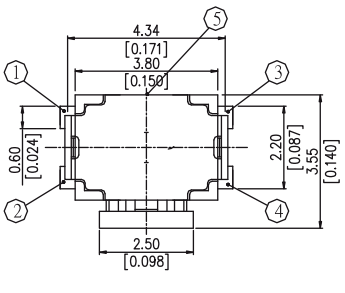
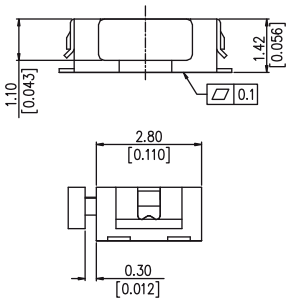
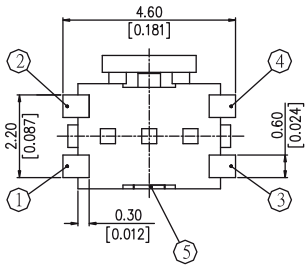
Tactile Switches

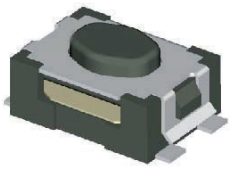
2.8x3.8mm Side/Vertical Push Tactile Switch — TP816 Series

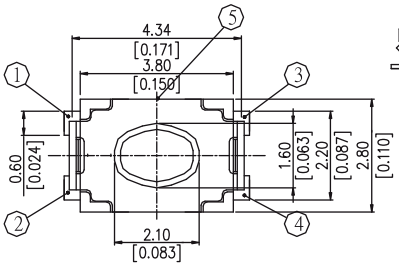


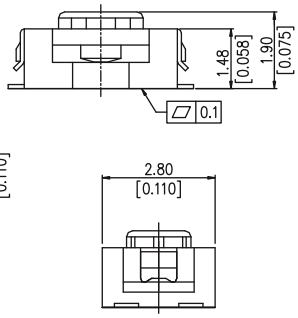


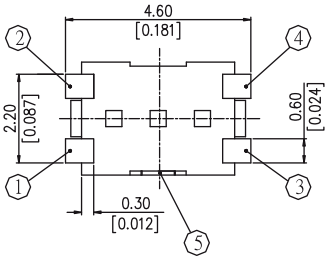


TP816S

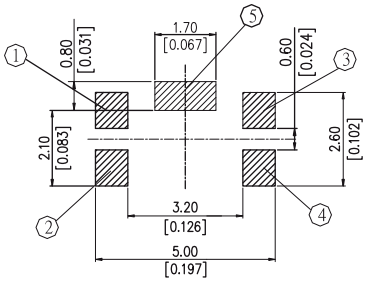




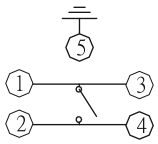




TP816V



P.C.B LAYOUT



CIRCUIT

How to order

TP816 [1] [2] [3] [4] [5]

[1] ACTUATING TYPE & HEIGHT:
- S — Side Push Actuating
- V1 — Vertical Push Actuating Height 1.9mm
- V2 — Vertical Push Actuating Height 2.5mm

[2] OPERATING FORCE:
- L — 160gf (Only for Vertical Push)
- H — 200gf (Only for Side Push)

[3] COLOR OF ACTUATOR
- A — Black
- B — White

[4] CONTACT MATERIAL:
- S — Silver
- G — Gold

[5] PACKAGE:
- TR — Tape & Reel

General Specifications:

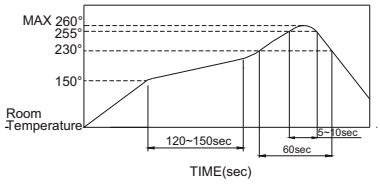
MATERIALS
- » Cover: Stainless steel with silver plating
- » Spacing Cover: Stainless steel
- » Stem: High-temp thermoplastic UL94V-0
- » Tape: Teflon
- » Contact: Stainless steel with silver plating
- » Base: High-temp thermoplastic UL94V-0, Black
- » Terminal: Brass, with silver or gold plating

