



Ultra-miniature Rocker Switches 4D series



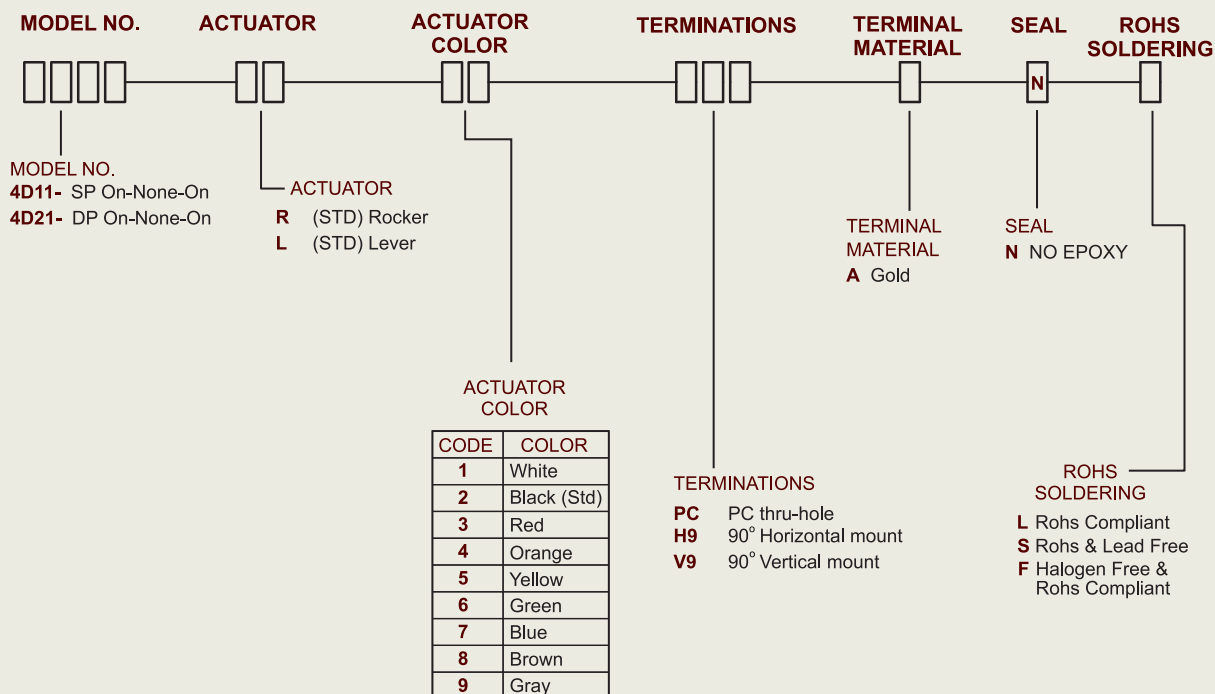
General Specification

- Contact Rating:** 0.4VA max. @ 20V AC or DC max.
- Initial contact resistance:** 100mΩ typ. @ 2-4VDC, 100mA
- Insulation resistance:** 500MΩ min. at 500VDC
- Dielectric strength:** 500VAC rms min. at sea level
- Mechanical life at no load:** 50,000 make-and-break cycles
- Operating temperature range:** -30°~ +85°C
- Hand Soldering:** 300°C +/- 5°C for 3 seconds max with a 60W iron.
- Wave Soldering:** 260°C +/- 5°C; Duration 5 secs. max. (PCB thickness 1.6mm)

Materials

- Case & Bushing:** Glass filled Nylon 6/6, flame retardant, heat stabilised (UL94V-0)
- Actuator:** Nylon, black std.
- Switch Support:** Brass or steel, tin plated.
- Contacts/Terminals:** Gold plated copper alloy.

How to Order



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS / SCHEMATIC		
		POS.1	POS.2	POS.3	POS.1	POS.2	POS.3
SP	4D11-	ON	NONE	ON	5-6	OPEN	5-4
DP	4D21-	ON	NONE	ON	5-6,2-3	OPEN	5-4,2-1

Technical drawing of a lever assembly. The drawing shows a side view of the lever with dimensions in inches and millimeters. Key dimensions include:

- Overall width: .177 (4.50 mm)
- Distance from center to right edge: .118 (3.00 mm)
- Distance from center to left edge: .276 (7.00 mm)
- Distance from center to bottom edge: .197 (5.00 mm)
- Distance from center to top edge: .008 (0.20 mm Typ)
- Distance from center to bottom edge: .010 (0.25 mm Typ)
- Distance from center to right edge: .150 (3.80 mm)
- Angle: 28°

