PWL-2P Series Power Switch Product Specifications

File/Edition: PWL-2P2T-6SAPTA-SPC.002

Description: Power Switch

Customer Name: Model No.: PWL-2P Series

Customer P/N: Toneluck P/N: PWL-2P2T-6SAPTA

Representative: Project Code:

Specifications Receipt Confirmation

Received by: _____ Title: _____

Signature: _____ Date: _____

Remark:

1. This product specification is considered as the technical agreement between the receiving customer and Toneluck. Any information on the general product catalog which is in conflict with or different from the corresponding information of this document is considered as invalid.

2. If customer issue purchase orders without confirmation by signature of this specification after receipt, such confirmation will be considered as granted upon receipt of the first purchase order.

Prepared by: Bink Wan 2022-06-01

Checked by: Genghong Guo 2022-06-01

Approved by: Jerry 2022-06-01

1. General Characteristics:

1.1 Application: This specification is applied to the power switch for general applications.
1.2 Operating Temperature Range: -25°C to +85°C
1.3 Operating Relative Humidity : ≤96% at +40°C
1.4 Test Conditions: Unless otherwise specified, the atmospheric conditions for making measurements and tests are as follows:
Ambient Temperature : 5~35 °C;
Relative Humidity : 45~85%;
Air Pressure : 86~106kPa (860~1060mbar)

2. Appearance, Structure & Dimensions:

2.1 Appearance : The switch shall have good finishing, and no rust, crack or Plating defects.
2.2 Structure & Dimensions: Refer to individual product drawing.
2.3 Markings: Refer to individual product drawing.
2.4 Approved by Standards: Refer to individual product drawing.

3. Ratings & Life:

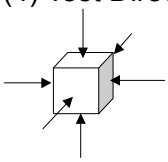
Rating	Operating Life with Load
Refer to individual product drawing	

4. Electrical Characteristics:

	Item	Criteria	Test Method
4.1	Insulation Resistance	100MΩ Min.	500±50VDC voltage is applied between all terminals and between terminal and ground (frame) for 60±5s.
4.2	Dielectric Voltage	No dielectric breakdown shall occur.	1500VAC (50~60Hz, cut-off current 10mA) is to be applied between live parts of opposite polarity and between live parts and dead metal parts for 60±5s.

5. Mechanical Characteristics:

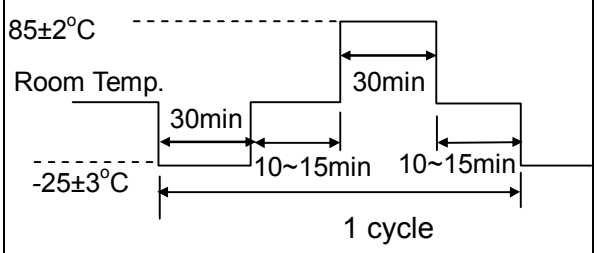
	Item	Criteria	Test Method
5.1	Operating Force	Refer to individual product drawing	Apply a tension meter on the midpoint of the actuator (or tip of the shaft) to supply a pressure vertically from its free position to operating position.
5.2	Pre Travel	Refer to individual product drawing	From free position to locking position.
5.3	Total Travels	Refer to individual product drawing	
5.4	Terminal Strength	-Shall be free from terminal looseness, damage and insulator breakage. -The electrical performance requirements specified in section 4 shall be satisfied.	A static load of 25N shall be applied to the tip of terminal in a desired direction for 10±1s. The test shall be done once per terminal.
5.5	Strength of operating section	-Shall be free from pronounced wobble bending and mechanical abnormalities.	A static load of 30N shall be applied in the operating direction for 15s. A static load of 30N shall be applied in the pulling direction for 15s. A static load of 30N shall be applied in the perpendicular direction of operation at the tip of actuator for 15s.