MECHANICALS
- » Operation Force: 160± 50gf (Vertical Push)
  200±65gf Side Push
- » Stroke: 0.13±0.1mm (Vertical Push); 0.20±0.1mm (Side Push)
- » Operation Temperature: -30°C~80°C
- » Storage Temperatute: -40°C~85°C

ELECTRICAL
- » Electrical Life: 50,000 cycles
- » Rating: 50mA, 12VDC
- » Contact Resistance: 100mΩ max.
- » Insulation Resistance: 100MΩ min. at 100VDC
- » Dielectric Strength: 100VAC/1 minute

SOLDERING PROCESS
- » Hand Soldering: Use a soldering iron of 30 watts, controlled st 350°C approximately while applying.
- » Reflow Soldering: When applying reflow soldering, the peak temperature or the reflow oven should be set to 260°C max

Reflow Temperature Profile:



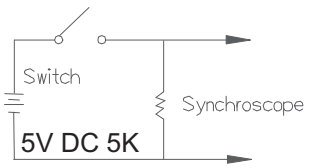
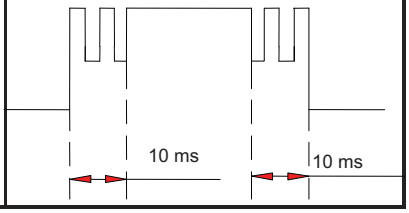
SPECIFICATION

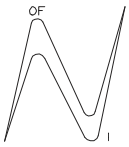
1. **Style**
   This specification describes ”TACTILE SWITCH”, mainly used as signal switch of electric devices, with the general requirements of mechanical and electrical characteristic.

   1.1 Operating Temperature Range : -30 ℃~+80℃

   1.2 Storage Temperature Range : -30℃~+85℃

2. **Current Range:** 50mA, 12V DC
3. **Type of Actuation:** Tactile feedback
4. **Test Sequence:**

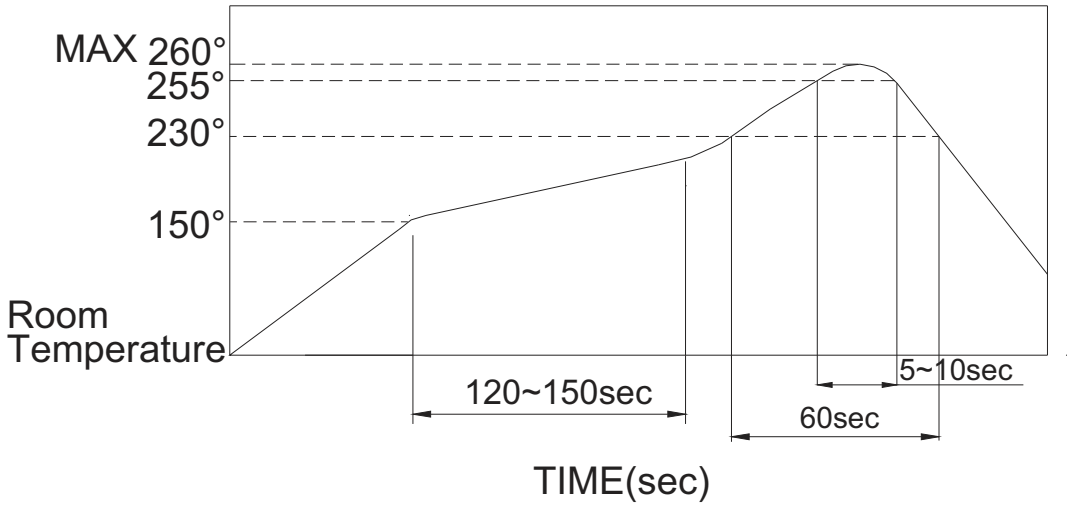
	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
APPEARANCE	1	Visual Examination	By visual examination check without any out pressure & testing	There shall be no defects that affect the serviceability of the product.
ELECTRIC PERFORMANCE	2	Contact Resistance	Applying a static load 1.5-2 times the operating force to the center of the stem, measurements shall be made with a 1 kHz small current contact resistance meter	100mΩ Max
	3	Insulation Resistance	Measurements shall be made following application of 100 V DC potential across terminals and cover for 1 minute ± 5 seconds	100MΩ min
	4	Dielectric Withstanding Voltage	100 V AC(50Hz or 60Hz) shall be applied across terminals and cover for 1 minute	There shall be no breakdown or flashover
	5	Capacitance	1 MHz ±10 kHz	5 pF max.
	6	Bounce	3 to 4 operations at a rate of 1 cycles per second 	10 ms seconds max. 

