

## SPECIFICATIONS

CONTACT RATING: 3A @120 VAC or 28 VDC (Q Contact)  
 ELECTRICAL LIFE:30,000 make-and-break cycles at full load  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC,100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30 °C to +85 °C

## MATERIALS

CASE - diallyl phthalate ( DAP )  
 TOGGLE HANDLE - Copper alloy , chrome plated  
 BUSHING - Copper alloy , nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy , silver plated  
 SWITCH SUPPORT - Copper alloy , tin-plated

How do you build the switches you need!!

The TS-4 / TS-5, please see the (A) ;

The TS-6/TS-7/TS-8/TS-9, please see the (B)

(A) **TS** - **4** - **S** **E** **B** **Q** - **E** - **A** **5** - **T** **3** - **2** -

| Switch Function |                  | Actuator              | Bushing   | Termination               | Vertical support Bracket                 | Cap color          |
|-----------------|------------------|-----------------------|---|---------------------------|--|--------------------|
| TS-4            | SP on-none-on    | For Bushing E/E1/F/F1 | The 10-48 uns thread  | <b>B</b> solder lug       | (none)                                   | 1 white            |
| TS-4B           | SP on-none-(on)  | <b>S</b> 9.40         | <b>E</b> (std.) flat 5.59   | <b>C</b> P.C              | <b>A5</b> Vertical bracket               | 2 black            |
| TS-4A           | SP on-off-on     | <b>T</b> 5.33         | <b>F</b> key-way 5.59   | <b>D</b> wire wrap        | <b>A5S</b> Vertical bracket (snap-in)    | 3 red              |
| TS-4H           | SP (on)-off-(on) | <b>U</b> 7.37         | Non-thread  |                           |  | 5 yellow           |
| TS-4I           | SP on-off-(on)   | For Bushing G/G1/J/J1 | <b>E1</b> flat 5.59   | <b>Q</b> silver plated    |  | 6 green            |
| TS-5            | DP on-none-on    | <b>V</b> 10.41        | <b>F1</b> key-way 5.59  | <b>R</b> gold plated      |  | 7 blue             |
| TS-5B           | DP on-none-(on)  | <b>X</b> 5.59         | 1/4-40 uns thread   | <b>G</b> gold over silver | <b>Actuator Cap/ Rubber hood Sealing</b> |                    |
| TS-5A           | DP on-off-on     | <b>Locking Lever</b>  | <b>G</b> flat 7.87  | <b>K</b> tin plated       | <b>Actuator Cap</b>                      | <b>RoHS code</b>   |
| TS-5H           | DP (on)-off-(on) | LK Round top          | <b>J</b> key-way 6.60   |                           | <b>T3</b> 9.40 (for actuator S/V/X)      | H = RoHS Compliant |
| TS-5I           | DP on-off-(on)   | LK1 Flat top          | Non-thread  | <b>Epoxy seal</b>         | <b>Rubber Hood</b>                       |                    |
| TS-5C           | DP on-on-on      |                       | <b>G1</b> flat 7.87   | (none) none seal          | <b>E1</b> for bushing G/J                |                    |
|                 |                  |                       | <b>J1</b> key-way 6.60  | <b>E</b> epoxy seal       | <b>E7</b> for bushing E/F                |                    |
|                 |                  |                       | <b>None</b>   |                           |  |                    |
|                 |                  |                       | The actuator LK/LK1 No requirement to choose the bushing, unless the non-thd LKN / LK1N |                           |  |                    |

