

# SMT TL series

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## Surface mount tiny washable toggle switches

*Distinctive features and specifications*

A



- ❑ Entirely designed for surface mount
- ❑ Tape and reel packaging
- ❑ Reflow solderable
  - High temperature plastic materials
  - Tin plated ground plate
  - Terminal coating : tin alloy over nickel plating
  - Terminals turned to the outside, preventing the shadow effect in infrared soldering and permitting visual inspection of solder joints
  - Distance between case and circuit : 0,55 mm (.021)
  - End stackable with 10,16 mm (.40) pitch
  - Available with positioning pins to ensure switch orientation during the reflow process and increasing switch mechanical resistance
- ❑ Protected against electrostatic discharges (ESD) up to 10 KV
- ❑ Washable
  - Construction withstands cleaning processes, including hot water under pressure

### ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 0,4VA 20V max. AC or DC
- Minimum load : 10mA 50mV or 10µA 5VDC
- Initial contact resistance : 20 mΩ max
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 1.000 Vrms. 50 Hz min. between terminals and frame 500 Vrms. 50 Hz min. between terminals
- Electrical life at full load :
  - 2 position switches : 60.000 cycles
  - 3 position switches : 30.000 cycles
- Static resistance : 10 KV (Schaffner equipment)

### GENERAL SPECIFICATIONS

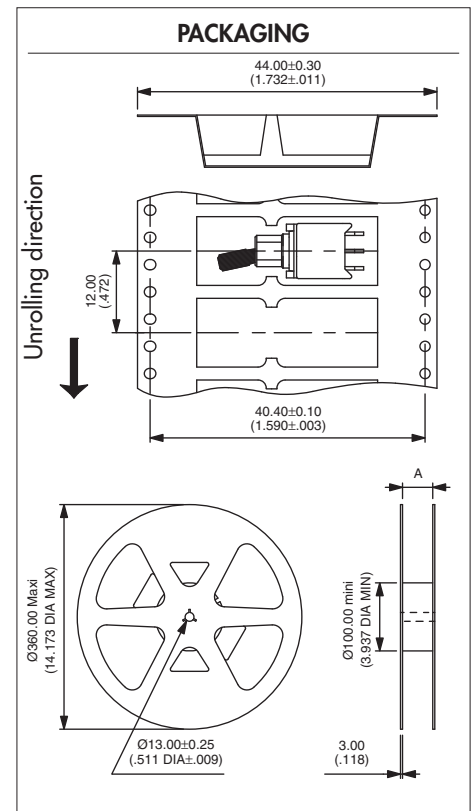
- Operating temperature : -40°C to +85°C
- Moisture resistance : 21 days per IEC 512-6 test 11c
- Vibration resistance : 10-500 Hz / 10 g per IEC 512-4 test 6d
- Shock resistance : 50 g per IEC 512-4 test 6c

### MATERIALS

- Case : high temperature plastic material UL94-V0
- Actuator : brass, nickel plated, with high temperature UL94-V0 plastic cap
- Ground plate and positioning pins : steel, tin plated
- Contacts : brass, gold plated
- Terminals : brass, with pure tin plating over nickel barrier

### SOLDERING AND CLEANING

- Reflow soldering : infrared, vapor phase or infrared convection
- Washable per IEA-RS448-2 :
  - water + detergent - preferred
  - solvents
- Further information on reflow soldering : see end of catalogue.



