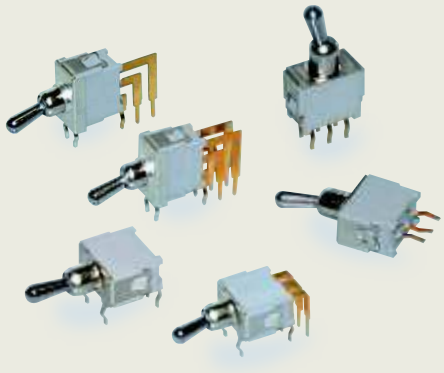
SPECIFICATION SHEET

NEW

Sealed / Washable Sub-Miniature Toggle Switches 2E series



General Specification

CONTACT RATING: Max 0.4 VA max @ 48 VAC or DC
MECHANICAL LIFE: minimum 40,000 operations.
CONTACT RESISTANCE: 50 mΩ max.
INSULATION RESISTANCE: 1,000 MΩ min.
DIELECTRIC STRENGTH: 500 Vrms min.@sea level.
OPERATING TEMPERATURE: -30°C to 85°C.
DEGREE OF PROTECTION: IP67

Materials

ACTUATOR: Brass,chrome plated,internal O-ring seal.
Standard for all actuators.
BUSHING & HOUSING: SPCC
CASE: Glass filled nylon 6/6, flame retardant,heat srabilized (UL94v-0)
SWITCH SUPPORT: Brass,tin plated.
CONTACT / TERMINALS: Phosphor bronze gold - plated over nickel barrier.
TERMINAL SEAL: Epoxy

How to Order

MODEL NO.	TERMINATIONS	CONTACT MATERIAL	SEAL	RoHS SOLDERING
			E	

Model NO.
2E11- SP On-None-On
2E12- SP On-None-Mom.
2E13- SP On-Off -On
2E14- SP Mom.-Off-Mom.
2E15- SP On-Off-Mom.
2E19- SP Off-None-On
2E21- DP On-None-On
2E22- DP On-None-Mom.
2E23- DP On-Off -On
2E24- DP Mom.-Off-Mom.
2E25- DP On-Off-Mom.

Terminations
PC PC thru-hole
H9 Right angle, PC thru-hole
V9 Vertical right angle, PC thru-hole

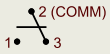
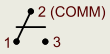
Contact material
A Gold
K Gold,pure-tin

Seal
E EPOXY (std)

RoHS soldering
L Rohs Compliant
S Rohs & Lead Free
F Halogen Free+RoHS

SPECIFICATION SHEET

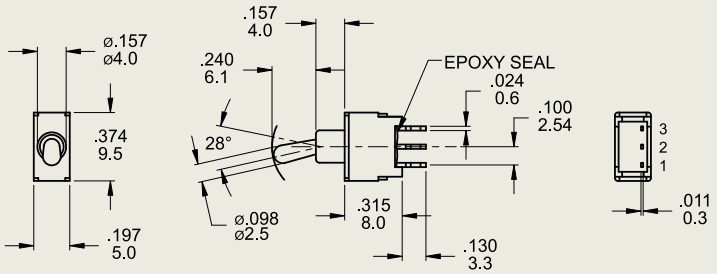
Switch Function

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS / SCHEMATIC		
		POS.1	POS.2	POS.3	POS.1	POS.2	POS.3
							
SP	2E11-	ON	NONE	ON	2-3 	N/A	2-1 
	2E12-	ON	NONE	MOM			
	2E13-	ON	OFF	ON		OPEN	
	2E14-	MOM	OFF	MOM			
	2E15-	ON	OFF	MOM			
	2E19-	OFF	NONE	ON	OPEN	N/A	2-1
DP	2E21-	ON	NONE	ON	2-3,5-6 	N/A	2-1,5-4 
	2E22-	ON	NONE	MOM			
	2E23-	ON	OFF	ON		OPEN	
	2E24-	MOM	OFF	MOM			
	2E25-	ON	OFF	MOM			

