

**RoHS  
Compliant**

## Description

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

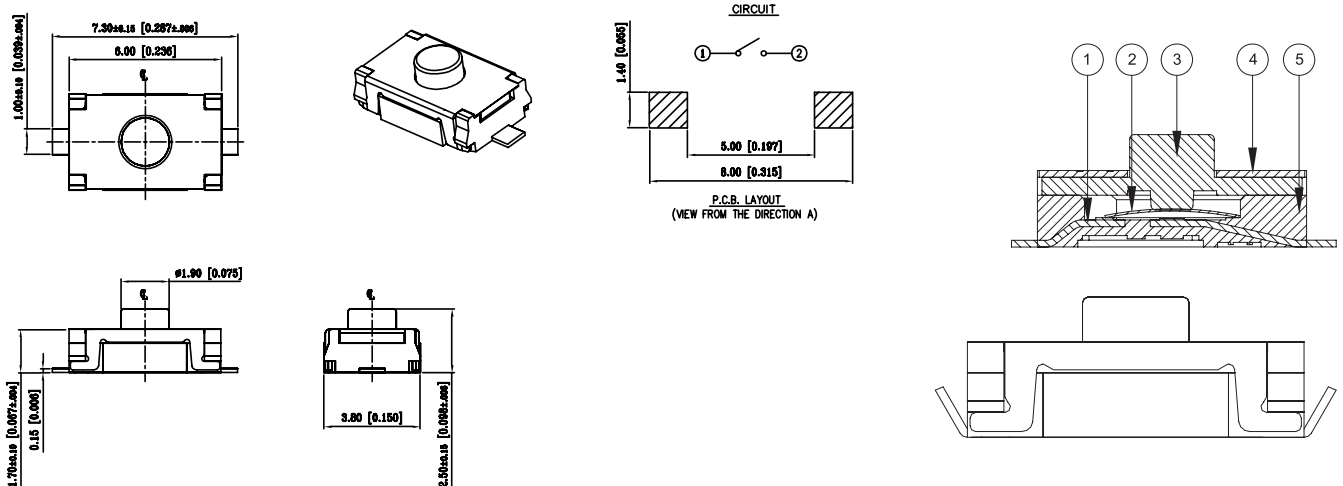
## Specifications

Operating Temperature Range	: -40°C+85°C
1.2 Storage Temperature Range	: -40°C+85°C
Switch Rating	: 50mA, 12V DC
Contact Resistance	: 100mΩ Max.
Insulation Resistance	: 100V DC, 100MΩ Min.
Type of Actuation	: Tactile feedback
The shelf life of product is within 6 months.	

## Mechanical

Type	Operation Force	Operation Life	Travel	Contact Material
MPTAEF-25NA-V-T/R	200 ±50gf	200,000	0.3 ±0.15	Gold
MPTAEF-25SA-V-T/R	450 ±110gf	100,000	0.45 ±0.15	

## Diagram

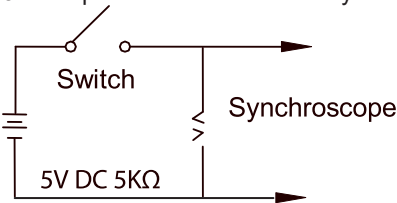
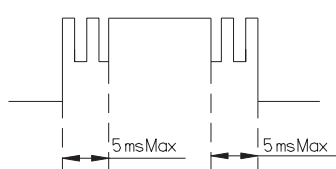
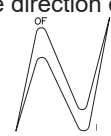


Dimensions : Millimetres (Inches)

Item	Description	Q'ty	Materials	Treatment
1	Terminal Actuator	1	Phosphor Bronze	With Gold Or Silver Plating
2	Dome		Stainless Steel	With Silver Plating
3	Stem		Silicone Rubber	Hardness 80°
4	Cover		Stainless Steel	--
5	Base		High-Temp Thermoplastic LCP V - 0	Black

