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## 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 |
|-----------------------|----|

### How To Order

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

|   |  |
|---|--|
| Model .....   |  |
| Terminal Configuration .....  |  |
| 9 = Surface Mount Gull-wing Style   |  |
| Detent Option .....   |  |
| 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 |  |

### Additional Information

Click these links for more information:



**WARNING**  
Cancer and Reproductive Harm  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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## Applications

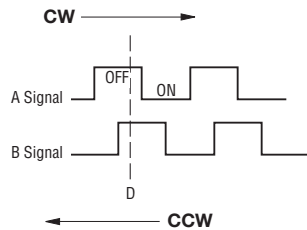
Level control, tuning and timer settings in:

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

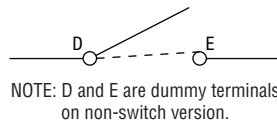
## PEC11J Series – 12 mm SMD Long Life Encoder

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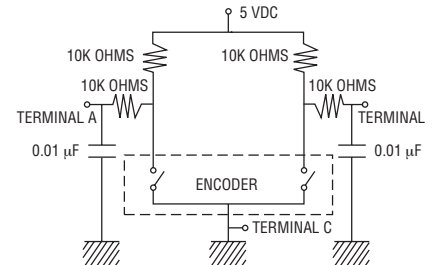
### Quadrature Output Table



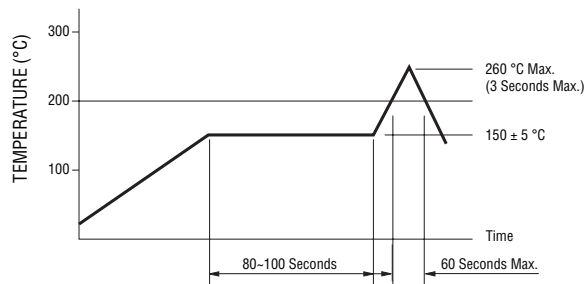
### Switch Circuit



### Suggested Filter Circuit



### Solder Profile



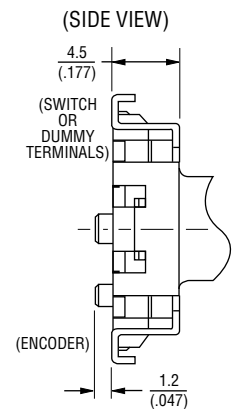
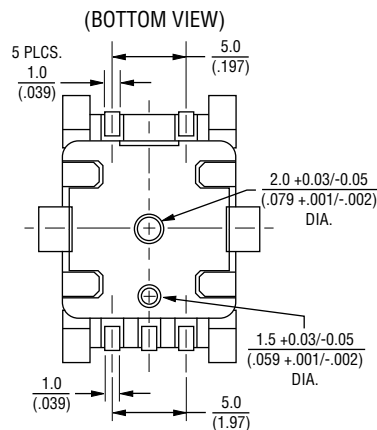
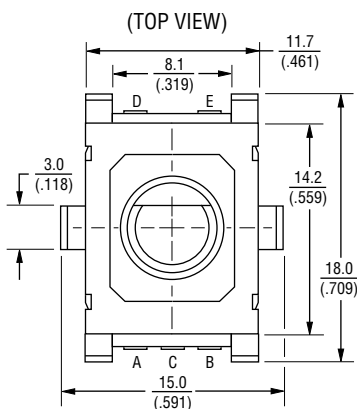
Processing Method: Reflow soldering with infrared heat or forced air convection (only once).

#### 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



TOLERANCES (UNLESS OTHERWISE NOTED):  $\leq 10$   $\pm 0.3$   $\leq (.394)$   $\pm (.012)$   $> 10$   $\pm 0.5$   $> (.394)$   $\pm (.020)$

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

Specifications are subject to change without notice.

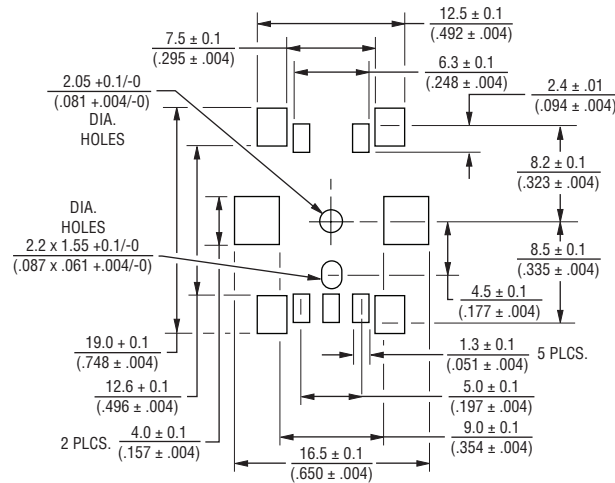
Users should verify actual device performance in their specific applications.

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# PEC11J Series – 12 mm SMD Long Life Encoder

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## Recommended PCB Layout

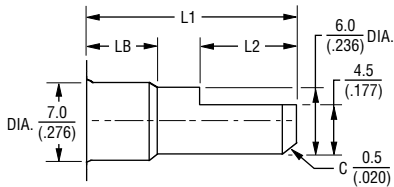


DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

## Product Dimensions - Shaft Styles

### PEC11J without Switch

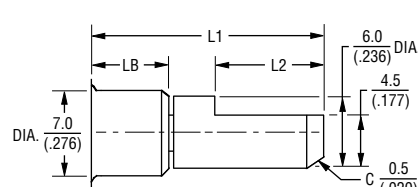
#### FLATTED SHAFT



| L1           | LB           | L2           |
|--------------|--------------|--------------|
| 15<br>(.591) | 7<br>(.276)  | 5<br>(.197)  |
| 20<br>(.787) | 10<br>(.394) | 7<br>(.276)  |
| 25<br>(.984) | 10<br>(.394) | 10<br>(.394) |

### PEC11J with 0.5 mm Switch Travel

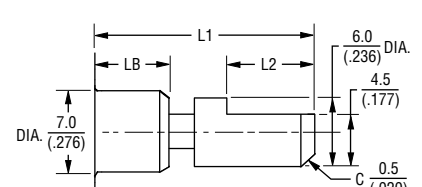
#### FLATTED SHAFT



| L1           | LB           | L2           |
|--------------|--------------|--------------|
| 15<br>(.591) | 7<br>(.276)  | 5<br>(.197)  |
| 20<br>(.787) | 10<br>(.394) | 7<br>(.276)  |
| 25<br>(.984) | 10<br>(.394) | 10<br>(.394) |

### PEC11J with 1.5 mm Switch Travel

#### FLATTED SHAFT



| L1           | LB           | L2           |
|--------------|--------------|--------------|
| 15<br>(.591) | 7<br>(.276)  | 5<br>(.197)  |
| 20<br>(.787) | 10<br>(.394) | 7<br>(.276)  |
| 25<br>(.984) | 10<br>(.394) | 10<br>(.394) |

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