

1. Style

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

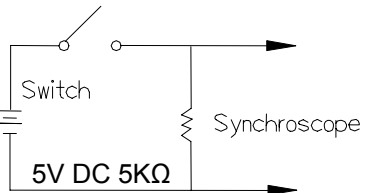
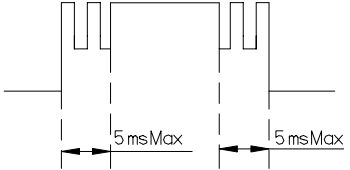
1.1 Operating Temperature Range : -25 °C ~ +70 °C


1.2 Storage Temperature Range : -30 °C ~ +80 °C

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 500 V DC potential across terminals and cover for 1 minute ± 5 seconds	100MΩ min
	4	Dielectric Withstanding Voltage	250 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 	5 m seconds max. 

MECHANICAL PERFORMANCE	7	Operating Force	Applied in the direction of operation 	OF	100±50g [.98±.49N]	160±50g [1.568±.49N]	260±50g [2.548±.49N]
	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	0.20±0.10mm			
	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	①As shown in item 4~7 ②Contact Resistance: 200mΩ Max ③Insulation Resistance: 10MΩ min			
	10	Solder Heat Resistance	<p>■ Through Hole Type</p> <p>①Soldering Temperature:260±5℃ ②Duration of Solder Immersion: 5±1 seconds ③Frequency of Soldering Process 2 times max. (PCB is 1.6mm in thickness)</p> <p>■ SMT Type ~ Series(4/4)</p>	① Shall be free from pronounced backlash and falling-off or breakage terminals ②As shown in item 4、5 ③ Contact Resistance: 200mΩ Max ④Insulation Resistance: 10MΩ min			
	11	Vibration	<p>Shall be vibrated in accordance with Method 201A of MIL-STD-202F</p> <p>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</p>	①As shown in item 4~7 ②Contact Resistance: 200mΩ Max ③Insulation Resistance: 10MΩ min			
MECHANICAL PERFORMANCE	12	Shock	<p>Shall be shocked in accordance with Method 213B condition A of MIL-STD-202F</p> <p>1)Acceleration; 50G 2)Action time:11±1m seconds 3)Testing Direction: 6 sides 4)Test Cycle: 3 times in each direction</p>	Ditto			

