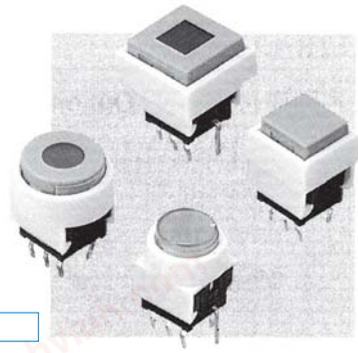
chanhvinh.com

TP&TPL

Ultra-Miniature Pushbutton Switches



RoHS Compliant

Features

1. Long Travel
DPDT ultra-miniature switch with long travel (latch position: 1 mm, total travel: 1.5 mm).

2. High Contact Reliability
Clip type contact mechanism ensures high reliability.

3. PC Board Mount
Terminal pitch is in inches (multiples of 2.54 mm) for all models. The unique terminal shape prevents the terminal pins from coming loose from the PC board during dip soldering.

4. Epoxy Sealed Terminals
Epoxy sealed terminals prevent ingress of flux.

5. Wide Variety of Accessories
Wide selection of accessories including color buttons, mounting frames, and LED illuminations are available

6. Unified Mounting Height
The mounting height of the TP/TPL series is the same as the LTR/LTM series which makes it convenient to design into the same panel.

Specifications

Rating	Silver plated contacts	0.1A 30VDC max.	
	Gold plated contacts	0.1A 30VDC max. 1μA min.	
Initial contact resistance		Silver plated contacts : 50mΩ max.	(1.5mA 200μ VAC)
		Gold plated contacts : 100mΩ max.	
Dielectric strength		500VAC 1 minute	
Insulation resistance		100MΩmin.	(500VDC)
Electrical life		10,000 operations	
Operating force	TP	1.47±0.98N	(Momentaly)
	TPL	2.45±0.98N	(Push to lock)
Operating temperature range		−10～+70℃	
Storage temperature range		−25～+85℃	

Part Numbering

T P L 1 — 01 G — L2

- T P: Series code
- L: Operation type
- 1: Structure
- 01: Registration No.
- G: Contact plating
- L2: LED color

Timing of switching

P	Non-shorting

Operation type

None	Momentary
L	Puch to lock

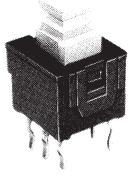
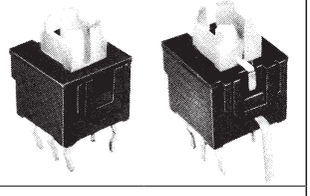
Contact plating

None	Silver
G	Gold

LED color

None	Without LED
L2	Red
L5	Green
L8	Yellow

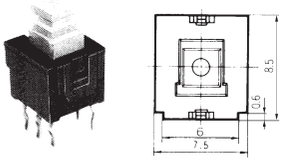
Construction

Fig.	1	2
Construction		
		Without LED / With LED

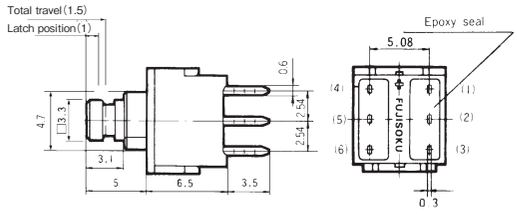
chanhvinh.com

TP/TPL

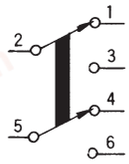
TP1·TPL1 (Without LED)



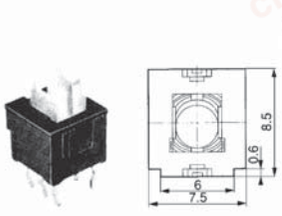
Neither the button nor the mounting frame can be mounted.

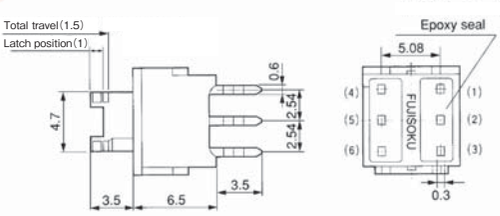


Terminal numbers are not shown on the switch.

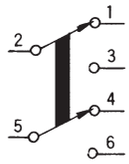
Part No.	Switching function		Circuit diagrams
	■	↓Push	
TP1−01□	ON	(ON)	
TPL1−01	ON	ON	
Connecting terminals	2−1 5−4	2−3 5−6	

TP2·TPL2 (Without LED)

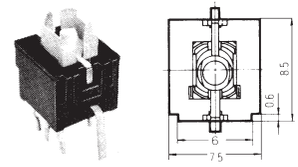


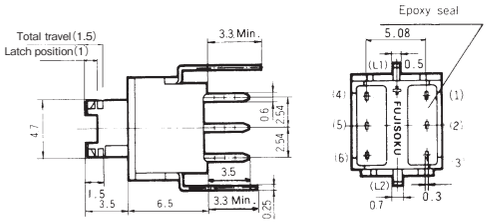


Terminal numbers are not shown on the switch.