(B) **TS** - **6** - **T** **E** **1** **Q** - **E** - **S** - **T** **3** - **5** -

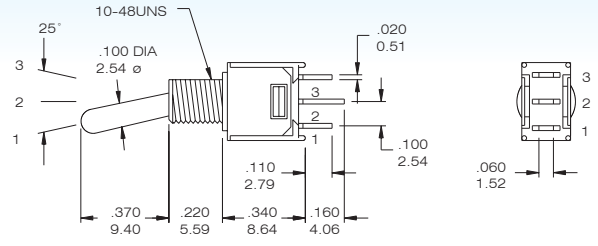
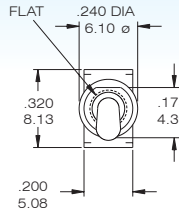
| Horizon Right Angle | Vertical Right Angle | Switches Function | Actuator              | Bushing                    | Contact Material          | Actuator Cap                    |
|---------------------|----------------------|-------------------|-----------------------|----------------------------|---------------------------|---------------------------------|
| TS-6                | TS-8                 | SP on-none-on     | For Bushing E/E1/F/F1 | The 10-48 uns thread       | <b>Q</b> silver plated    | (none)                          |
| TS-6B               | TS-8B                | SP on-none-(on)   | <b>S</b> 9.40         | <b>E</b> flat 5.59         | <b>R</b> gold plated      | <b>T3</b> 9.40 (actuator S/V/X) |
| TS-6A               | TS-8A                | SP on-off-on      | <b>T</b> 5.33         | <b>F</b> key-way 5.59      | <b>G</b> gold over silver |                                 |
| TS-6H               | TS-8H                | SP (on)-off-(on)  | <b>U</b> 7.37         | Non-thread                 | <b>K</b> gold / tin       | <b>Cap color</b>                |
| TS-6I               | TS-8I                | SP on-off-(on)    | For Bushing G/G1/J/J1 | <b>E1</b> (std.) flat 5.59 | <b>Epoxy seal</b>         | 1 white                         |
| TS-7                | TS-9                 | DP on-none-on     | <b>V</b> 10.41        | <b>F1</b> key-way 5.59     | (none) none seal          | 2 black                         |
| TS-7B               | TS-9B                | DP on-none-(on)   | <b>X</b> 5.59         | 1/4-40 uns thread          | <b>E</b> epoxy seal       | 3 red                           |
| TS-7A               | TS-9A                | DP on-off-on      |                       | <b>G</b> flat 7.87         |                           | 5 yellow                        |
| TS-7H               | TS-9H                | DP (on)-off-(on)  |                       | <b>J</b> key-way 6.60      | <b>Bracket type</b>       | 6 green                         |
| TS-7I               | TS-9I                | DP on-off-(on)    |                       | Non-thread                 | (none) std. Straight      | 7 blue                          |
| TS-7C               | TS-9C                | DP on-on-on       |                       | <b>G1</b> flat 7.87        | <b>S</b> Snap-in type     |                                 |
|                     | TS-82                | SP on-none-on     |                       | <b>J1</b> key-way 6.60     |                           | <b>RoHS code</b>                |
|                     | TS-82B               | SP on-none-(on)   |                       |                            |                           | H = RoHS Compliant              |
|                     | TS-82A               | SP on-off-on      |                       |                            |                           |                                 |
|                     | TS-82H               | SP (on)-off-(on)  |                       |                            |                           |                                 |
|                     | TS-82I               | SP on-off-(on)    |                       |                            |                           |                                 |



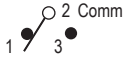
## SPDT



| Model No.   | Switching position |      |      |
|-------------|--------------------|------|------|
|             |                    |      |      |
| TS-4        | ON                 | none | ON   |
| TS-4A       | ON                 | OFF  | ON   |
| TS-4B       | ON                 | None | (ON) |
| TS-4H       | (ON)               | OFF  | (ON) |
| TS-4I       | ON                 | OFF  | (ON) |
| Term. Comm. | 2-3                | open | 2-1  |



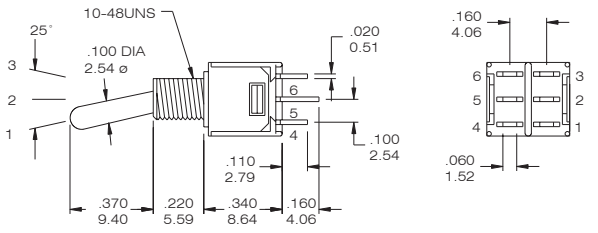
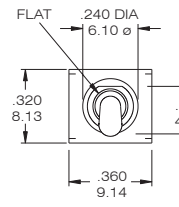
TS-4 - SEBQ