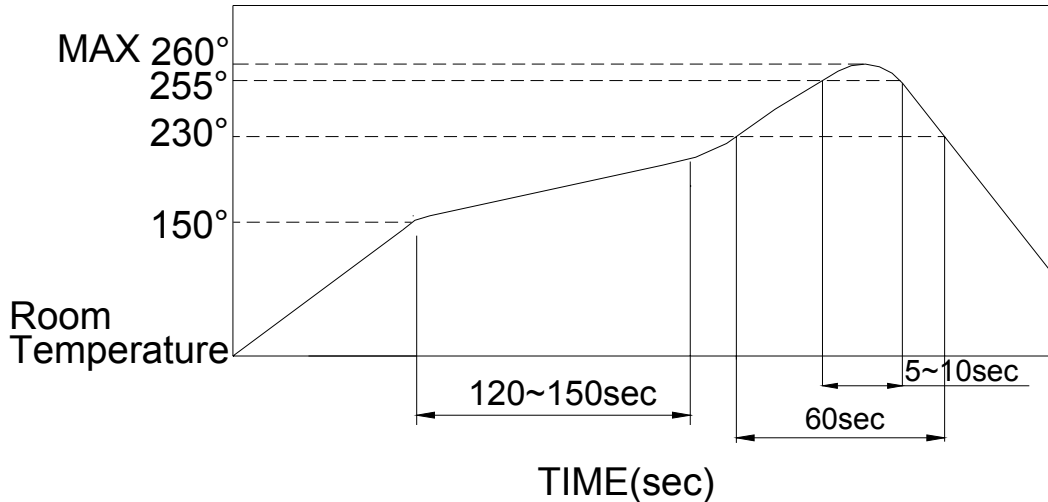
TL(L)□-6□□-VSPECIFICATION

FILE No. : E-V-AT10
 REV. : B
 Page : 3 / 4

MECHANICAL PERFORMANCE	13	Solderability	1)Through Hole Soldering Temperature : $245\pm 3^{\circ}\text{C}$ Lead-Free solder : M705E JIS Z 3282 A (Tin 96.5% , Silver 3% , Copper 0.5%) 2)Flux : 5~10 sec 3)Duration of solder Immersion : 5 ± 1 sec	No anti-soldering and the coverage of dipping into solder must more than 66% were requested.	
	DURABILITY	14	Operating Life	Measurements shall be made following the test forth below: 1)5mA,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)Cycle of Operation: 200,000 cycles min.	1.As shown in item 4 、 5 2.Operating force: $\pm 50\%$ of initial force. 3.Contact Resistance: 10Ω Max 4.Insulation Resistance: 10MΩ min 5.Bounce: 10 m seconds Max
		WEATHER-PROOF	15	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: 1)Temperature: $-25\pm 3^{\circ}\text{C}$ 2)Time: 96 hours
16			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: 1)Temperature: $80\pm 2^{\circ}\text{C}$ 2)Time: 96 hours	Ditto
17	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: 1)Temperature: $40\pm 2^{\circ}\text{C}$ 2)Relative Humidity: 90~95% 3)Time: 96 hours	Ditto	

5. SOLDERING CONDITIONS:

■ Condition for Reflow Soldering – S.M.T Series



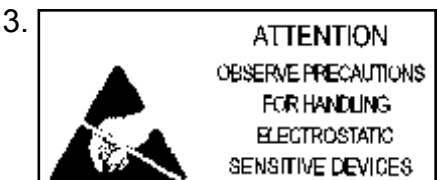
- The condition mentioned above is the temperature on the Cu foil of the PCB surface. There are cases where board's temperature greatly differs from switch's surface be used not to allow switch's surface temperature to exceed 260°C.

■ Manual Soldering

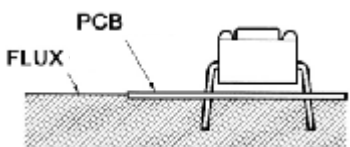
Soldering Temperature	Max.350°C
Continuous Soldering Time	Max. 5 seconds

■ 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.



4. Please make sure that there is no flux rose over the surface of the PCB.



ITEM	DESC	Q'TY	METERIALS	TREATMENT	REMARK
1	STEM	1	HIGH-TEMP THERMOPLASTIC NYOLN UL 94V-0	NONE	-
2	CONTACT	1	SUS301CSP-EH	NONE	-
3	BASE	1	HIGH-TEMP THERMOPLASTIC NYOLN UL 94V-0	MOLDED BLACK	-
4	TERMINAL	1	BRASS	WITH SILVER PLATING	-
5	LED	1	—	NONE	-

PROD. NO. : TL L - 6 - - -

Package:
B=Tube

V=Lead Free

S=Super Light

LED Color:

R=Red; Y=Yellow

G=Green; B=Blue

W=White; O=Orange

YG=Yellow/Green

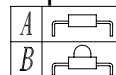
RG=Red/Green

OR=Orange/Red

AG=Amber/Green

<YG, RG, OR LED Only For B TYPE>

LED Specification



Operating Force

1=100g, Black

2=160g, Brown

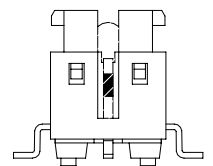
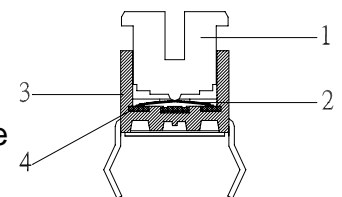
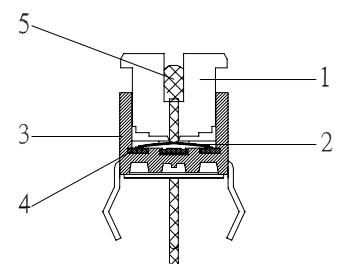
3=260g, White