MECHANICAL PERFORMANCE	7	Operating Force & Return Force	Applied in the direction of operation 	OF	160±50gf (1.568N±.49N)
	8	Stroke	Placing the switch such that the direction of switch operation is vertical and gradually increasing the load applied to the stem, the stroke distance for the stem to come to contact shall be measured	0.13±0.10 ㎜	
	9	Stop Strength	Placing the switch such that the direction of switch operation is vertical, a static load of 3 kgf (29.4N)shall be applied in the direction of stem operation for a period of 15 seconds	As shown item 2~7	
	10	Solder Heat Resistance	■SMT Type ~TP816 Series(4/4)	①As shown in item 4~7 ②Contact Resistance: 200mΩ Max ③Insulation Resistance: 10MΩ min ④Bounce: 20 ms seconds Max	
	11	Vibration	Shall be vibrated in accordance with Method 201A of MIL-STD-202F ①Swing distance=1.5mm ②Frequency: 10-55-10Hz in 1-min/cycle. ③Direction: 3 vertical directions including the directions of operation ④Test time: 2 hours each direction	As shown in item 2~7	
	12	Shock	Shall be shocked in accordance with Method 213B condition A of MIL-STD-202F ①Acceleration; 80G ②Action time:11±1m seconds ③Testing Direction: 6 sides (Test Cycle: 3 times in each direction	As shown in item 2~7	

DURABILITY	13	Operating Life	Measurements shall be made following the test forth below: ①5mA,5 VDC resistive load ② Applying a static load the operating force to the center of the stem in the direction of operation Static Load = OF Max. ③ Rate of Operation: 1 operation per second ④Cycle of Operation: Silver CONTACT 100,000 cycles Gold CONTACT 50,000 cycles	①Operating force:±50% of initial force ②Contact Resistance: 200mΩ Max ③Insulation Resistance: 10MΩ min ④Bounce: 10 ms seconds Max
WEATHER-PROOF	14	Resistance Low Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ①Temperature:-30±2℃ ②Time: 96 hours	①As shown in item 4~7 ②Contact Resistance: 200mΩ Max ③Insulation Resistance: 10MΩ min
WEATHER-PROOF	15	Heat Resistance	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ①Temperature:80±2℃ ② Time: 96 hours	①As shown in item 4~7 ②Contact Resistance: 200mΩ Max ③Insulation Resistance: 10MΩ min
	16	Humidity Resistance	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ①Temperature:60±2℃ ② Relative Humidity: 90~95% ③ Time: 96 hours	①As shown in item 4、7 ② Contact Resistance: 200mΩ Max ③ Insulation Resistance: 10MΩ min

5. SOLDERING CONDITIONS:

■ Condition for Soldering TP816 Series



■ The condition mentioned above is the temperature on the Cu foil of the PCB surface. There are cases where board's temperature greatly differs from switch's surface be used not to allow switch's surface temperature to exceed 260℃.

■ Manual Soldering

Soldering Temperature	Max.350℃
Continuous Soldering Time	Max. 5 seconds

■ Precautions in Handling

1.Care should be exercised so that flux from the upper part of the printed circuit board does not adhere to the switch.

2.Except for washable type do not wash the switch.