## DPDT



| Model No.             | Switching position |         |         |
|-----------------------|--------------------|---------|---------|
|                       |                    |         |         |
| TS-5                  | ON                 | none    | ON      |
| TS-5A                 | ON                 | OFF     | ON      |
| TS-5B                 | ON                 | None    | (ON)    |
| TS-5H                 | (ON)               | OFF     | (ON)    |
| TS-5I                 | ON                 | OFF     | (ON)    |
| Term. Comm.           | 2-3,5-6            | open    | 2-1,5-4 |
| 3 way switches (SP3T) |                    |         |         |
| TS-5C                 | ON                 | ON      | ON      |
| Term. Comm.           | 2-3,5-6            | 2-3,5-4 | 2-1,5-4 |



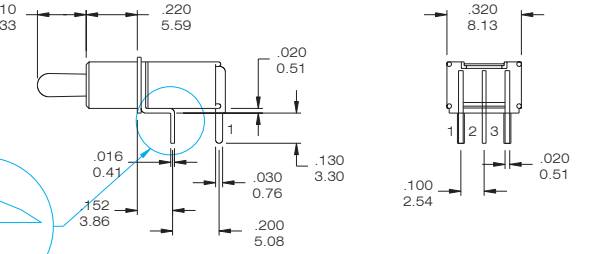
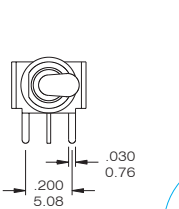
TS-5 - SEBQ



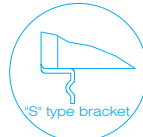
## SPDT



| Model No.   | Switching position |      |      |
|-------------|--------------------|------|------|
|             |                    |      |      |
| TS-6        | ON                 | none | ON   |
| TS-6A       | ON                 | OFF  | ON   |
| TS-6B       | ON                 | None | (ON) |
| TS-6H       | (ON)               | OFF  | (ON) |
| TS-6I       | ON                 | OFF  | (ON) |
| Term. Comm. | 2-3                | open | 2-1  |



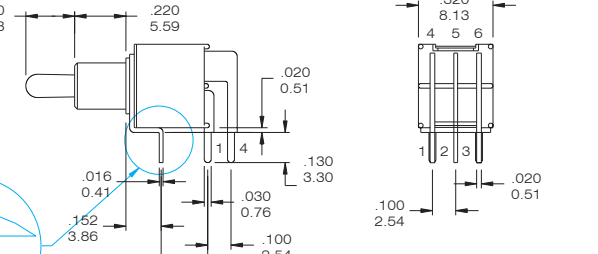
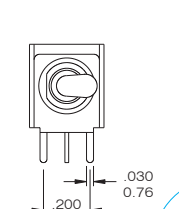
TS-6 - TE1Q / TS-6-TE1Q-S



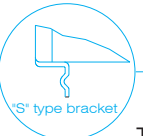
## DPDT



| Model No.             | Switching position |         |         |
|-----------------------|--------------------|---------|---------|
|                       |                    |         |         |
| TS-7                  | ON                 | none    | ON      |
| TS-7A                 | ON                 | OFF     | ON      |
| TS-7B                 | ON                 | None    | (ON)    |
| TS-7H                 | (ON)               | OFF     | (ON)    |
| TS-7I                 | ON                 | OFF     | (ON)    |
| Term. Comm.           | 2-3,5-6            | open    | 2-1,5-4 |
| 3 way switches (SP3T) |                    |         |         |
| TS-7C                 | ON                 | ON      | ON      |
| Term. Comm.           | 2-3,5-6            | 2-3,5-4 | 2-1,5-4 |



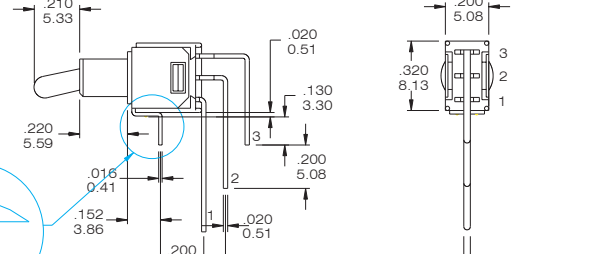
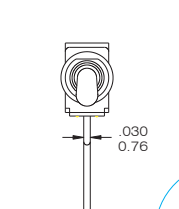
TS-7 - TE1Q / TS-7-TE1Q-S