6=6x6

M= S.M.T

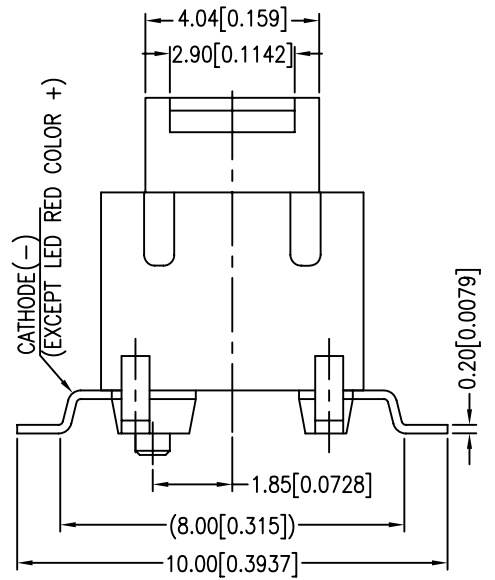
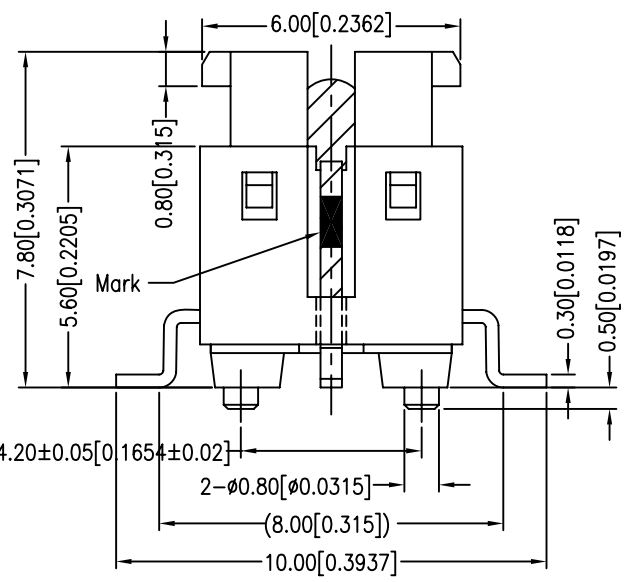
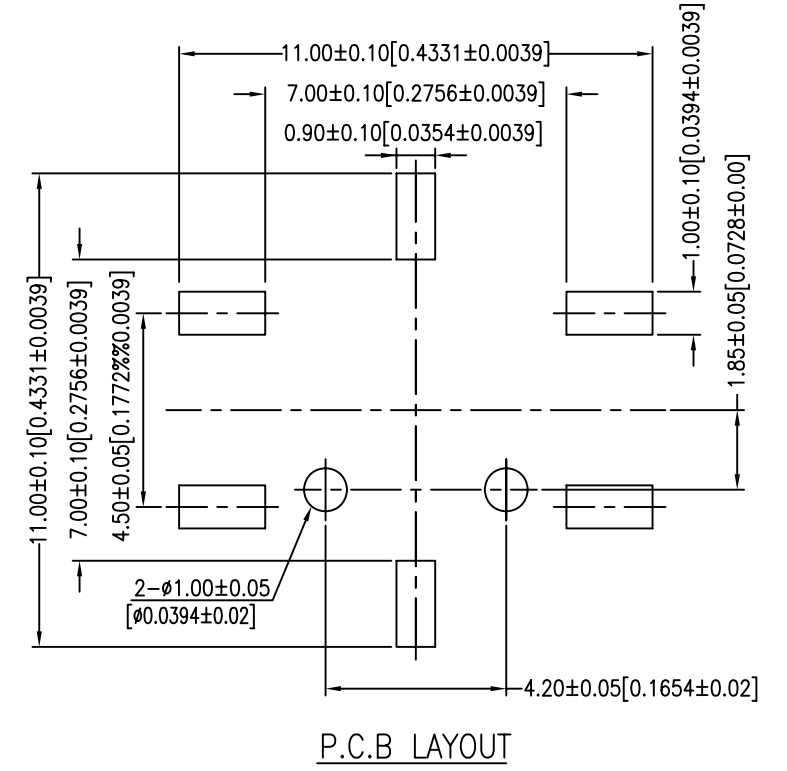
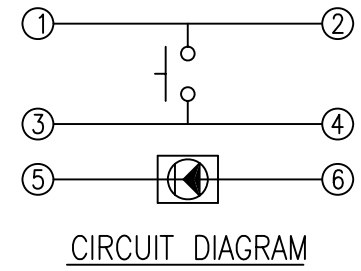
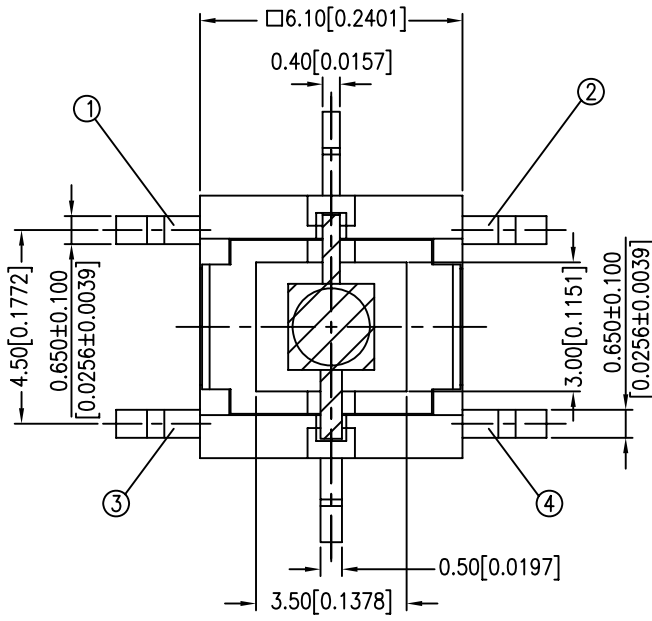
L=Tact Switch + LED