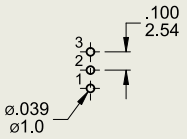
MOM=MOMENTARY

Function/Mounting Options

PC



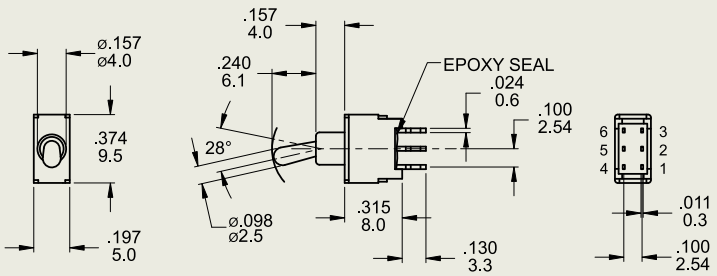
P.C. MOUNTING



SPDT

Part No. Shown : 2E11-PCAES

PC



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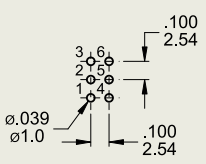


DPDT

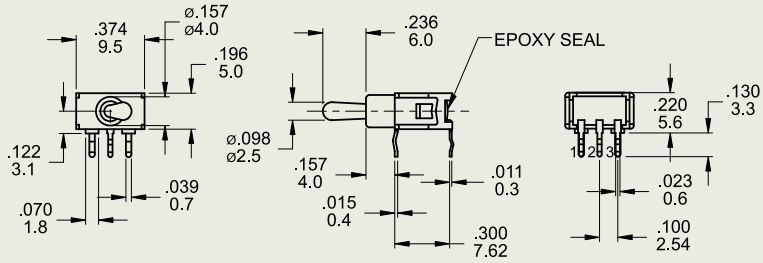
Part No. Shown : 2E21-PCAES

SPECIFICATION SHEET

Function/Mounting Options (contd.)

H9

SPDT



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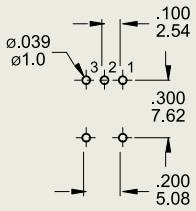
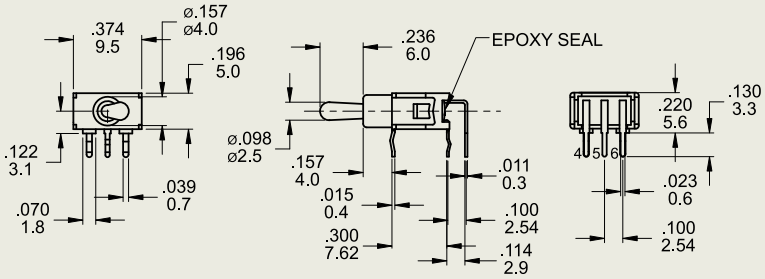
P.C. MOUNTING



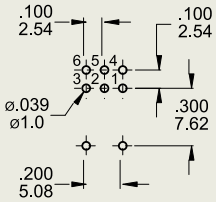
H9

DPDT



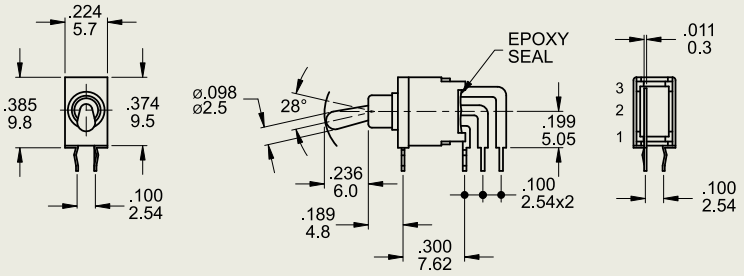
Part No. Shown : 2E21-H9AES

P.C. MOUNTING



V9

SPDT



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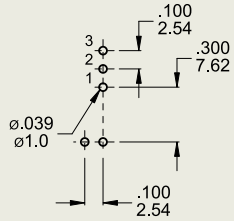
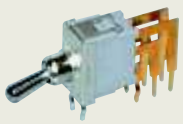
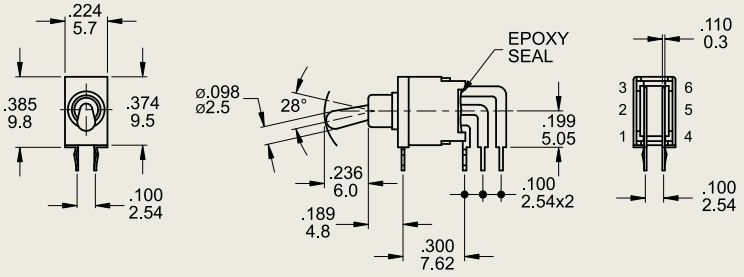
P.C. MOUNTING



