

## Features

- Push switch option standard
- Compact, rugged design
- High reliability
- Metal bushing/shaft
- Surface mount version
- Long rotational life

## PEC11J Series – 12 mm SMD Long Life Encoder

### Electrical Characteristics

Output .....	2-bit quadrature code
Closed Circuit Resistance .....	3 ohms maximum
Contact Rating .....	10 mA @ 5 VDC
Insulation Resistance .....	100 megohms @ 250 VDC
Dielectric Withstanding Voltage - Sea Level.....	300 VAC minimum
Electrical Travel .....	Continuous
Contact Bounce (15 RPM).....	2.0 ms maximum
RPM (Operating) .....	60 maximum

### Environmental Characteristics

Operating Temperature Range .....	-10 °C to +70 °C
Storage Temperature Range .....	-35 °C to +85 °C
Operating Humidity .....	25 % to 85 % R.H.
Rotational Life.....	100,000 cycles minimum
Switch Life .....	20,000 cycles minimum
IP Rating.....	IP 40
Moisture Sensitivity Level .....	1
ESD Classification (HBM).....	N/A

### Mechanical Characteristics

Mechanical Angle .....	360 ° continuous
Detent Torque .....	100 ±70 gf.cm
Shaft Push-Pull Strength .....	8 kg max.
Weight .....	5 gm maximum
Terminals .....	Printed circuit board surface mount terminals
Soldering Condition .....	
Reflow Soldering .....	Sn95.5/Ag2.8/Cu0.7 solder with no-clean flux (see Solder Profiles for recommended time and temperature)
Hand Soldering .....	Not recommended
Hardware .....	No hardware supplied with this encoder

### Switch Characteristics

Switch Type .....	Contact Push ON Momentary SPST
Power Rating (Resistive Load) .....	10 mA at 5 V DC
Switch Travel .....	
S (Standard) .....	0.5 ± 0.3 mm
H (High) .....	1.5 ± 0.5 mm
Switch Actuation Force.....	See How to Order
Contact Resistance .....	100 mΩ max.

### Packaging Characteristics

Pieces per Tray.....	75
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### How To Order

**PEC11J - 9 2 20 F - S 0015**

Model .....	PEC11J
Terminal Configuration .....	9 = Surface Mount Gull-wing Style
Detent Option .....	0 = No Detents (Exclusively for 24 Pulses) 1 = 18 Detents (Exclusively for 9 Pulses) 2 = 30 Detents (Exclusively for 15 Pulses)
Shaft Length .....	15 = 15.0 mm    20 = 20.0 mm    25 = 25.0 mm
Shaft Style .....	F = Flatted, Metal
Switch Configuration (SPST) .....	S = 350 ± 100 gf    H = 400 ± 200 gf    N = No Switch
Resolution .....	0009 = 9 Pulses per 360 ° Rotation 0015 = 15 Pulses per 360 ° Rotation 0024 = 24 Pulses per 360 ° Rotation**

\*\* Only available without detents.

### Additional Information

Click these links for more information:



**CALIFORNIA WARNING:** Can expose you to lead, a carcinogen and reproductive toxicant. See [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex. Specifications are subject to change without notice. Users should verify actual device performance in their specific applications. The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

## Applications

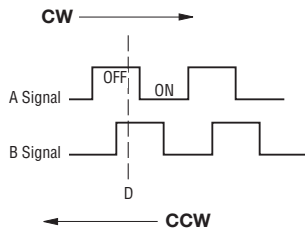
Level control, tuning and timer settings in:

- Professional audio equipment
- Professional lighting consoles
- Consumer white goods
- Test and measurement equipment
- Communications equipment
- Laboratory equipment

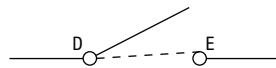
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### Quadrature Output Table

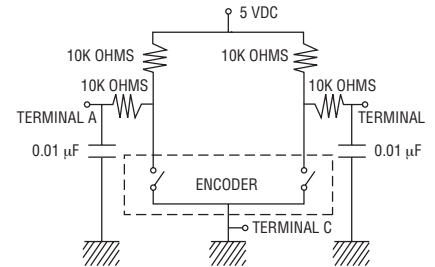


### Switch Circuit

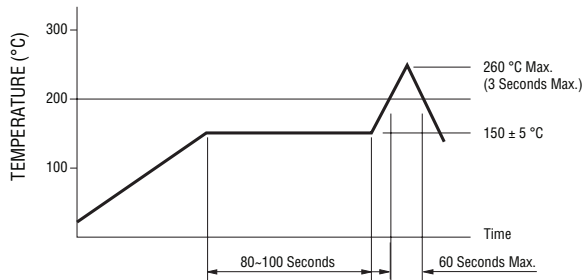


NOTE: D and E are dummy terminals on non-switch version.

