

Features

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

Applications

Level control, tuning and timer settings in:

- Audio-visual equipment
- Consumer electric appliances
- Radios
- Musical instrumentation
- Communications equipment

PEC11S Series - 12 mm SMD Incremental 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 | -40 °C to +70 °C (-40 °F to +158 °F) |
| Storage Temperature Range | -40 °C to +85 °C (-40 °F to +185 °F) |
| Operating Humidity | 25 % to 85 % R.H. |
| Rotational Life | 15,000 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 (1.36 ±0.1 oz.-in.) |
| Shaft Push-Pull Strength | 10 kg max. |
| Weight | 5 gm (0.17 oz.) 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. |



Asia-Pacific: Tel: +886-2 2562-4117 • Email: asiacus@bourns.com

Europe: Tel: +36 88 885 877 • Email: eurocus@bourns.com

Mexico: Tel: +52 614 478 0400 • Email: mexicus@bourns.com

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WARNING Cancer and Reproductive Harm - 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.

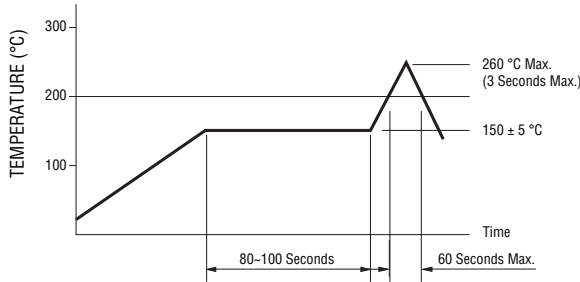
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The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

PEC11S Series - 12 mm SMD Incremental Encoder

BOURNS®

Solder Profile



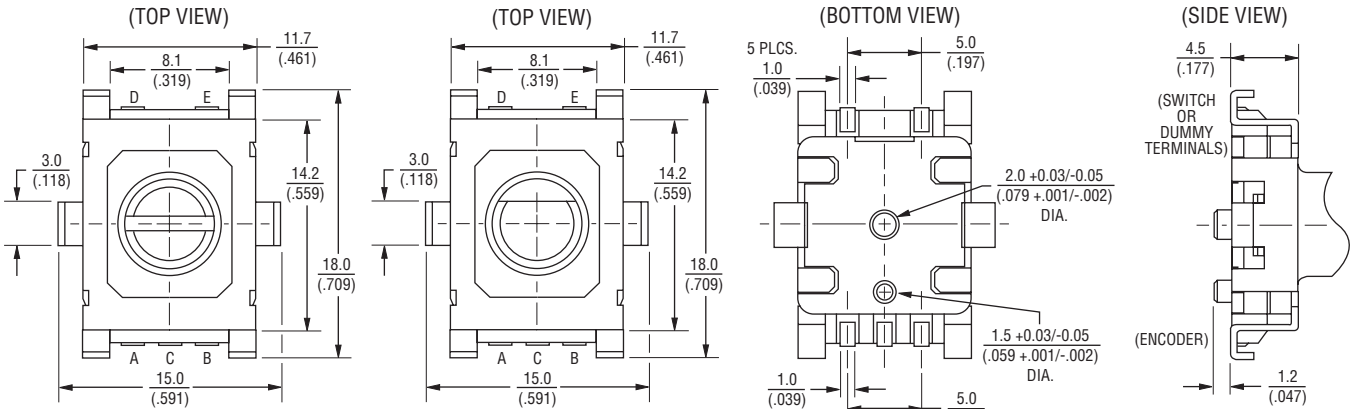
Processing Method: Reflow soldering with infrared heat or forced air convection (only once).

Notes:

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

Product Dimensions

Common Dimensions

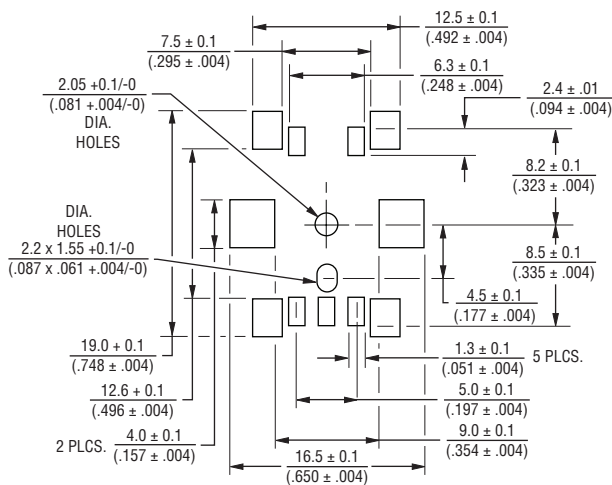


TOLERANCES (UNLESS OTHERWISE NOTED): ≤ 10 = ± 0.3
 $\leq (.394)$ = $\pm (.012)$

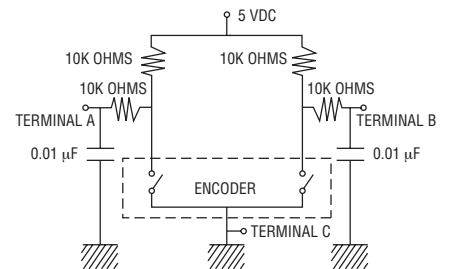
> 10 = ± 0.5
 $> (.394)$ = $\pm (.020)$

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

Recommended PCB Layout



Suggested Filter Circuit



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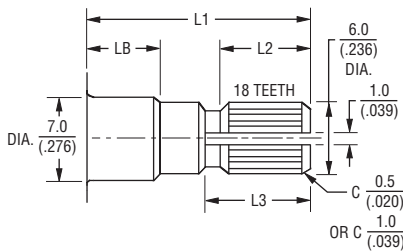
PEC11S Series - 12 mm SMD Incremental Encoder



Product Dimensions - Shaft Styles

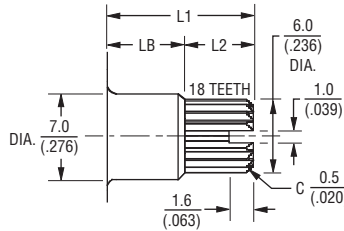
PEC11S without Switch

KNURLED SHAFT



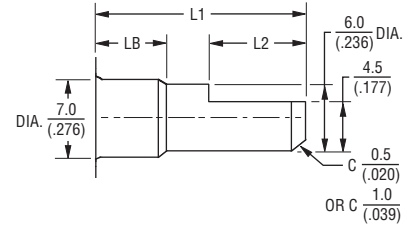
| L1 | LB | L2 | L3 |
|--------------|-------------|--------------|--------------|
| 15 (.591) | 5 (.197) | 7 (.279) | 8 (.315) |
| 20 (.787) | 7 (.276) | 10 (.394) | 11 (.433) |

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



| L1 | LB | L2 |
|---------------|-------------|---------------|
| 9.5 (.374) | 5 (.197) | 4.5 (.177) |

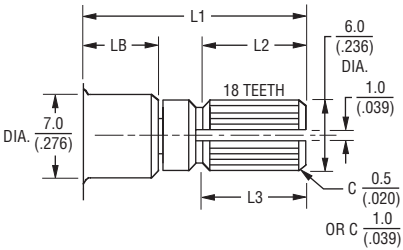
FLATTED SHAFT



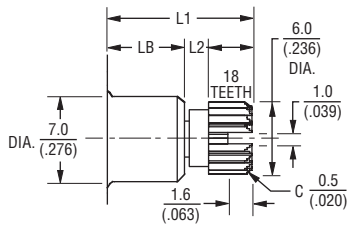
| L1 | LB | L2 |
|--------------|-------------|--------------|
| 15 (.591) | 5 (.197) | 7 (.276) |
| 20 (.787) | 7 (.276) | 12 (.472) |

PEC11S with 0.5 mm Switch Travel

KNURLED SHAFT

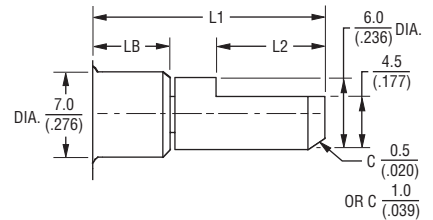


| L1 | LB | L2 | L3 |
|--------------|-------------|-------------|---------------|
| 15 (.591) | 5 (.197) | 7 (.279) | 7.5 (.295) |
| 20 (.787) | 7 (.276) | 9 (.354) | 10 (.394) |



| L1 | LB | L2 |
|----------------|-------------|---------------|
| 9.5 (.374) | 5 (.197) | 2.7 (.106) |
| 13.5 (.531) | 5 (.197) | 6.7 (.264) |