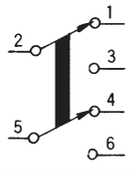
Part No.	Switching function		Circuit diagrams
	■	↓Push	
TP2−01□	ON	(ON)	
TPL2−01□	ON	ON	
Connecting terminals	2−1 5−4	2−3 5−6	

TP2·TPL2 (With LED)





Terminal numbers are not shown on the switch.

Part No.	Switching function		Circuit diagrams
	■	↓Push	
TP2−01□−L■	ON	(ON)	
TPL2−01□−L■	ON	ON	
Connecting terminals	2−1 5−4	2−3 5−6	
LED circuit	L1 (+) (−) L2		

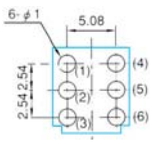
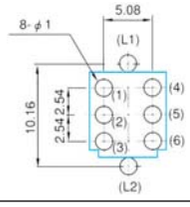
□ : Contact plating code (Silver/Gold) ■ : LED color code

■LED Specifications (TP2 ·TPL2)

Symbol	Color	Forward Current (IF)	Forward V (VF)		Reverse Voltage (VR)
			nom.	max.	
L2	Red	30mA	2.0V	2.5V	DC5V
L5	Green	25mA	2.2V	2.5V	DC5V
L8	Yellow	30mA	2.1V	2.5V	DC5V

■ PC Hole Layouts

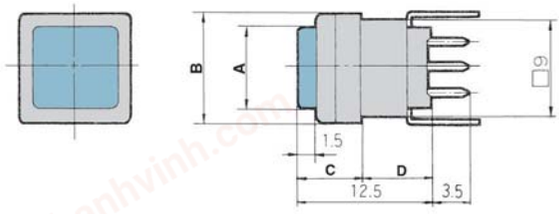
(Top view)

Type	without LED	with LED
Dimensions		

The blue line represents the switch outline.

■ Dimensions with color button and mounting frame

(**TP2** **TPL2**)



Button	Dimension **A**	Dimension **B**	Dimension **C**	**D**Dimension **D**
□10	□10	□12.5	6	6.5
ϕ10	ϕ10	ϕ12.5	6	6.5
□7.5	□7.5	□10	6	6.5
ϕ7.5	ϕ7.5	ϕ10	5.3	7.2

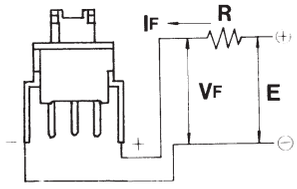
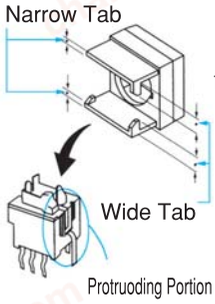
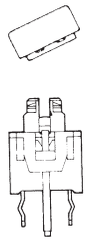
Note: Neither the **button** nor the **mounting frame** can be mounted on to **TP1** and **TPL1**.

(ON) : Momentary

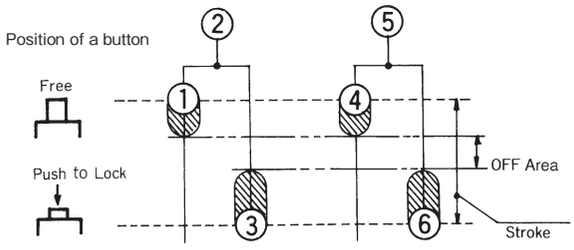
□■ : Refer to "Table of Part Numbers" on P.181 for a full list of part numbers.

chanhvinh.com

■Handling Precautions

LED circuit	Current to be applied to the LED must be lower than the forward current (IF) indicated in the LED Specifications of each switches. Resistance value R should be calculated using the formula on the right.  Calculation Example : E=6 V I_F=10mA $R=\frac{E-V_F}{I_F}$ $R=\frac{6-2.1}{0.01}$ =390Ω Use V_F=2.1V to calculate.
Accessories mounting	 1.Installing the mounting frame Install the mounting frame so that the tab on the frame is in the same direction as the switch groove. 2.Installing the color button Install the color button so that the protrusions on the switch actuator fit in the square buttonhole.  ● The mounting frame cannot be installed when the color button is already mounted on the switch. Do not remove the button when a switch is locked.

■Contact method

Code	Item	Contact method
P	Non-shorting	 There is a range of complete OFF time in the transit process from Terminal ① (or ④) to ③ (or ⑥).

▨ : ON area

■Table of Part Numbers

Contactt plating \ Series			TP1	TPL1	TP2	TPL2
Non-illuminated	Silver		TP1—01	TPL1—01	TP2—01	TPL2—01
	Gold		★TP1—01G	——	★TP2—01G	★TPL2—01G
Illuminated	Series		TP2		TPL2	
	Silver	LED				
		Red	☆TP2—01—L2		☆TPL2—01—L2	
		Green	TP2—01—L5		TPL2—01—L5	
		Yellow	☆TP2—01—L8		☆TPL2—01—L8	
	Gold	Red	★TP2—01G—L2		★TPL2—01G—L2	
		Green	★TP2—01G—L5		★TPL2—01G—L5	
		Yellow	★TP2—01G—L8		★TPL2—01G—L8	

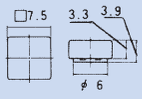
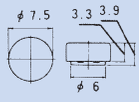
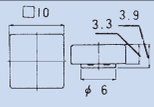
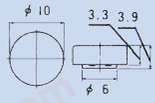
☆ : Semi-standard products. ★ : Made to order products.