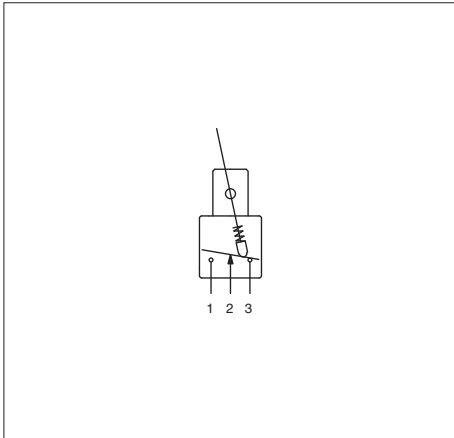
Tape width	24.00 (.944)	44.00 (1.732)
Reel (dimension A)	24.40±2.00/0.00 (.960±.078/.000)	44.40±2.00/0.00 (1.748±.078/.000)

**Standard packaging unit : 700 pieces**  
 Tape meeting international standard IEC - Publication 286-3 (EIA481A)  
 Start leader : 400 mm min.



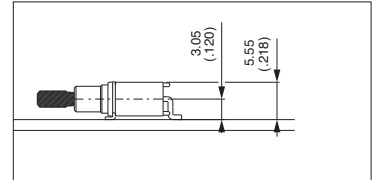
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**Dimensions :** First dimensions are in mm while inches are shown as bracketed numbers.



- With or without positioning pins
- Single pole

Also available for vertical mounting. On request.

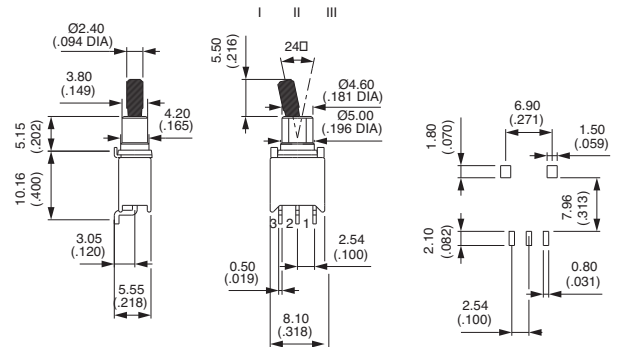


### Without positioning pins



TL36WS84000  
TL39WS84000  
TL37WS84000  
TL38WS84000  
TL32WS84000

III	II	I
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

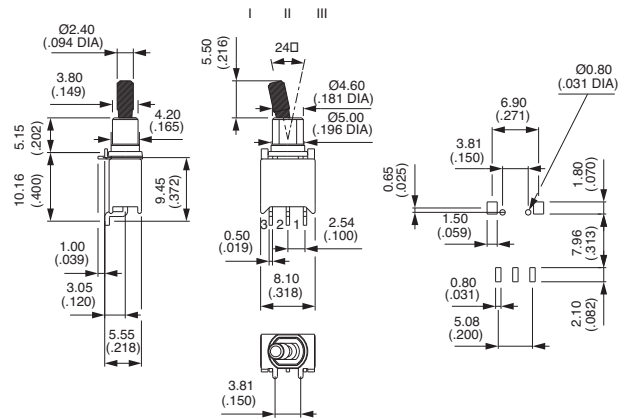


### With positioning pins



TL36WS84065  
TL39WS84065  
TL37WS84065  
TL38WS84065  
TL32WS84065

III	II	I
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM



## Tiny washable toggle switches

*Distinctive features and specifications*



- Process sealed**
  - Single piece case
  - O-ring seal between actuator and bushing
  - Epoxy sealed terminals
- Wide variety of contact materials**
- Same PCB layout as TP, TR and TG tiny switches**

### ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
  - gold plated contacts : 0,4VA 20V max. AC or DC
  - silver plated contacts : 0,5A 48V max. AC or DC
- Minimum load : 10mA 50mV - 10 $\mu$ A 5VDC
- Contact resistance : 20 m $\Omega$  max.
- Insulation resistance : 1.000 M $\Omega$  min. at 500VDC
- Dielectric strength :
  - 1.000 Vrms 50 Hz min. between terminals and frame
  - 500 Vrms 50 Hz min. between terminals
- Electrical life at full load :