Part No. Shown : 4D11-R2PCANL

Part No. Shown : 4D21-L2PCANL

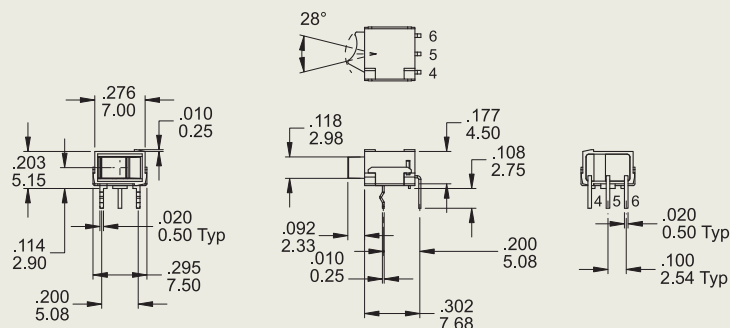
Function/Mounting Options (contd.)

H9

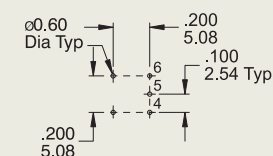


SPDT

Part No. Shown : 4D11-R2H9ANL



P.C. MOUNTING

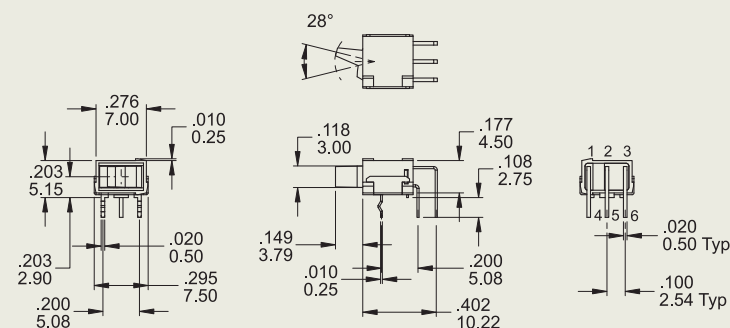


H9

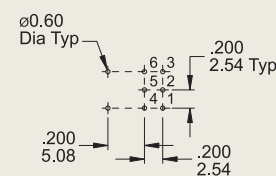


DPDT

Part No. Shown : 4D21-L2H9ANL



P.C. MOUNTING

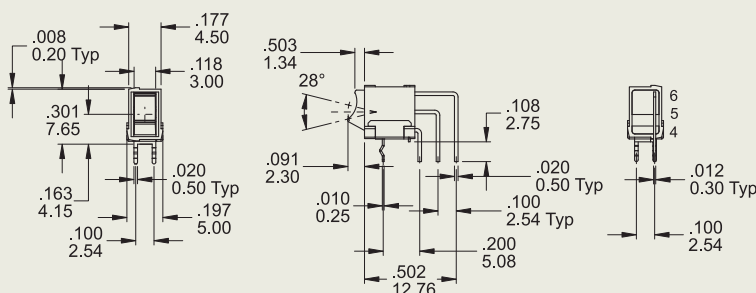


V9

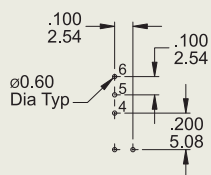


SPDT

Part No. Shown : 4D11-R2V9ANL



P.C. MOUNTING

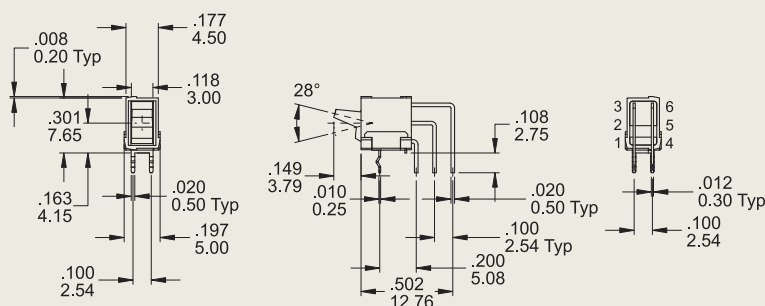


V9

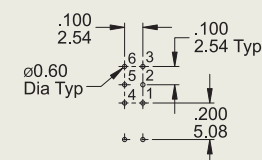


DPDT

Part No. Shown : 4D21-L2V9ANL



P.C. MOUNTING



4D SERIES SPECIFICATION

Test Sequence

ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
①	Visual Examination	Visual Examination check without any external force applied	There shall be no defects that affect the serviceability of the product.
②	Contact Resistance	@2-4VDC 100mA.	100mΩ Max.
③	Insulation Resistance	Measurements shall be made following application of 500 V/DC potential across terminals and cover.	500MΩ min/500VDC 100mA
④	Dielectric Withstanding Voltage	500 VAC (25Hz or 30Hz) 0.5mA shall be applied across terminals and cover for 1 minute.	There shall be no breakdown or flashover.
⑤	Solder Heat Resistance	Through Hole Type Wave Soldering Soldering Temperature: 260±5°C. Duration of Solder Immersion: 5 ±1 Seconds. PCB is 1.6mm in thickness Manual Soldering Soldering Temperature 300±5°C . Duration of Solder Heated 3 ±1 seconds.	Shall be free from pronounced backlash and falling-off or breakage of terminals. Shall conform to the limits in items ② to ④.
⑥	Vibration	Shall be tested in accordance with Method 201A of MIL-STD-202F. (a) Frequency: 10-55-10Hz in 1 min./cycle. (b) Direction: 3 vertical directions including the directions of operation (c) Test time: 2 hours in each direction	Shall conform to the limits in items ② to ④.
