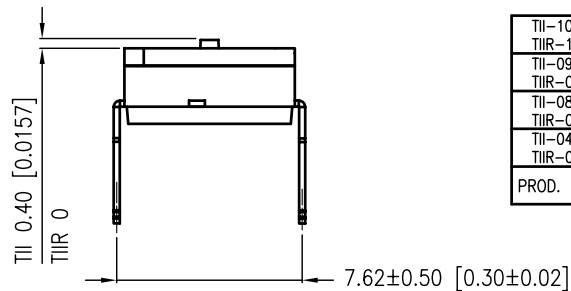
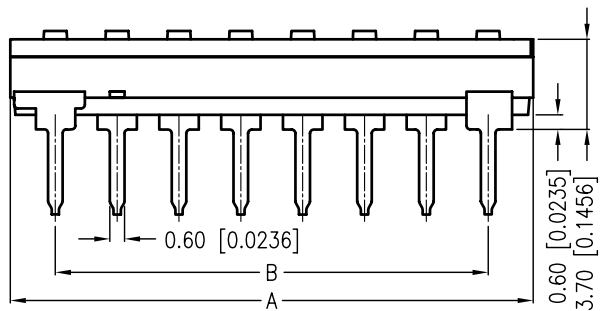


P.C.B. LAYOUT

CIRCUIT DIAGRAM

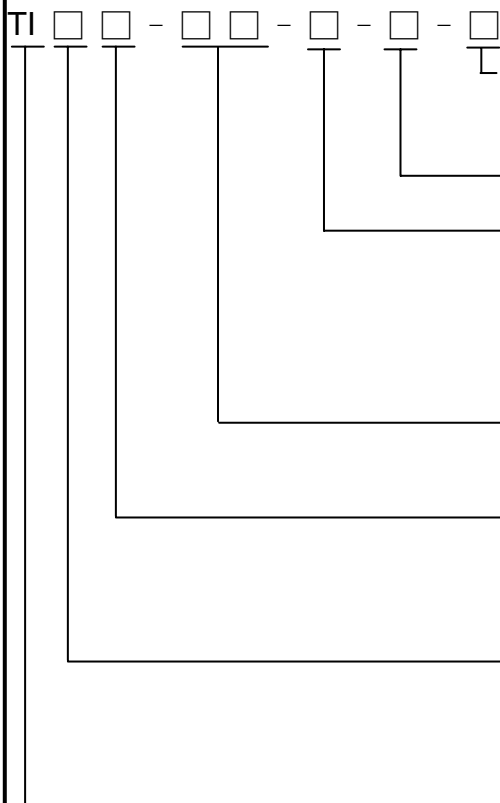
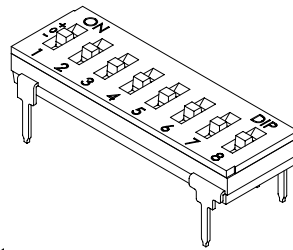


TII-10-V	10	26.56[1.046]	22.86[.900]
TIIR-10-V	10	26.56[1.046]	22.86[.900]
TII-09-V	9	24.02[.946]	20.32[.800]
TIIR-09-V	9	24.02[.946]	20.32[.800]
TII-08-V	8	21.48[.846]	17.78[.700]
TIIR-08-V	8	21.48[.846]	17.78[.700]
TII-04-V	4	11.32[.446]	7.62[.300]
TIIR-04-V	4	11.32[.446]	7.62[.300]
PROD. NO.	NO. OF POS.	DIM. A	DIM. B

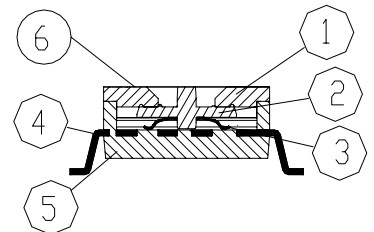
NOTE:

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

ITEM	DESC	Q'TY	METERIALS	TREATMENT	REMARK
1	COVER	1	HIGH-TEMP TERMOPLASTIC PA-9T UL 94V-0	MOLDED BLACK	-
2	ACTUATOR	1	HIGH-TEMP THERMOPLASTIC LCP UL 94V-0	MOLDED WHITE	-
3	CONTACT	1	COPPER	GOLD PLATED AT CONTACT AREA	-
4	TERMINAL	1	BRASS	GOLD PLATED	-
5	BASE	1	HIGH - TEMP THERMOPLASTIC PA9T UL 94N-0	MOLDED BLACK	-
6	TAPE	1	KAPTON	-	-



Package Style
=Tube
T/R=Tape & Reel(Only S.M.T)
V=Lead Free
Seal:
=Regular
T =Top Tape Sealed
(For recessed actuator only)
Number of positions:
04.08.09.10 Positions
Actuator Type
=Raised Actuator
R=Recessed Actuator
Terminal Type
M=SMT Type
I =Through Hole Type
TRI-SATE IC TYPE



A	DWG.REL.	
REV.	ECO. NO.	APPD.

TITLE :	APPD. :
TRI-STATE IC TYPE	CHKD. :
PRROD. NO. : TI□□-□□-□□	PR. : 楊佩儒
FILE NO. : E-V-CD16	REV. : A SHEET : 1/1

一、 產品型態：

本規格書是描述"指撥式開關"，一般之機械特性與電氣特性, 而該指撥式開關主要是用來作為訊號開關之電子裝置。

1. 使用之溫度範圍：-20°C ~+85°C
2. 儲存之溫度範圍：-40°C ~+85°C

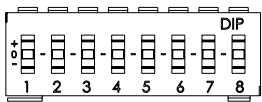
二、 額定電流：

1. 當開關之設定已固定不再作任何切換，而使電流常處於一平穩的通電狀態時，則額定電流為：100mA, 50 V DC。
2. 當開關的設定不固定常需作任意切換，而使電流常處於一脈衝狀態時，則額定電流為：25mA，24 V DC。

三、 操作類型：指撥滑動。

四、 測試項目：

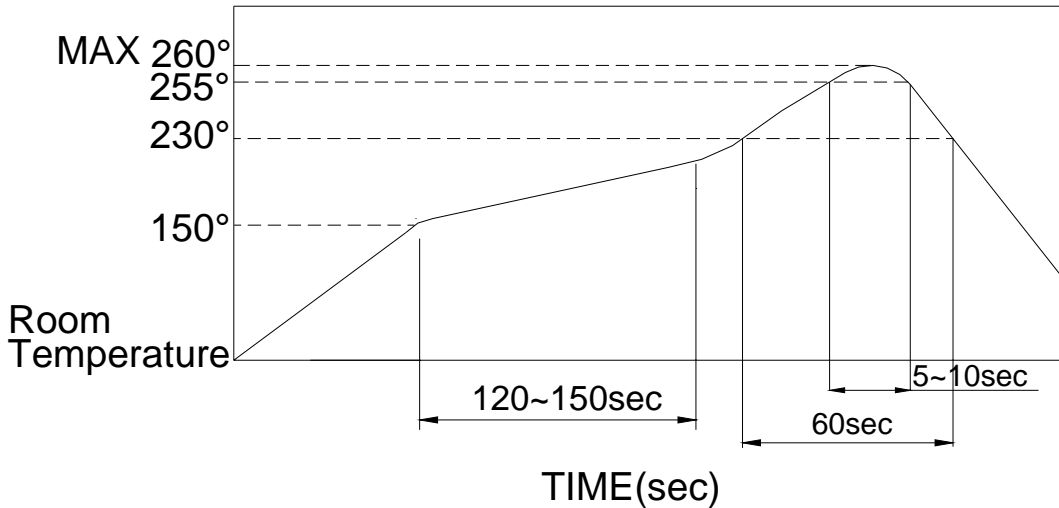
特性	項次	測試種類	測 試 條 件	測 試 要 求
外觀 電氣特性	1	目視檢查	在未施加任何外力及試驗前, 以目視方式檢測	產品的外觀不能有影響產品功能之不良缺點
	2	接觸阻抗	①測定通路, 在開關的兩極端測量端子間的接觸阻抗值 ②測定時以 1KHZ 規格的微電流阻抗計測量之	接觸阻抗的初值不得高於100mΩ
	3	絕緣阻抗	直流電壓 500V, 1 分鐘±5 秒	絕緣阻抗不得低於 100MΩ
	4	耐 電 壓	以 500V 的交流電(50Hz 或 60Hz 近似正弦波電壓), 施於兩相鄰端子與底座間, 並保持 1 分鐘之加壓狀態後, 檢查是否能耐該值	成品不得有故障, 跳火及絕緣體破壞等不良現象
	5	靜電容量	在頻率 1MHZ±10KHZ 下, 測量電容含值	該電容值需 5pF 以下