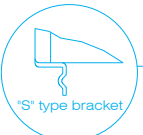
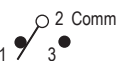
## SPDT



| Model No.   | Switching position |      |      |
|-------------|--------------------|------|------|
|             |                    |      |      |
| TS-8        | ON                 | none | ON   |
| TS-8A       | ON                 | OFF  | ON   |
| TS-8B       | ON                 | None | (ON) |
| TS-8H       | (ON)               | OFF  | (ON) |
| TS-8I       | ON                 | OFF  | (ON) |
| Term. Comm. | 2-3                | open | 2-1  |



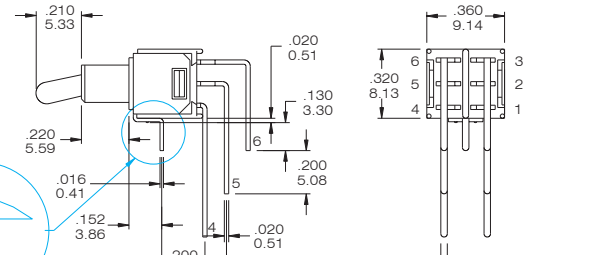
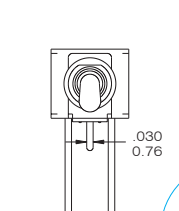
TS-8 - TE1Q / TS-8-TE1Q-S



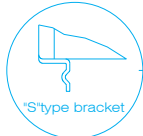
## DPDT



| Model No.             | Switching position |         |         |
|-----------------------|--------------------|---------|---------|
|                       |                    |         |         |
| TS-9                  | ON                 | none    | ON      |
| TS-9A                 | ON                 | OFF     | ON      |
| TS-9B                 | ON                 | None    | (ON)    |
| TS-9H                 | (ON)               | OFF     | (ON)    |
| TS-9I                 | ON                 | OFF     | (ON)    |
| Term. Comm.           | 2-3,5-6            | open    | 2-1,5-4 |
| 3 way switches (SP3T) |                    |         |         |
| TS-9C                 | ON                 | ON      | ON      |
| Term. Comm.           | 2-3,5-6            | 2-3,5-4 | 2-1,5-4 |

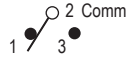
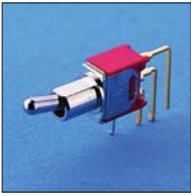


TS-9 - TE1Q / TS-9-TE1Q-S

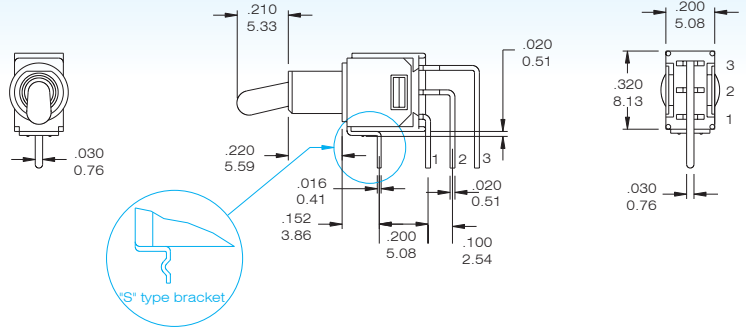




SPDT



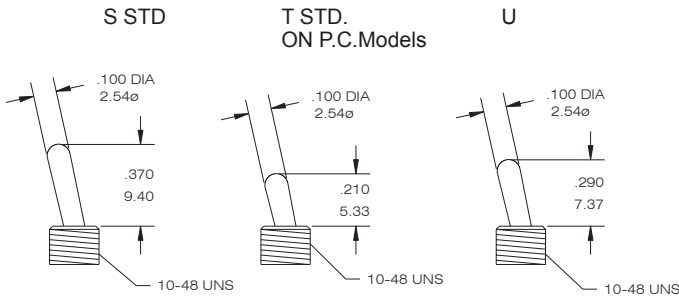
| Model No.   | Switching position |      |      |
|-------------|--------------------|------|------|
|             |                    |      |      |
| TS-82       | ON                 | none | ON   |
| TS-82A      | ON                 | OFF  | ON   |
| TS-82B      | ON                 | None | (ON) |
| TS-82H      | (ON)               | OFF  | (ON) |
| TS-82I      | ON                 | OFF  | (ON) |
| Term. Comm. | 2-3                | open | 2-1  |