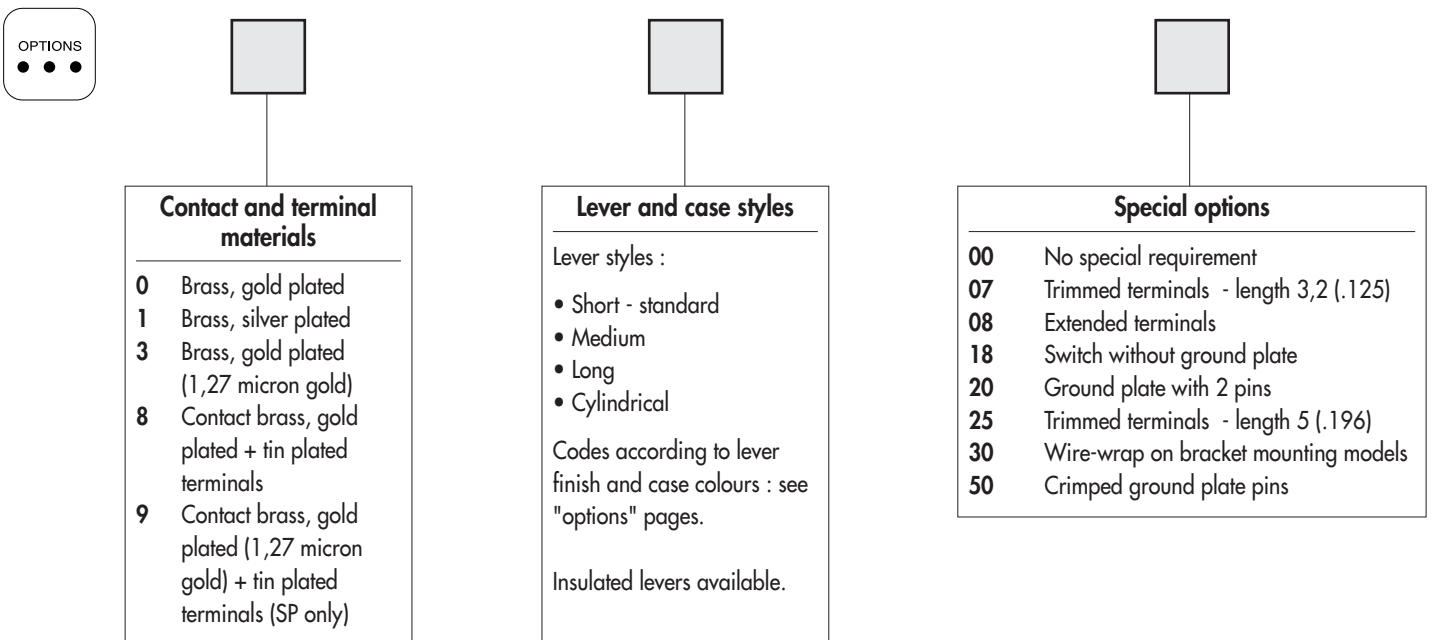
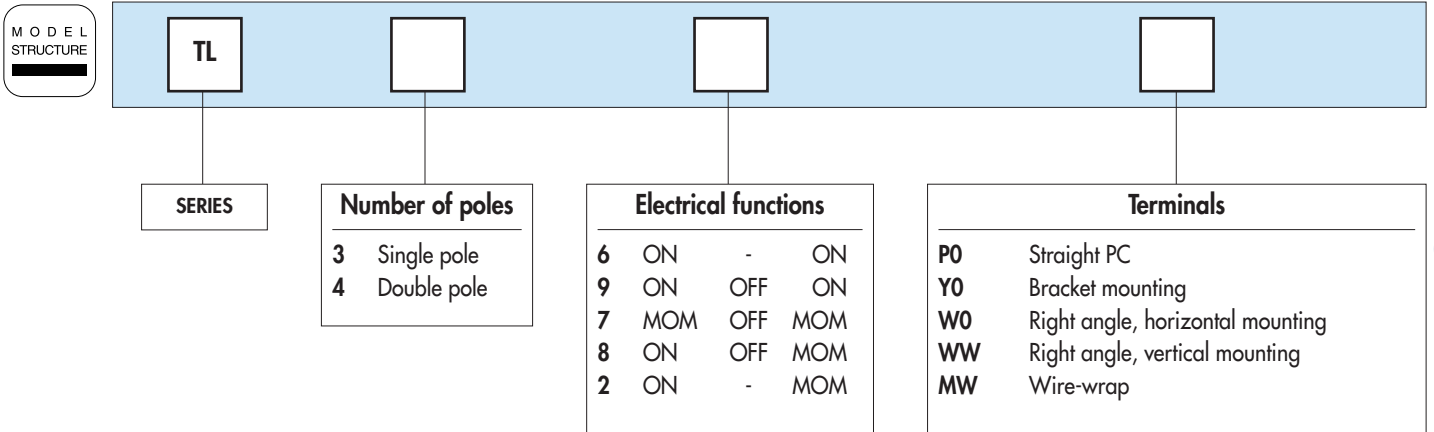
Contacts	Number of cycles	
	2 positions	3 positions
Gold plated	60.000	30.000
Silver plated	20.000	10.000