機	6	作動力	<p>如圖所示,各箭頭方向即為測定推鈕操作方向之力量</p> <p>0→+ +→0 0→- -→0</p> 	1000gf max (9.8N max)									
	7	操作部強	以 1kgf 的靜態荷重施於操作方向測定,操作時間 15 秒	操作部不得變形及機械的功能發生故障或損壞									
械	8	抗銲錫熱	①銲溫： <table border="1" data-bbox="502 817 997 1064"> <thead> <tr> <th>產品</th> <th>溫度</th> <th>時間</th> </tr> </thead> <tbody> <tr> <td>基板插入端 TII-V</td> <td>260±5°C</td> <td>5±1 秒</td> </tr> <tr> <td>表面黏著端 TIM-V</td> <td colspan="2">參照曲線圖(4/4 頁)</td> </tr> </tbody> </table>	產品	溫度	時間	基板插入端 TII-V	260±5°C	5±1 秒	表面黏著端 TIM-V	參照曲線圖(4/4 頁)		1. 受測後之成品仍需符合前述 4~6 測試項規格之要求 2. 經過測試後之接觸阻抗值不得高於 200mΩ 3. 受測後之絕緣阻抗不得低於 10MΩ
			產品	溫度	時間								
基板插入端 TII-V	260±5°C	5±1 秒											
表面黏著端 TIM-V	參照曲線圖(4/4 頁)												
②浸錫時間：5±1 秒 ③銲錫操作之次數,最多 2 次 (PCB 厚度為 1.6mm)													
特	9	振動測試	請依照 MIL-STD-202F, 201A 所規定之方法做測試 ①頻率:10-55-10Hz 的頻率循環測試,週期 1 分鐘 ②振動方向:以 X, Y, Z 三軸向,包含推鈕操作之方向 ③測試時間:每一方向 2 小時	同上									
	10	衝擊試驗	請依照MIL-STD-202F, 213B 條件 A 所規定之方法做測試 ①加速度：50G ②測定時間：11±1 毫秒 ③受測方向：以成品全周,三軸六個方向做測試 ④受測次數：每一方向 3 次	同上									
性	11	沾錫性	①TII-V 銲溫：245±3°C 銲錫規格：M705E JIS Z 3282 A 級 (錫 96.5%，銀 3%，銅 0.5%) ②助銲劑：5-10 秒 ③浸錫時間：5±1 秒	鍍金/錫面不能有拒銲現象 沾錫面積占總面積 75%以上									