V9

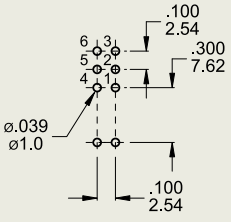


DPDT



Part No. Shown : 2E21-V9AES

P.C. MOUNTING



SPECIFICATION SHEET

2E SERIES SPECIFICATION

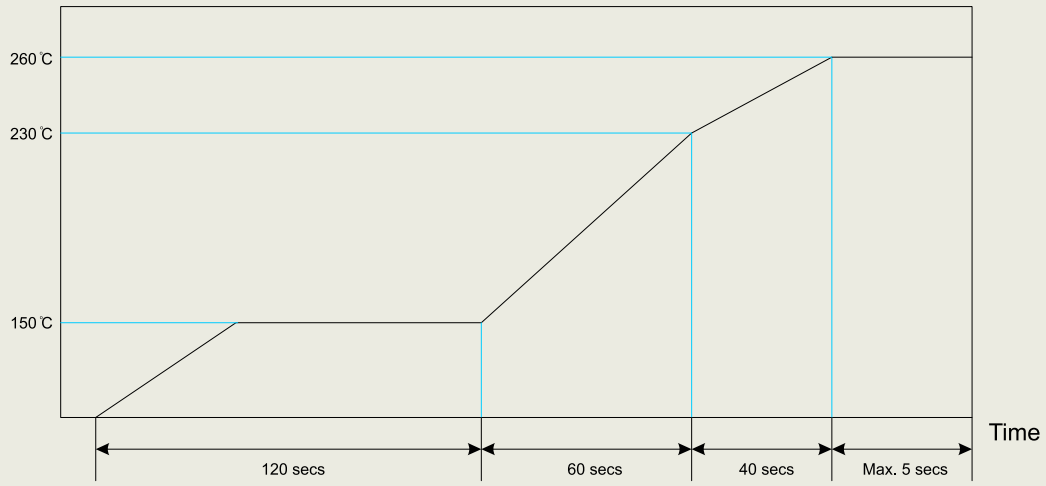
Test Sequence

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 for both silver and gold plated contacts.	50mΩ Max.
3	Insulation Resistance	Measurements shall be made following application of 500 V/DC potential across terminals and cover.	1000MΩ min/500VDC 100mA
4	Dielectric WithstandingVoltage	500 VAC (50Hz or 60Hz) shall be applied across terminals and cover for 1 minute.	There shall be no breakdown or flashover.
5	Solder Heat Resistance	**Wave Soldering** (1) Soldering Temperature:260+/- 5°C. (2)Duration of Solder Immersion: 5 ±1 Seconds. (3)Frequency of Soldering Process 2 times max. (PCB is 1.6mm in thickness)	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: 11+/-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	Model-1305N Mechanical Test	Force: 300+/-100 grams, except 2E19- model which is 300+/-50 grams
9	Operating Life	Measurements shall be made following the test below: (a) Max 48V AC/DC, 0.4VA/max. 50mA resistive load - gold plated (b) Rate of operation: 6-8 operations per minute. (c) Electrical Life Test: 40,000 cycles	(1) Shall conform to the limits in items 3 & 4.
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 -30±3°C. (b) Time 96 hours.	Shall conform to the limits in items 1 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 1 & 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±2°C. (b) Relative Humidity 90~95%. (c) Time 96 hours.	Shall conform to the limits in items ① to ④.
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±2°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

Wave Soldering



(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.