5.6	Vibration Proof	After test: - Insulation Res.: 50MΩ Min. - Electrical performance requirements specified in item 4.2 shall be satisfied. -Operating force: Within ±10% of specified value. -No abnormalities shall be recognized in appearance and construction.	Switch shall be secured to a testing machine by a normal mounting device and method. Switch shall be measured after following test: (1) Vibration frequency range = 10~55 Hz (2) Total amplitude = 1.5mm (3) Sweep ratio: 10~55~10Hz Approx. 1 min. (4) Method of changing the sweep vibration frequency : logarithmic or linear (5) Direction of vibration: Three perpendicular directions including actuating direction. (6) Duration :2 hours @ (6 hours in total)
5.7	Mechanical Shock	After test: - Insulation Res.: 50MΩ Min. - Electrical performance requirements specified in item 4.2 shall be satisfied. -Operating force: Within ±10% of specified value. -Shall be free from mechanical abnormalities.	Switch shall be measured after following test: (1) Mounting Method : Normal (2) Acceleration : 490m/s^2 (50G) (3) Duration : 11 ms (4) Test Direction : 6 directions  (5) Number of shocks:3 times per direction (18 times in total)
5.8	Solder ability	-More than 90% of immersed part shall be covered with solder.	Switch shall be checked after following test: (1) Soldering Temperature : 260 + 5 °C Immersing Time : 3 + 0.5s Flux immersing time shall be 5~10s in normal room temperature. (2) Immersion Depth: Immersion depth shall be at copper plating portion of PCB after mounting. (Thickness of PCB = 1.6mm)
5.9	Solder Heat Resistance	-No abnormalities shall be observed in appearance and operation. -The electrical performance requirements specified in item 4 shall be satisfied.	Switch shall be measured after following test: (1) Soldering Temperature & Immersing Time: Dip Soldering: 260 ± 5°C, 5 ±1s Manual Soldering: 350 ± 10°C, 3~4s (2) Immersion Depth:(For Dip Soldering) Immersion depth shall be at copper plating portion of PCB after mounting (Thickness of PCB = 1.6mm.)

6. Durability Characteristics:

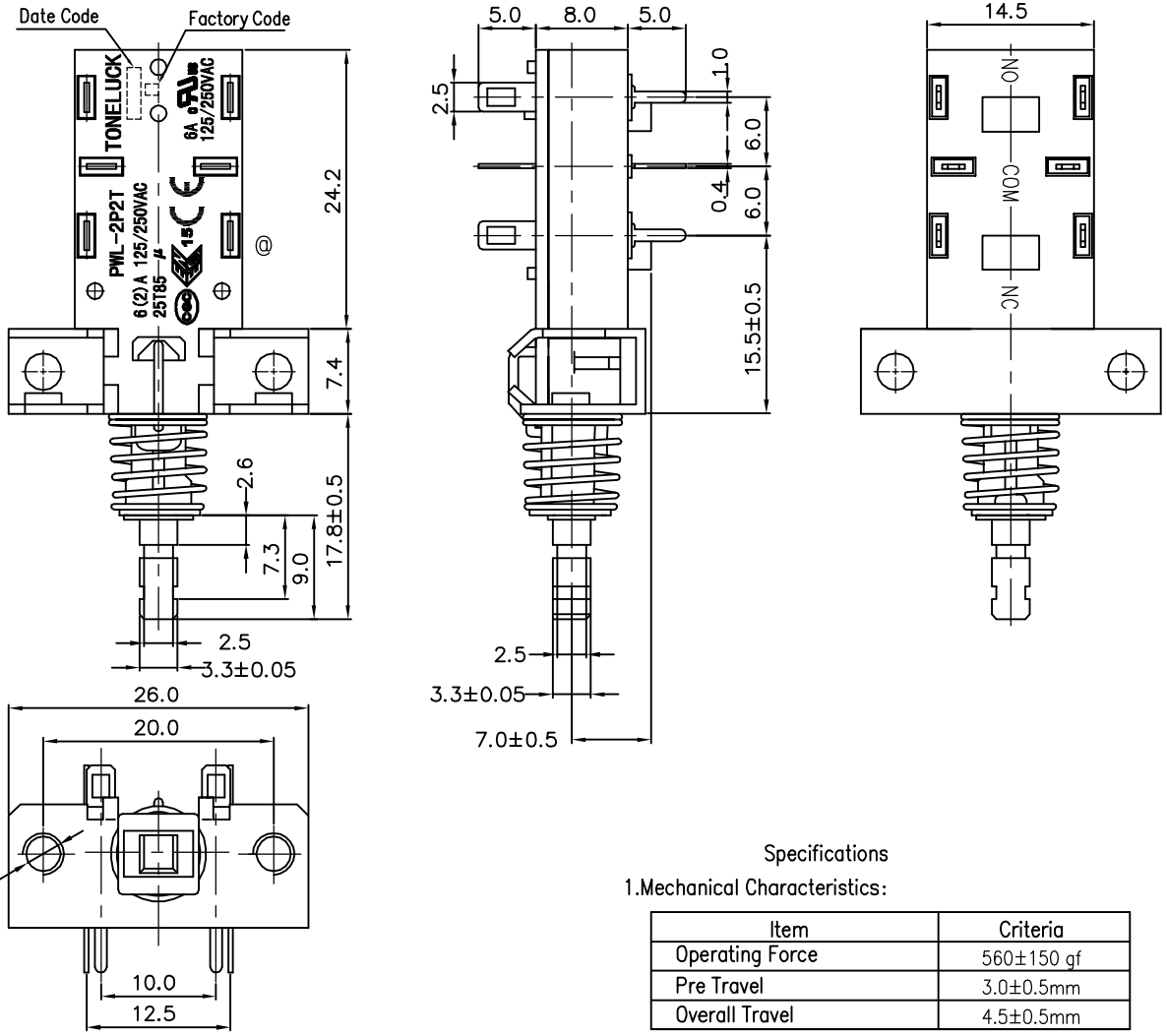
	Item	Criteria	Test Method
6.1	Operating Life with Load	After test:: - Insulation Res.: 10MΩ Min. - Electrical performance requirements specified in item 4.2 shall be satisfied. - Operating force shall be within ±10% of specified value. - The switch shall be free from abnormalities in appearance & construction.	Operation shall be performed continuously with load as follow: ① 6A 125/250VAC 6,000 cycles(UL cUL) ②6(2)A 125/250VAC 10,000 cycles (ENEC、CQC) 6~10 cycles/minute