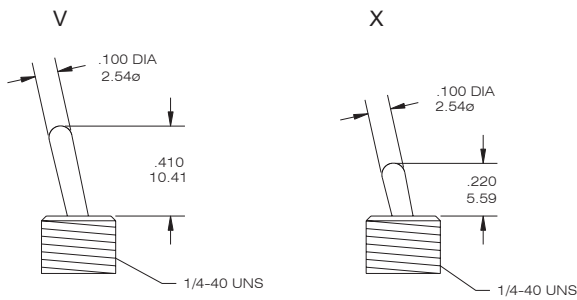
TS-82- TE1Q / TS-82-TE1Q-S

Actuator Option

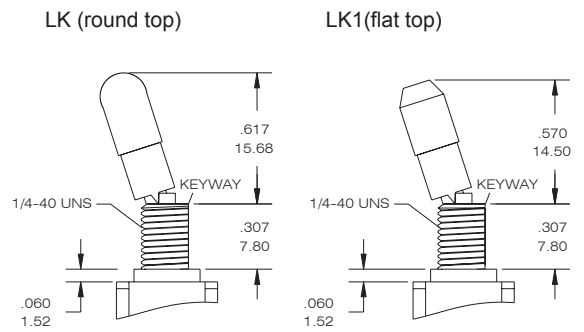
only applied for the bushing (E/E1/F/F1)



only applied for the bushing (G/G1/J/J1)



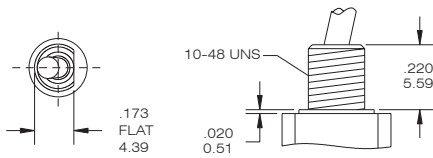
Locking Lever



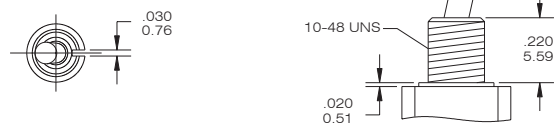
Bushing Option Code not required unless non-thread ordered, choose the bushing code "N" -- LKN / LK1N

Bushing Option

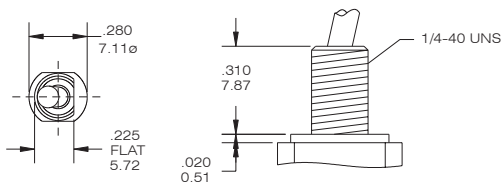
E THD. STD.  
E1 NON THD. STD. ON P.C. Model



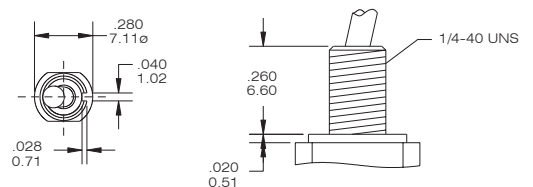
F THD  
F1 NON THD



G THD  
G1 NON THD



J THD  
J1 NON THD





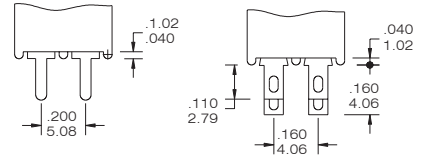
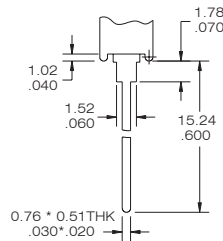
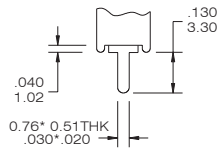
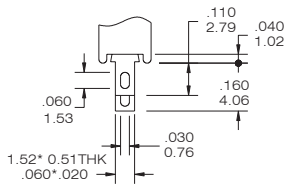
## TERMINAL OPTION ( ONLY FOR THE TS-4 / TS-5 )