### MATERIALS

- Case : PBT
- Actuator : brass, nickel plated
- Contacts and terminals :
  - 0 : brass, gold plated
  - 1 : brass, silver plated
  - 3 : brass, gold plated (1,27 micron gold)
  - 8 : contact brass, gold plated + tin plated terminals
  - 9 : contact brass, gold plated (1,27 micron gold) + tin plated terminals
- Terminal seal : epoxy

### GENERAL SPECIFICATIONS

- Strength of terminals : pull-out force - 10N max.
- Operating temperature : -30°C to +85°C
- Moisture : 21 days 95 % (NFC 20-603 - IEC 68-2-3)
- Cleaning : solvents or water + detergent
- Wave soldering : 260°C - 5 sec.



### ABOUT THIS SERIES

On the following pages, you will find successively :

- model structure of switches
- options in the same order as in above chart

**Dimensions** : first dimensions are in mm while inches are shown as bracketed numbers.



**NOTICE** : please note that not all combinations of above numbers are available. Refer to the following pages for further information.



**Packaging unit** : 100 pieces, except for models with WW terminals (50 pieces)



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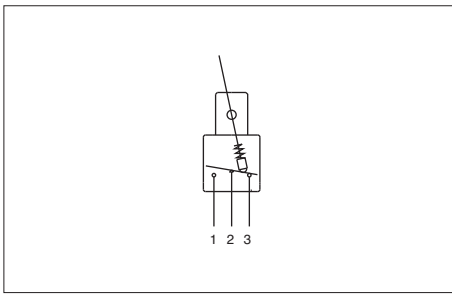
# TL series

Tiny washable toggle switches

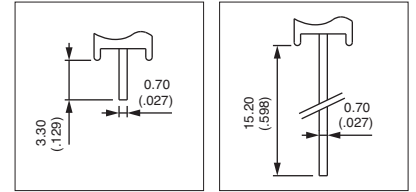
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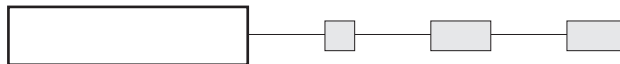
A