### Suggested Filter Circuit



### Solder Profile



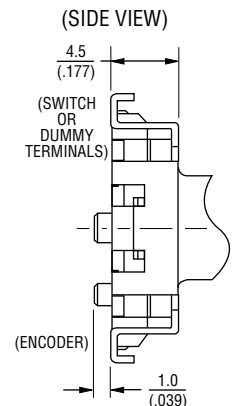
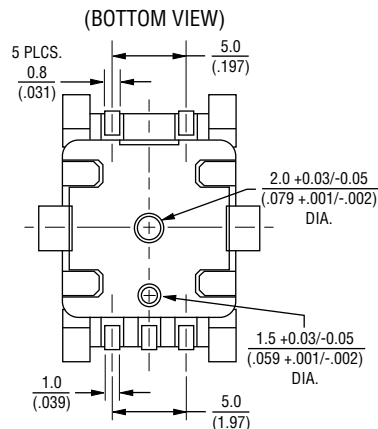
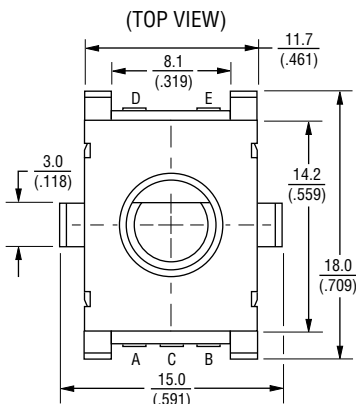
Processing Method: Reflow soldering with infrared heat or forced air convection (only once).

### Notes:

1. No-clean solder paste is recommended.
2. Aqueous wash is not recommended.
3. Use of water soluble soldering flux should be avoided due to possible corrosion.
4. Multiple passes through the soldering process is not recommended.

### Product Dimensions

#### Common Dimensions



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

TOLERANCE:  $\frac{<10}{(<.400)} = \frac{\pm 0.3}{(\pm .012)}$   
 $\frac{\geq 10}{(\geq .400)} = \frac{\pm 0.5}{(\pm .020)}$

Specifications are subject to change without notice.

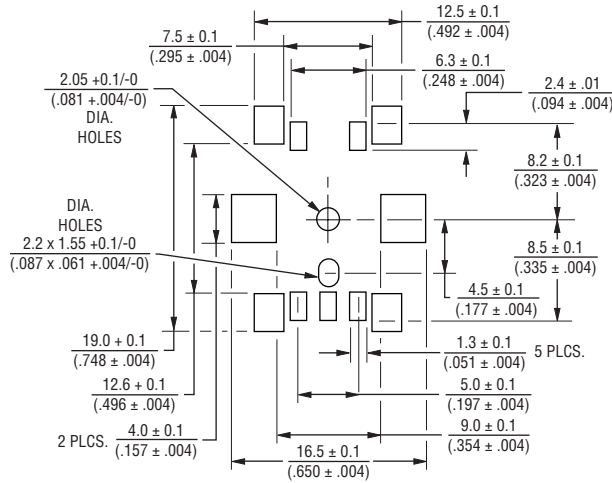
Users should verify actual device performance in their specific applications.

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## Recommended PCB Layout



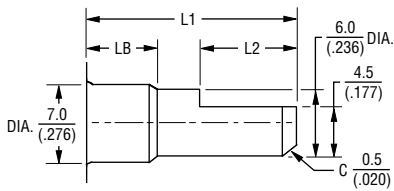
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

TOLERANCE:  $\frac{<10}{(<.400)} = \frac{\pm 0.3}{(\pm .012)}$   
 $\frac{\geq 10}{(\geq .400)} = \frac{\pm 0.5}{(\pm .020)}$

## Product Dimensions - Shaft Styles

### PEC11J without Switch

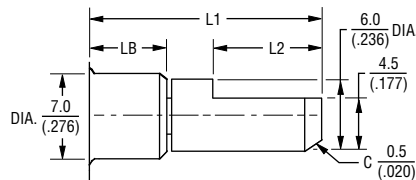
FLATTED SHAFT



L1	LB	L2
15 (.591)	7 (.276)	5 (.197)
20 (.787)	10 (.394)	7 (.276)
25 (.984)	10 (.394)	10 (.394)

### PEC11J with 0.5 mm Switch Travel

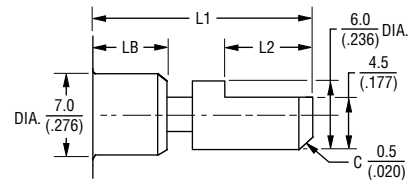
FLATTED SHAFT



L1	LB	L2
15 (.591)	7 (.276)	5 (.197)
20 (.787)	10 (.394)	7 (.276)
25 (.984)	10 (.394)	10 (.394)

### PEC11J with 1.5 mm Switch Travel

FLATTED SHAFT



L1	LB	L2
15 (.591)	7 (.276)	5 (.197)
20 (.787)	10 (.394)	7 (.276)
25 (.984)	10 (.394)	10 (.394)

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