B Solder Lug(STD)

C PRINTED CIRCUIT

D Wire Wrap

DPDT



## CONTACT MATERIAL OPTIONS

| CODE | CONTACT MATERIAL               | TERMINAL MATERIAL              | RATING   |
|------|--------------------------------|--------------------------------|--|
| Q    | Silver plated                  | Silver plated                  | 3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC                                      |
| R    | Gold plated over nickel plated | Gold plated over nickel plated | 0.4VA MAX @ 20 V AC or DC MAX  |
| G    | Gold plated over silver plated | Gold plated over silver plated | 0.4 VA MAX @ 20 V AC or DC MAX or<br>3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC |
| K    | Gold plated over nickel plated | Tin over nickel plated         | 0.4VA MAX @ 20 V AC or DC MAX  |

\* THE K option is only for some special item. Please inquire first when you need the "K" option

## P.C.B MOUNTING DIMENSION

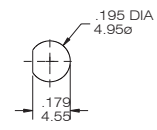
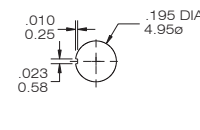
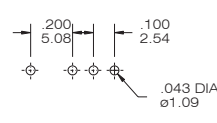
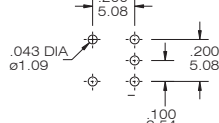
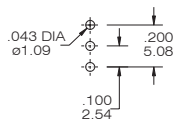
## PANEL MOUNTING DIMENSION

TS-4 (PC terminal)

TS-6

TS-8

10-48 BUSHING

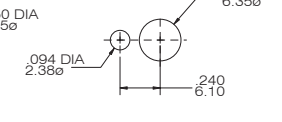
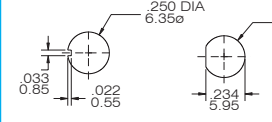
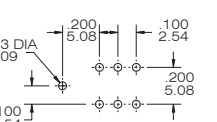
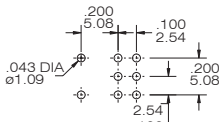
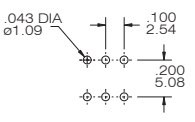


TS-5(PC terminal)

TS-7

TS-9

1/4 IN. BUSHING



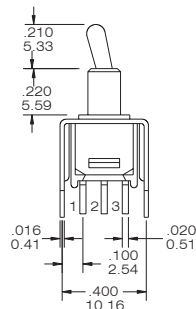
without lock ring

with lock ring

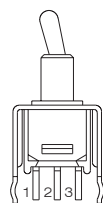
## VERTICAL SUPPORT BRACKET OPTION

only for the TS-4/TS-5. If you need the vertical support bracket, please build the terminal option - "C" code

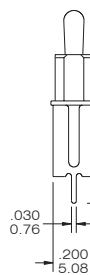
A5/ A5S



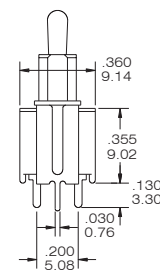
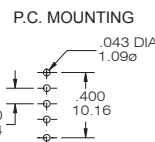
A5  
STD.



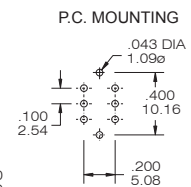
A5S  
Snap-in



TS-4-TE1CQ-A5



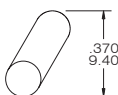
TS-5-TE1CQ-A5



## Toggle Cap Option

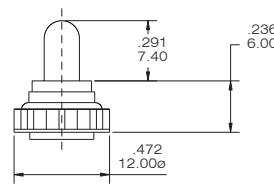
## Rubber Hood Sealing

T3 for actuator "S" only

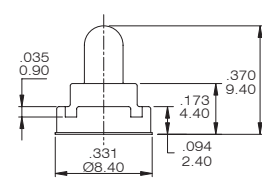


Material Vinyl

| code | color | code | color  |
|------|-------|------|--------|
| 1    | white | 5    | yellow |
| 2    | black | 6    | green  |
| 3    | red   | 7    | blue   |



E1 for bushing G/J  
(1/4 - 40UNS)



E7 for bushing E/F  
(10-48UNS special code)