- Straight PC, right angle or wire-wrap terminals
- 1 and 2 pole configurations



MODEL STRUCTURE

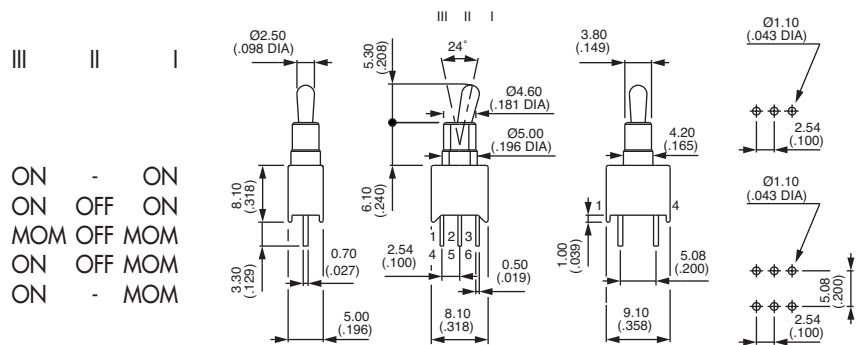


Shown with standard lever

## Straight PC terminals : TL..P0



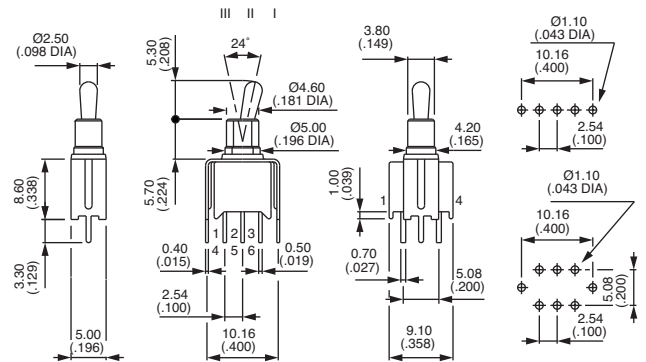
Single pole	Double pole	III	II	I
TL36P0	TL46P0	ON	-	ON
TL39P0	TL49P0	ON	OFF	ON
TL37P0	TL47P0	MOM	OFF	MOM
TL38P0	TL48P0	ON	OFF	MOM
TL32P0	TL42P0	ON	-	MOM



## Straight PC terminals - bracket mounting : TL..Y0



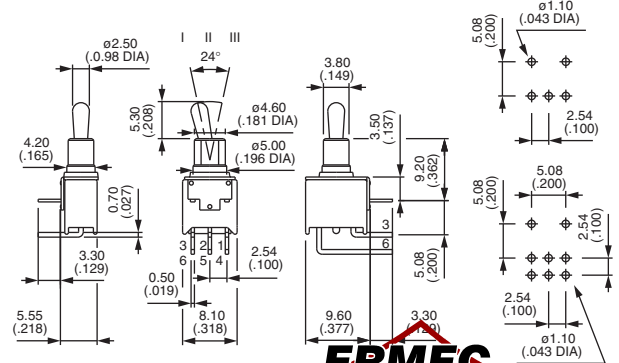
Single pole	Double pole	III	II	I
TL36Y0	TL46Y0	ON	-	ON
TL39Y0	TL49Y0	ON	OFF	ON
TL37Y0	TL47Y0	MOM	OFF	MOM
TL38Y0	TL48Y0	ON	OFF	MOM
TL32Y0	TL42Y0	ON	-	MOM



## Right angle terminals - horizontal mounting : TL..W0



Single pole	Double pole	III	II	I
TL36W0	TL46W0	ON	-	ON
TL39W0	TL49W0	ON	OFF	ON
TL37W0	TL47W0	MOM	OFF	MOM
TL38W0	TL48W0	ON	OFF	MOM
TL32W0	TL42W0	ON	-	MOM



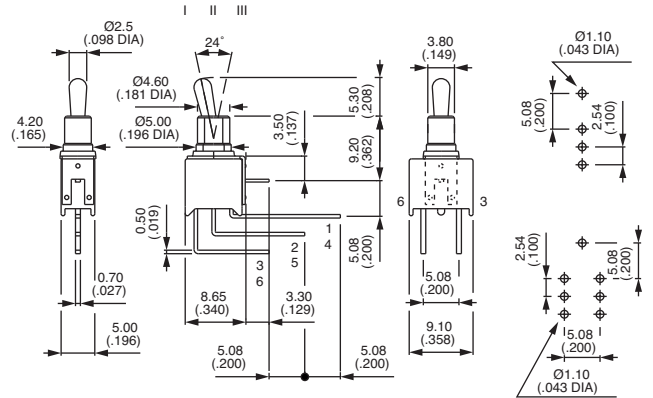
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**Right angle terminals - vertical mounting : TL..WW**



