# PEM

# TL series

# Subminiature washable toggle switches



5471.1803

# **DISTINCTIVE FEATURES**

Process sealed
Single piece case
Front and rear sealing
Wide variety of contact materials
Same PCB layout as TP, TR and TG subminiature switches



### **ENVIRONMENTAL SPECIFICATIONS**

- Operating temperature : -30 °C to +85 °C (-22 °F to +185 °F)
- Moisture: 21 days 95 % (NFC 20-603 IEC 68-2-3)



### **ELECTRICAL SPECIFICATIONS**

- Max. current/voltage rating with resistive load :
  - gold plated contacts: 0.4 VA 20 V max. AC or DC
- silver plated contacts: 0.5 A 48 V max. AC or DC
- Minimum load: 10 mA 50 mV 10 μA 5 VDC
- Contact resistance : 20 m $\Omega$  max.
- Insulation resistance : 1,000 M $\Omega$  min. at 500 VDC
- 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



### **GENERAL SPECIFICATIONS**

- Strength of terminals : pull-out force 10 N max.
- Cleaning : solvents or water + detergent
- Wave soldering: 260 °C (500 °F) 5 sec.

The company reserves the right to change specifications without notice.





Subminiature washable toggle switches



# **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

APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.



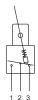
# **TERMINALS**





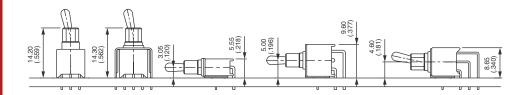


# **ELECTRICAL FUNCTIONS**



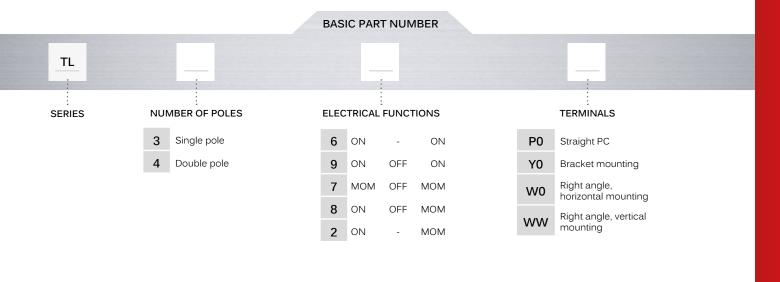


# **PCB MOUNTING**



# Subminiature washable toggle switches

### **BUILD YOUR PART NUMBER**



#### **OPTIONS CONTACT AND TERMINAL MATERIALS** LEVER STYLES / CASE COLORS SPECIAL OPTIONS With blue case With black case Brass, gold plated Short lever, Short lever, 00 1 Brass, silver plated nickel plated nickel plated Brass, gold plate 3 (1.27 micron gol

Brass, gold plated (1.27 micron gold)	01	Short lever, black	51	Short lever, black
Contact brass, gold plated + tin plated terminals	02	Long lever, nickel plated	52	Long lever, nickel plated
Contact brass,	03	Long lever, black	53	Long lever, black
gold plated (1.27 micron gold) + tin plated terminals	04	Medium lever, nickel plated	54	Medium lever, nickel plated
(SP only)	05	Medium lever, black	55	Medium lever, black
	40	Short insulated lever	56	Cylindrical lever, nickel plated
	30	Long insulated lever	94	Short insulated lever
			90	Long insulated

00	No special requirement
07	Trimmed terminals - length 3.2 (.125
80	Extended terminals
18	Switch without ground plate
20	Ground plate with 2 pins
25	Trimmed terminals - length 5 (.196)
	9 ( )
50	Crimped ground plate pins
	- , ,
	- , ,
	- , ,
	- , ,



### **ABOUT THIS SERIES**

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On the following pages, you will find successively basic part numbers of switches and options in the same order as in above chart.