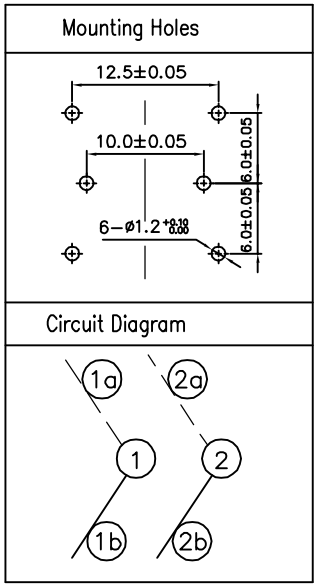
7. Weather Proof Characteristics:

	Item	Criteria	Test Method
7.1	Cold Proof	After test:: - Insulation Res.: 10MΩ Min. - Electrical performance requirements specified in item 4.2 shall be satisfied. - Operating force shall be within ±10% of specified value. - The switch shall be free from abnormalities in appearance & construction.	After testing at –25±3°C for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be eliminated.
7.2	Hot Proof		After testing at 85±2°C for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that.
7.3	Moisture Resistance		After testing at 40±2°C, 90~95% RH for 24 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that Water drops shall be eliminated.
7.4	Temperature Cycling		After 5 cycles of following conditions, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be eliminated. 

OUTLINE	File/Edition:	PWL-2P2T-6SAPTA.004

XX.XX	CONTROL DIMENSION
△	CRITICAL CHARACTERISTIC





Specifications

1.Mechanical Characteristics:

Item	Criteria
Operating Force	560±150 gf
Pre Travel	3.0±0.5mm
Overall Travel	4.5±0.5mm

Base	Thermoplastic
Plunge	Thermoplastic
Cover	Thermoplastic
Spring	Spring Steel
Terminal	Copper Alloy, Silver plated
Lock	Carbon Steel
Contact	Silver Alloy

2.Electrical Characteristics:

Ratings:	6A 125/250VAC (UL.cUL), 6(2)A 125/250VAC (ENEC. CQC)	
Insulation Resistance:	100MΩ Min.	
Operating Life :	6000 cycles with load	6A 125/250VAC (UL cUL)
	10000 cycles with load	6(2)A 125/250VAC(ENEC. CQC)
Dielectric: Voltage	1500VAC	–applied between live parts of opposite polarity –applied between live parts and dead metal parts
Operating Temperature Range:	-25℃~+85℃	

MASS PRODUCTION RELEASE

REV.	DATE	MODIFICATION	ECN NO.	PRIOR VERSION
@	2021-08-10	**"ENEC 17" Changed to "ENEC 15"**	ECN-21057	003

				Tolerance Unless Otherwise Specified					
Project Ref:	Power Switch			~3	>3~10	>10~30	>30~80	>80~180	Angle
Part No:	PWL-2P2T-6SAPTA			±0.20	±0.30	±0.40	±0.60	±0.80	±3°
Drawing No:	- - -	Eng Ver	A2						
Drafted by:	Shan Hong	Date:	2021-08-10	Unit: mm		Size: A4		Scale:	
Checked by:	Bink Wan	Date:	2021-08-10	THIRD ANGLE					
Approved by:	Norris Xie	Date:	2021-08-10						

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Switches & Control Solutions