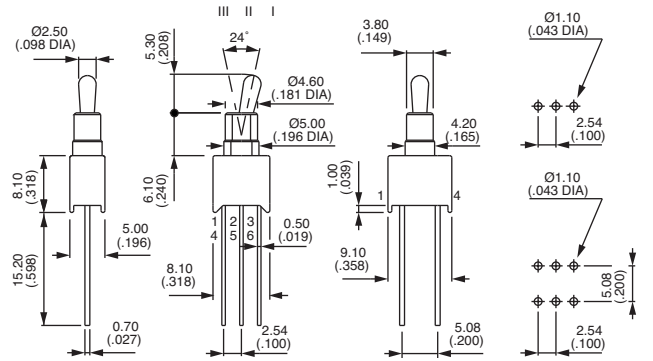
Single pole	Double pole	III	II	I
TL36WW	TL46WW	ON	-	ON
TL39WW	TL49WW	ON	OFF	ON
TL37WW	TL47WW	MOM	OFF	MOM
TL38WW*	TL48WW*	ON	OFF	MOM
TL32WW*	TL42WW*	ON	-	MOM



**Wire-wrap terminals : TL..MW**

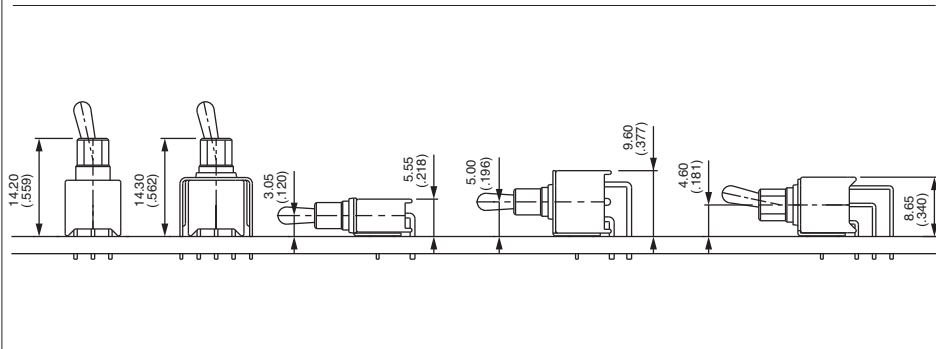


Single pole	Double pole	III	II	I
TL36MW	TL46MW	ON	-	ON
TL39MW	TL49MW	ON	OFF	ON
TL37MW	TL47MW	MOM	OFF	MOM
TL38MW	TL48MW	ON	OFF	MOM
TL32MW	TL42MW	ON	-	MOM



\* Functions 2 and 8 : reversed connection available. Consult factory.

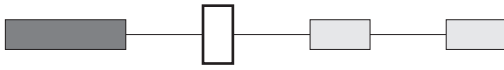
**PCB MOUNTING**



# TL series

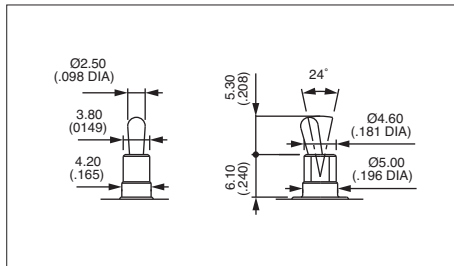
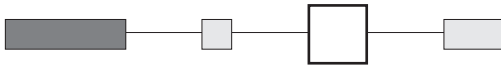
Tiny washable toggle switches