Tact Switch Type



B	新增規格 TLLM	
A	DWG.REL	邱明義
REV.	ECO. NO.	APPD.

TITLE	APPD. :
TACTILE SWITCH TYPE	CHKD. :
PRROD. NO. TL(L) <input type="checkbox"/> -6 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> -V- <input type="checkbox"/>	PR. : 陳碧霞
FILE NO. E-B-CT20	REV. : B SHEET : 1/1



TLLM-63AR

Series Name: TLLM-63AR
 With LED
 S.M.D TERMINAL
 Operating Force: 1 | 100g, 2 | 160g, 3 | 260g

LED Color: R | Red, B | Blue, Y | Yellow, W | White, G | Green, O | Orange
 LED Shape: A | [A Shape], B | [B Shape]

*Customer can provide their own LED light (with specs in details)
 *LED light B shape white color is not available, A shape orange is not available.

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△				
△				
△	A1	DWC.RET	12.08'06	
ZONE	REV.	DESCRIPTION	DATE	APPD.

NOTE:
 1. ALL DIMENSIONS ARE IN MILLIMETERS, BRACKETED DIMENSIONS ARE IN INCHES.
 2. GENERAL TOLERANCES MAX. ±0.20mm.

APPD:	Q'TY:	圓達實業股份有限公司 DIPTRONICS MANUFACTURING INC.	PART NAME:
CHKD:	SCALE:		TLLM-6□□□□
DR: 10.24.06 范小英	REV: A1	UNITS: mm	PART NO:
DESIGN: 10.09.06 林后謙			TLLM-6□□□□
			MAT'L:
			FINISH:
			DWG NO:
			TLLM-B