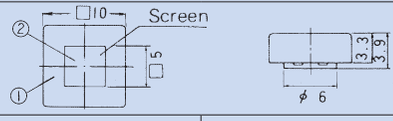
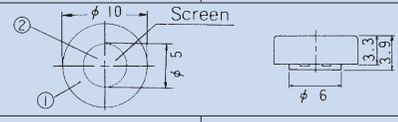
chanhvinh.com

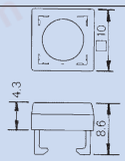
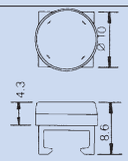
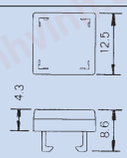
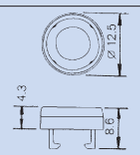
TP/TPL

■Optional Accessories

《Sold separately》

Part Name	Color Button (Non-illuminated)			
Dimensions (Material : ABS)				
Dark gray	140007480234	140007480272	140007480244	140007480282
Gray	140007480235	140007480273	140007480245	140007480283
Wite	140007480236	140007480274	140007480246	140007480284
Ivory	140007480237	140007480275	140007480247	140007480285
Red	140007480231	140007480269	140007480241	140007480279
Green	140007480233	140007480271	140007480243	140007480281
Blue	140007480232	140007480270	140007480242	140007480280

Part Name	Color Button (Illuminated)			
Dimensions Material : ABS				
②Screen color / ①Color	Clear	Red Clear	Green Clear	Yellow Clear
Dark gray	140007480468	140007480251	140007480258	140007480265
Gray	140007480469	140007480252	140007480259	140007480266
Wite	140007480470	140007480253	140007480260	140007480267
Ivory	140007480471	140007480254	140007480261	140007480268
Red	140007480472	140007480248	140007480255	140007480262
Green	140007480473	140007480250	140007480257	140007480264
Blue	140007480474	140007480249	140007480256	140007480263
Dimensions Material : ABS				
②Screen color / ①Color	Clear	Red Clear	Green Clear	Yellow Clear
Dark gray	140007480475	140007480289	140007480296	140007480303
Gray	140007480476	140007480290	140007480297	140007480304
Wite	140007480477	140007480291	140007480298	140007480305
Ivory	140007480478	140007480292	140007480299	140007480306
Red	140007480479	140007480286	140007480293	140007480300
Green	140007480480	140007480288	140007480295	140007480302
Blue	140007480481	140007480287	140007480294	140007480301

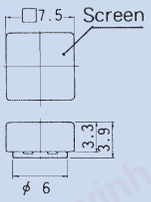
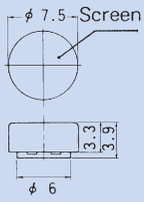
Part Name	Mounting Frame			
Dimensions Material : ABS				
Dark gray	140000340191	140000340195	140000340187	140000340199
Gray	140000340192	140000340196	140000340188	140000340200
Wite	140000340193	140000340197	140000340189	1400003401201
Ivory	140000340194	140000340198	140000340190	140000340202

: Optional Accessories

chanhvinh.com

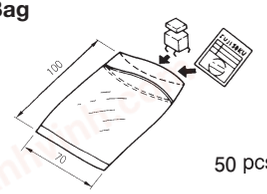
■Optional Accessories

《Sold separately》

Color Button (Illuminated)		
Dimensions (ABS)		
Clear	**140007480466**	**140007480467**
Red Clear	**140007480238**	**140007480276**
Green Clear	**140007480239**	**140007480277**
Yellow clear	**140007480240**	**140007480278**

■Packaging Specifications

Zipper Plastic Bag



50 pcs/pack

■Soldering Specifications

(1) Manual Soldering
Device: Soldering iron
①380°C, Max.; 3 seconds, Max.

(2) Wave Soldering
Device: Jet wave type or dip type
①245°C; 3 seconds, Max.
・Pre-heating should be done at temperatures below 80°C to 120°C and within 120 seconds.
・For **TPL** type, soldering should be done with the lock released.

■Flux Cleaning

(1) Solvents : Fluorine or Alcohl type
(2) The **TP/TPL** series are not washable. To wash the PC board, clean the soldering surface of the PC board with a brush so that the switch is not exposed to the cleaning solution.
(3) After soldering, wait until the temperature of the terminals cool down to 90℃ or below or until the parts are exposed to room temperature for more than 5 min. before washing.

■Switch Operation (TM/TR/LTM/LTR/TP/TPL Series)

(1) Operating force should be 9.8 N or less.
(2) Do not operate the switch right after soldering.
(3) Do not solder the switch with the actuator pressed down.