## CONTACT AND TERMINAL MATERIALS



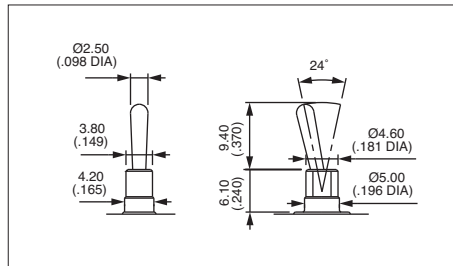
- 0 Brass, gold plated
- 1 Brass, silver plated
- 3 Brass, gold plated (1,27 micron gold)
- 8 Contact brass, gold plated + tin plated terminals
- 9 Contact brass, gold plated (1,27 micron gold) + tin plated terminals (single pole only)

## LEVER AND CASE STYLES



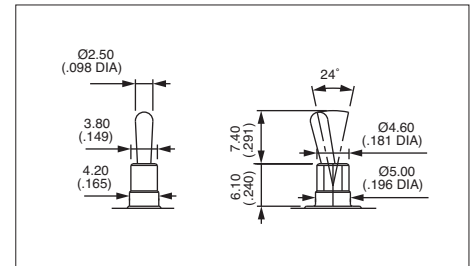
Short - standard

LEVER \ CASE	Blue	Black
Nickel plated	00	50
Matt black	01	51



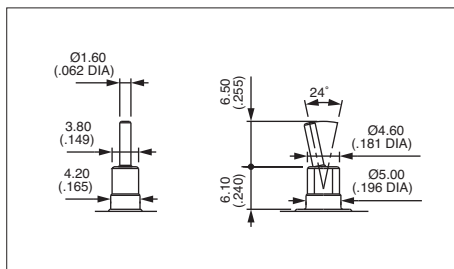
Long

LEVER \ CASE	Blue	Black
Nickel plated	02	52
Matt black	03	53



Medium

LEVER \ CASE	Blue	Black
Nickel plated	04	54
Matt black	05	55



Cylindrical

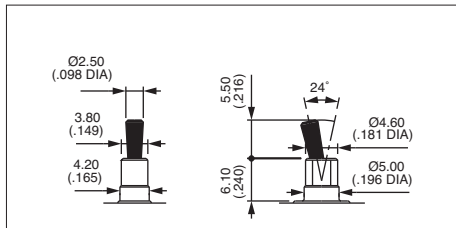
LEVER \ CASE	Blue	Black
Nickel plated	-	56



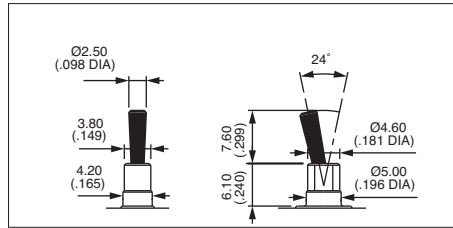


## LEVER AND CASE STYLES (continued)

**Insulated levers** - Protected against electrostatic discharges (ESD) up to 10KV. Black colour.

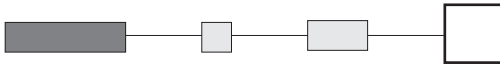


**40** With blue case  
**94** With black case



**30** With blue case  
**90** With black case

## SPECIAL OPTIONS



- 00** No special requirement
- 07** **Trimmed terminals** - length 3,2 mm (.125) for TL..WW models only
- 08** **Extended terminals** for TL..W0 models only
- 18** Switch **without ground plate** for TL..WW models only
- 20** **Ground plate with 2 pins** for TL..WW models only
- 25** **Trimmed terminals** - length 5 mm (.196) for all models, except TL..WW
- 30** **Wire-wrap terminals** on models with mounting **bracket**
- 50** **Crimped ground plate pins.**  
Retains switch on PCB during handling and wave soldering.  
For models TL..W0, TL..WW and TL..Y0 single and double pole.