⑦	Shock	Shall be tested in accordance with Method 213B condition A of MIL-STD-202F (a) Acceleration: 50g (b) Action time: 5±1ms (c) Testing direction: 6 sides (d) Test cycle: 3 times in each direction	Shall conform to the limits in items ② to ④.
⑧	Actuation Force	Actuated in the direction shown with max. actuation force.	 R type  L type R type: 270g +/- 70g L type: 90g ~ 120g
⑨	Operating Life	Working with 0.1A @ 20VDC Max. and 50,000 make and break cycles at a repetition rate of 10~12 times per minute	(1) Shall conform to the limits items ① to ⑤. (2) After testing, contact resistance: 200mΩ min.. (3) Temperature rise of terminals <30°C.
⑩	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: (a) Temperature -40±3°C. (b) Time 96 hours.	Shall conform to the limits in items ② to ④.
⑪	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: (a) Temperature 85±2°C . (b) Time 96 hours.	Shall conform to the limits in items ③ & ④.

⑫

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:

- (a) Temperature $40 \pm 2^\circ\text{C}$.
- (b) Relative Humidity 90~95%.
- (c) Time 96 hours.

Shall conform to the limits in items ② & ③.

⑬

The Salt Testing

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

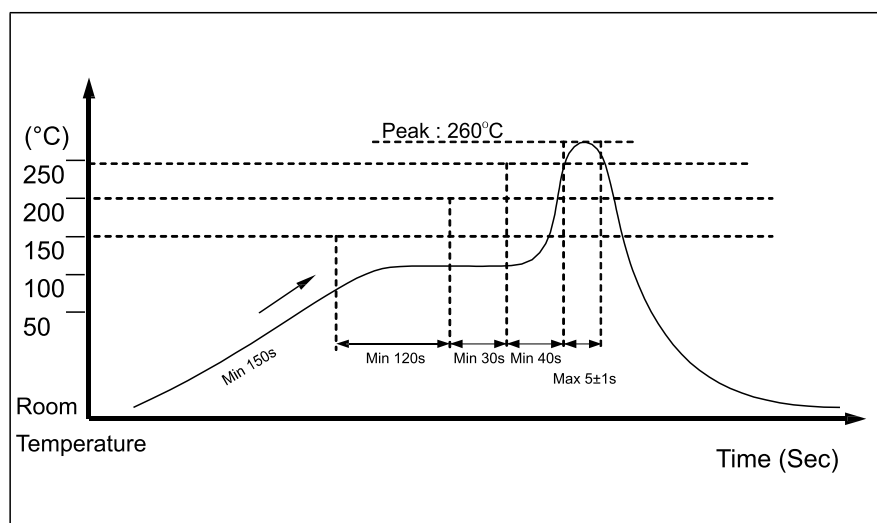
- (a) Temperature $35 \pm 2^\circ\text{C}$.
- (b) The ratio of salt-water: 5%.
- (c) The spray amount of salt- water 1~2 ml/h.
- (d) Time 48 hours.

The testing standard based on bubble, crack, and magnifying glass with gauge.

Soldering Conditions

Vapour phase

Temperature Profile



Manual Soldering

Soldering Temperature	Max.300°C
Continuous Soldering Time	Max. 3 seconds

Wave soldering

Recommended Soldering Temperature	260±5°C
Duration of Solder Immersion	5±1 seconds

(PCB is 1.6mm in thickness)

Precautions in Handling:

Care should be exercised so that flux from the upper part of the printed circuit board does not adhere to the switch.