General tolerances : ±0.2mm

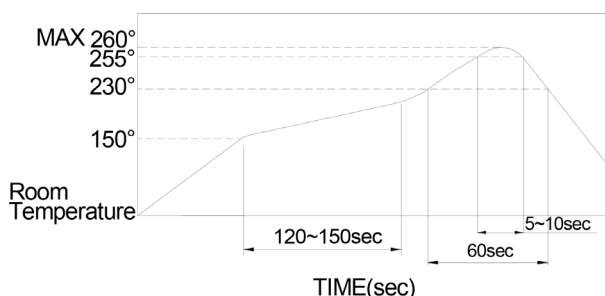
## Test Sequence

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 100V DC potential across terminals and cover for 1 minute± 5 seconds	100MΩ Min.		
4	Dielectric Withstanding Voltage	300V 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 	 5 m seconds Max.		
Mechanical Performance					
7	Operation Force	Applied in the direction of operation. 		MPTAEF-25NA-V-T/R	MPTAEF-25SA-V-T/R
			OF	200±50g [1.96±.49N]	450±110g [4.41±1.07N]
8	Stroke	Placing the switch such that the direction of switch operation is vertical and then gradually increasing the load applied to the stem, the stroke distance for the stem to come to a stop shall be measured		MPTAEF-25NA-V-T/R	MPTAEF-25SA-V-T/R
			stroke	0.3±0.15	0.45±0.15
9	Stop Strength	Placing the switch such that the direction of switch operation is vertical, a static load of 3 kgf shall be applied in the direction of stem operation for a period of 15 seconds	1. As shown in item 4~7 2. Contact Resistance: 200mΩ Max 3. Insulation Resistance: 10MΩ Min		
10	Solder Heat Resistance	1) SMT Type: (5/5)	1. Shall be free from pronounced backlash and falling-off or breakage terminals 2. As shown in item 4, 5 3. Contact Resistance: 200mΩ Max 4. Insulation Resistance: 10MΩ Min		

Item	Description	Test Conditions	Requirements
11	Vibration	Shall be vibrated in accordance with Method 201A of MIL-STD-202F 1) Frequency: 10-55-10Hz in 1-min/cycle. 2) Direction: 3 vertical directions including the directions of operation 3) Test time: 2 hours each direction 4) Swing distance=1.5mm	1. As shown in item 4~7 2. Contact Resistance: 200mΩ Max 3. Insulation Resistance: 10MΩ Min
12	Shock	Shall be shocked in accordance with Method 213B condition A of MIL-STD-202F 1) Acceleration: 50G 2) Action time: 11±1m seconds 3) Testing Direction: 6 sides 4) Test Cycle: 3 times in each direction	1. As shown in item 4~7 2. Contact Resistance: 200mΩ Max 3. Insulation Resistance: 10MΩ Min
13	Solderability	1. TAE□-25□□-V Soldering Temperature: 245±3°C Lead-Free solder: M705E JIS Z 3282 Class A (Tin 96.5%, Silver 3%, Copper 0.5%) 2. Flux: 5-10 seconds. 3. Duration of solder Immersion: 5±1 sec.	No anti-soldering and the coverage of dipping into solder must more than 75% was requested.
<b>Durability</b>			
14	Operating Life	Measurements shall be made following the test forth below: 1) 5 mA, 5VDC 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 1 second 4) Cycle of Operation: 200,000 cycles~25N 200,000 cycles~25R 100,000 cycles~25S	1) As shown in item 4~6 2) Operating force: ±50% of initial force. 3) Contact Resistance: 10Ω Max 4) Insulation Resistance: 10MΩ min 5) Bounce: 10 m seconds Max
<b>Weather-Proof</b>			
15	Resistance Low Temperature	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: 1) Temperature: -40±3°C 2) Time: 96 hours	1) As shown in item 4~7 2) Contact Resistance: 200mΩ Max 3) Insulation Resistance: 10MΩ min
16	Resistance High Temperature	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: 1. Temperature: 85±2°C 2. Time: 96 hours	1) As shown in item 4~7 2) Contact Resistance: 200mΩ Max 3) Insulation Resistance: 10MΩ min

Item	Description	Test Conditions	Requirements
17	Resistance Humidity	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: 1) Temperature: $40 \pm 2^{\circ}\text{C}$ 2) Relative Humidity: 90~95% 3) Time: 96 hours	1) As shown in item 4~7 2) Contact Resistance: 200mΩ Max 3) Insulation Resistance: 10MΩ min

## Soldering Conditions



- 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 temperature depending on board's material, size, thickness, etc. Care, therefore, should be used not to allow switch's surface temperature to exceed 260°C.
- Manual Soldering
 

Soldering Temperature	Max. 350°C
Continuous Soldering Time	Max. 5 seconds

## Part Number Table

Description	Part Number
Tactile Switch, 3.8mm × 6mm, Flat Pin, H2.5mm, Gold Plating, 200gf	MPTAEF-25NA-V-T/R
Tactile Switch, 3.8mm × 6mm, Flat Pin, H2.5mm, Gold Plating, 450gf	MPTAEF-25SA-V-T/R

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