耐 久 性	12	壽命測試	測試時需依照下列所設定情況 ①施以 25mA, 24V 之直流電 ②作動速度：15~20 回/min ③受測次數：2000 回	1. 受測後之成品仍需符合前述 3.4 測試項規格之要求 2. 經過測試後之接觸阻抗值不得高於 500mΩ	
	耐 候 性	13	耐寒性	請依照下列所設定的條件測試後. 並於常溫常濕中放置 1 小時後測定 ①受測溫度：-40±3°C ②受測時間：96 小時	1. 受測後之成品仍需符合前述 4~6 測試項規格之要求 2. 經過測試後之接觸阻抗值不得高於 200mΩ 3. 受測後之絕緣阻抗不得低於 10MΩ
		14	耐熱性	請依照下列所設定的條件測試後. 並於常溫常濕中放置 1 小時後測定 ①受測溫度：85±2°C ②受測時間：96 小時	同上
	15	耐濕性	請依照下列所設定的條件測試後. 並於常溫常濕中放置 1 小時後測定 ①受測溫度：40±2°C ②相對濕度：90-95% ③受測時間：96 小時	同上	

五、 鐳錫條件

■ 溫度曲線圖
 TIM-V 系列



■ 上述提到之情況，是 PCB 上銅箔之溫度。

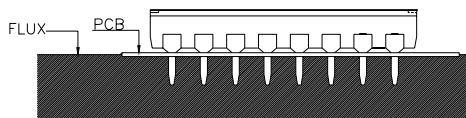
有一些情形是這 PCB 的溫度和開關表面之溫度會有很大的不同，這和 PCB 材質、大小、厚度等有很大之關係，因此要小心不要讓開關表面之溫度超過 260°C。

■ 手工鐳錫：

鐳錫溫度	350°C 以下
連續鐳錫時間	5 秒以下

■ 處理時注意事項：

1. 在 P.C. 板面上之助鐳劑，不要黏到開關本身。
2. 除了有貼 TAPE 的產品形式，可使用沖洗式清洗外，其它則不可洗到開關本身。
3. 若使用 FLUX 為發泡式，則要管制其發泡面高度，不可超過已放置 SW 的 PCB 表面，如果 FLUX 發泡面超過 PCB 表面，可能會侵入 SW 內部，會變成導通不良原因



TI□-V SPECIFICATION

FILE No. : E-V-AD12
 REV. : A
 Page : 1 / 4

1. Style:

This specification describes "DUAL IN-LINE PACKAGE SWITCHES" mainly used as signal switch of electric devices with the general requirements of mechanical and electrical characteristics.

1.1 Operating Temperature Range : -20°C ~ +85°C

1.2 Storage Temperature Range : -40°C ~ +85°C

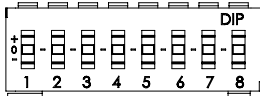
2. Current Range :

2.1 Non-Switching : 100mA, 50V DC

2.2 Switching : 25mA , 24V DC

3. Type of Actuation: Actuated by sliding

4. Test Sequence :

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
ELECTRIC PERFORMANCE	1	Visual Examination	By visual examination check without any out pressure & testing.	There shall be no defects that affect the serviceability of the product.
	2	Contact Resistance	①To be measured between the two terminals associated with each switch pole. ②Measurements shall be made with a 1kHz shall current contact resistance meter.	100mΩ max. (initial)
	3	Insulation Resistance	500V DC, 1 minute ± 5 sec.	100MΩ min.
	4	Dielectric withstand-ing Voltage	500V AC (50Hz or 60 Hz) shall be applied between all the adjacent terminals and between the terminal and the frame for 1 minute.	There shall be no breakdown or flashover.
	5	Capacitance	1 MHz ± 10 kHz	5 pF max.
MECHANICAL PERFORMANCE	6	Operation Force	Applied in the direction of operation. 0→+ +→0 0→- -→0 	1000gf max (9.8N max)