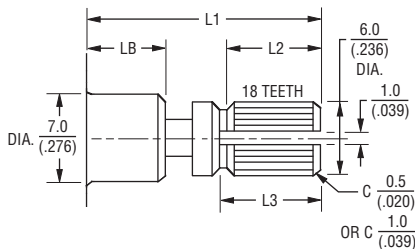
FLATTED SHAFT



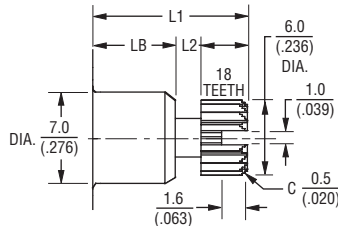
| L1 | LB | L2 |
|---------------|-------------|--------------|
| 9.5 (.374) | 5 (.197) | 3 (.118) |
| 15 (.591) | 5 (.197) | 7 (.276) |
| 20 (.787) | 7 (.276) | 10 (.394) |

PEC11S with 1.5 mm Switch Travel

KNURLED SHAFT

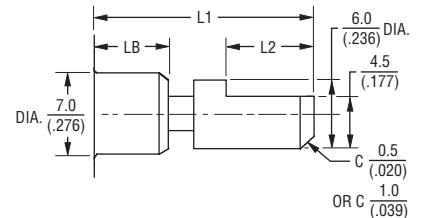


| L1 | LB | L2 | L3 |
|--------------|-------------|-------------|---------------|
| 15 (.591) | 5 (.197) | 6 (.236) | 6.5 (.256) |
| 20 (.787) | 7 (.276) | 8 (.315) | 9 (.354) |



| L1 | LB | L2 |
|----------------|-------------|---------------|
| 9.5 (.374) | 5 (.197) | 2.9 (.114) |
| 13.5 (.531) | 5 (.197) | 6.9 (.272) |

FLATTED SHAFT



| L1 | LB | L2 |
|--------------|-------------|--------------|
| 15 (.591) | 5 (.197) | 7 (.276) |
| 20 (.787) | 7 (.276) | 10 (.394) |
| 25 (.985) | 7 (.275) | 12 (.473) |

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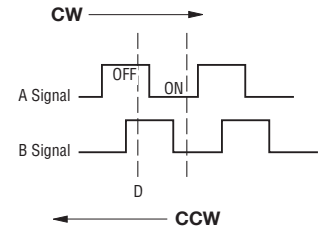


How To Order

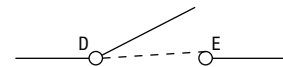
PEC11S - 9 2 20 F - S 0015

- Model _____
- Terminal Configuration _____
9 = Surface Mount Gull-wing Style
- Detent Option _____
2 = 30 Detents
- Shaft Length (See Product Dimensions - Shaft Styles for Availability) _____
9 = 9.5 mm
13 = 13.5 mm
15 = 15.0 mm
20 = 20.0 mm
25 = 25.0 mm (Flat Shaft and H-Switch Configuration Only)
- Shaft Style _____
F = Flatted, Metal
K = Knurled, Metal
- Switch Configuration (SPST) _____
S = 350 ± 100 gf
H = 400 ± 200 gf
N = No Switch
- Resolution _____
0015 = 15 Pulses per 360 ° Rotation

Quadrature Output Table



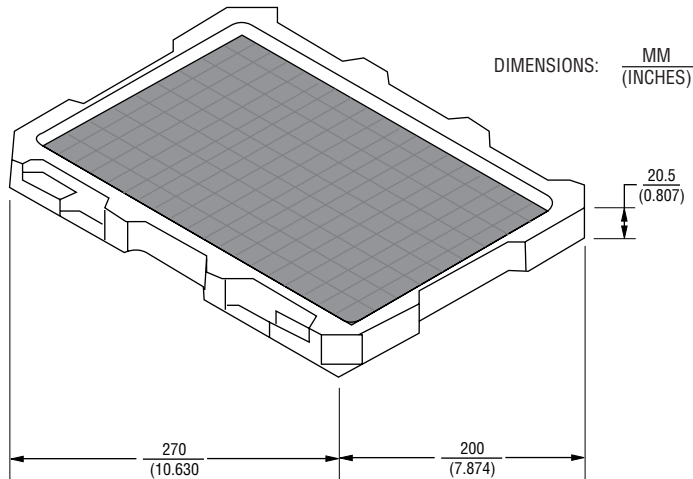
Switch Circuit



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

Packaging

- Tray 60 pcs. per tray
- Outer Box 10 trays; 1200 pcs. per box



REV. 07/25

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