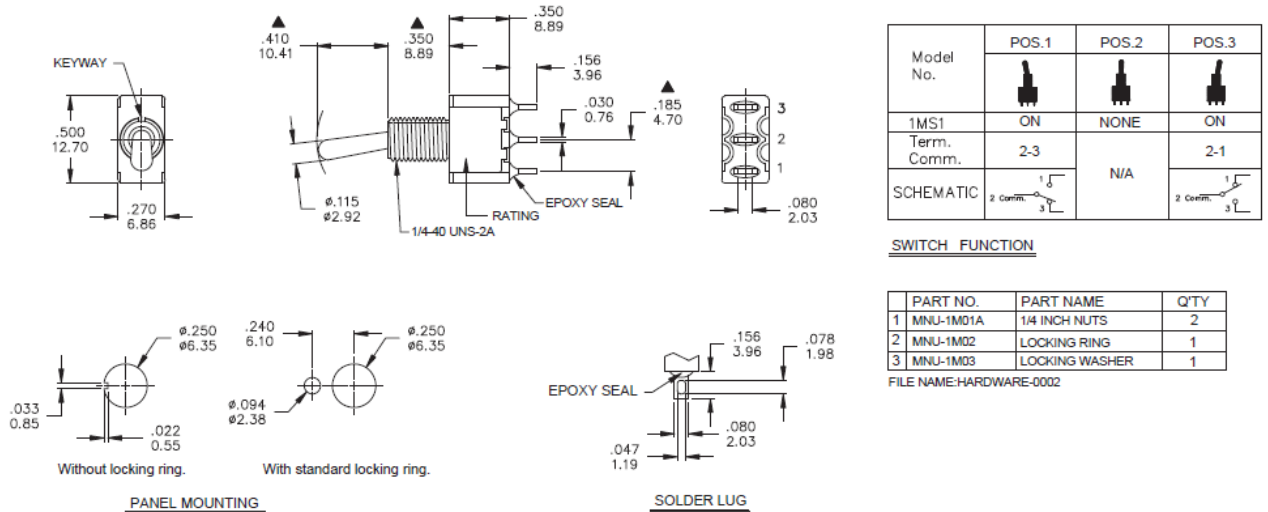
Stock No. 2099348

Drawing:



Stock No. 394459

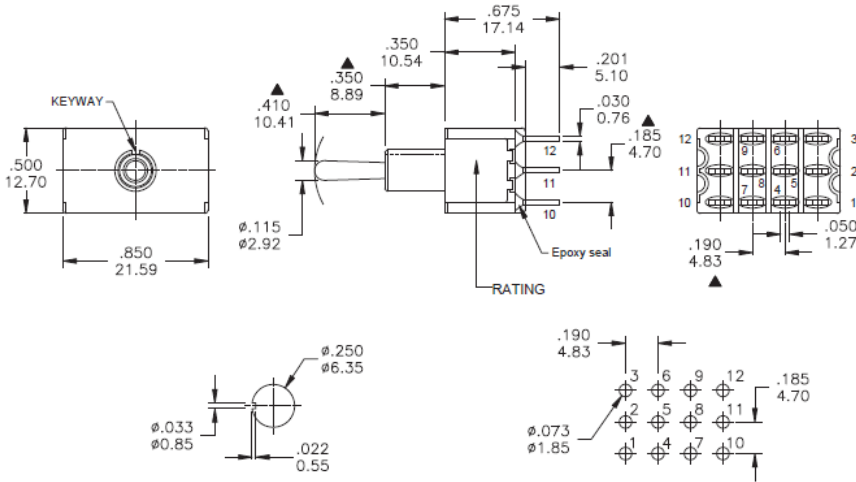
Drawing:



Miniature Toggle Switches

Stock No. 734-7012

Drawing:



Model No.	POS.1	POS.2	POS.3
1M46	ON	ON	ON
Term. Comm.	2-3,5-6 8-9,11-12	2-3,5-4 8-9,11-10	2-1,5-4 8-7,11-10
SCHMATIC			

SWITCH FUNCTION

Accessories / Illustrations