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

lever

Subminiature washable toggle switches

### STRAIGHT PC TERMINALS: TL..P0



		III	II	1
Single pole	Double pole			
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



		III	II	l l
Single pole	Double pole			
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..WO



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

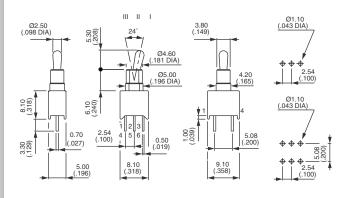
# RIGHT ANGLE TERMINALS VERTICAL MOUNTING: TL..WW

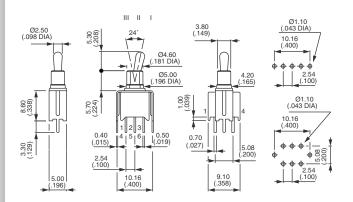


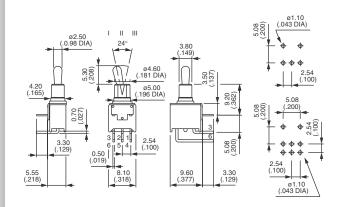
		III	II	- 1
Single pole	Double pole			
TL36WW	TL46WW	ON	-	ON
TL39WW	TL49WW	ON	OFF	ON
TL37WW	TL47WW	MOM	OFF	MOM
TL38WW*	TL48WW*	ON	OFF	MOM
TL32WW*	TL42WW*	ON	-	MOM

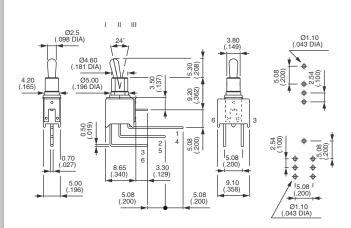
<sup>\*</sup>Functions 2 and 8: reversed connection available. On request.

#### Shown with standard lever









# Subminiature washable toggle switches

# CONTACT AND TERMINAL MATERIALS

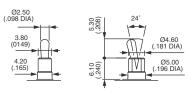


- 0 Brass, gold plated
- Brass, silver plated 1
- 3 Brass, gold plated (1.27 micron gold)
- 8 Contact brass, gold plated + tin plated terminals
- 9 Contact brass, gold plated (1.27 micron gold) + tin plated terminals (single pole only)

#### LEVER AND CASE STYLES

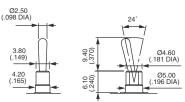


#### SHORT - STANDARD



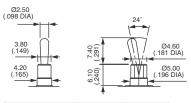
CASE LEVER	Blue	Black
Nickel plated	00	50
Black	01	51

# LONG



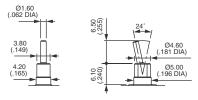
CASE	Blue	Black
Nickel plated	02	52
Black	03	53

### MEDIUM



CASE	Blue	Black
Nickel plated	04	54
Black	05	55

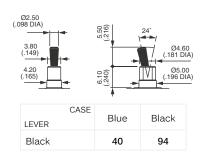
#### CYLINDRICAL

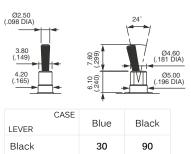


CASE	Blue	Black
Nickel plated	-	56

### INSULATED LEVERS

Protected against electrostatic discharges (ESD) up to 10 KV.





Subminiature washable toggle switches

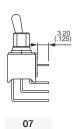
### SPECIAL OPTIONS

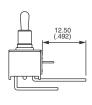


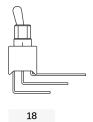
- 00 No special requirement
- 07 Trimmed terminals - length 3,2 mm (.125) for TL..WW models only
- 80 Extended terminals for TL..W0 models only
- Switch without ground plate for TL..WW models only 18
- 20 Ground plate with 2 pins for TL..WW models only
- 25 Trimmed terminals - length 5 mm (.196) for all models, except TL..WW
- 50 Crimped ground plate pins.

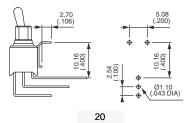
Retains switch on PCB during handling and wave soldering.

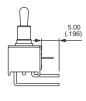
For models TL..W0, TL..WW and TL..Y0 single and double pole.













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