TI□-V SPECIFICATION

FILE No. : E-V-AD12
 REV. : A
 Page : 2 / 4

MECHANICAL PERFORMANCE	7	Stop Strength	A static load of 1 kgf is applied in the operating direction and pulling direction operated for a period of 15 seconds.	There shall be no sign of damage mechanically.		
	8	Soldering Heat Resistance	1.Soldering Temperature :		1.As shown in item 4,6 2.Contact Resistance: 200mΩ max. 3.Insulation Resistance: 10MΩ min.	
			PROD SERIES	TEMP		TIME
			THROUGH HOLE TYPE TII-V	260°C±5°C		5±1 sec.
			SMT TYPE TIM-V	SEE PAGE 4/4		
	2.Duration of Solder Immersion: 5±1 sec. 3.Frequency of Soldering Process: 2 times max. (PCB is 1.6mm in thickness.)					
9	Vibration	Shall be vibrated in accordance with Method 201A of MIL-STD-202F ①Frequency: 10-55-10 Hz 1 min/cycle. ②Direction: 3 vertical directions including the direction of operation. ③Test Time: 2 hours each direction.	Ditto			
10	Shock	Shall be shocked in accordance with Method 213B condition A of MIL-STD-202F ①Acceleration: 50G. ②Action Time : 11 ± 1 m sec. ③Testing Direction: 6 sides. ④Test cycle : 3 times in each direction	Ditto			
11	Solderability	1)TII-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: 3±0.5 sec.	No anti-soldering and the coverage of dipping into solder must more than 75% was requested.			

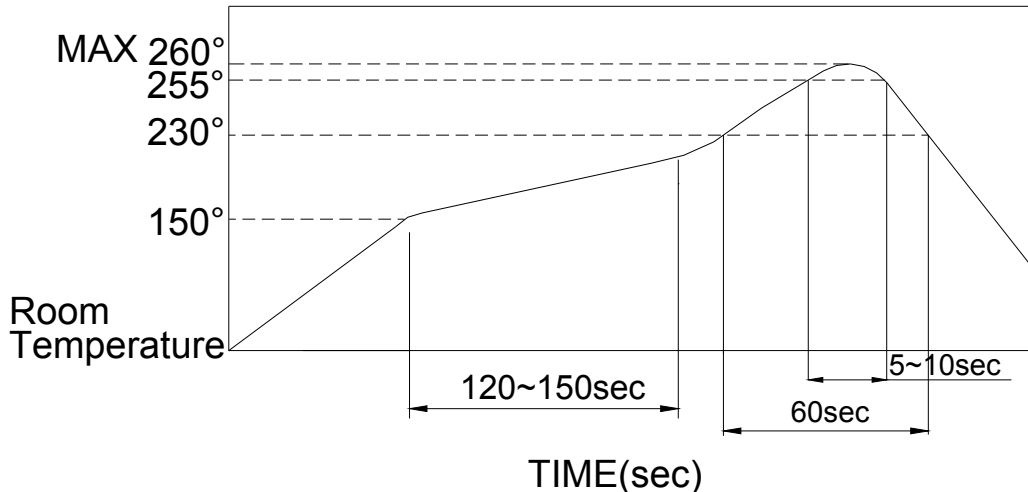
TI□-V SPECIFICATION

FILE No. : E-V-AD12
 REV. : A
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WEATHER-PROOF	DURABILITY	12	Operation Life	Measurements shall be made following the test set forth below: 1)25 mA, 24V DC resistive load 2)Rate of Operation: 15~20 cycles/ minute 3)Cycle of Operation: 2000 cycles.	1.As show in item 3,4 2.Contact Resistance: 500mΩ max. (final-after test)
		13	Resistance Low Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before measurements are made : 1)Temperature : -40°C±3°C 2)Time: 96 hours	1.As shown in item 4,6 2.Contact Resistance: 200mΩ max. 3.Insulation Resistance: 10MΩ min.
		14	Resistance High Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before measurements are made : 1)Temperature : 85°C±2°C 2)Time: 96 hours	Ditto
		15	Resistance Humidity	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before measurements are made : 1)Temperature : 40°C±2°C 2)Relative Humidity :90~95% 3)Time: 96 hours	Ditto

5. SOLDERING CONDITIONS:

■ Condition for Soldering –TIM –V Series



- The condition mentioned above is the temperature on the Cu foil of the P.C.B 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

■ 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. Don't clean the switch body except with top tape sealed type, which can only spray of cleaning method from top of s/w.
3. Please make sure that there is no flux rose over the surface of the PCB

