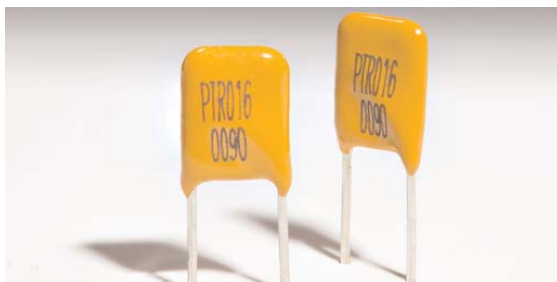


## PTR016V

## 16 Volt DC radial leaded, PolyTron™ PTC devices



## Product features

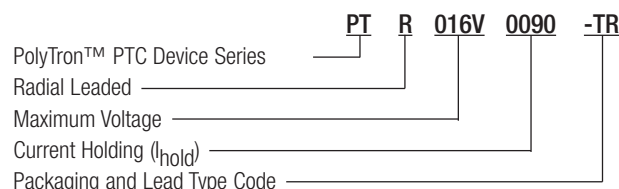
- PolyTron™ radial leaded thru-hole PTC device
- Maximum 16 V
- Current ratings from 0.9 A to 15 A
- Fast time-to-trip
- Low resistance
- Halogen free, lead free, RoHS compliant

## Applications

- Medical equipment
- Telecommunications
- White goods
- Computers and peripherals

## Agency information

- cURus: Recognized Card: File E343021 (Ihold 3A-15 A)
- TUV File: J 50194729

Ordering information/  
part number system

Lead Codes: TR &amp; BK - Straight Leads, TR1 &amp; BK1 - Kinked Leads

## TR &amp; TR1 On Reels

- 0.9-1.85 A - 3000 devices
- 2.5-4 A - 2500 devices
- 5-7 A - 1500 devices
- 8-15 A - 1000 devices

## BK &amp; BK1 In Poly Bags

- 0.9-1.60 A - 1000 devices
- 1.85-9.00 A - 500 devices
- 10.00-15.00 A - 250 devices

## Specifications

| Specifications |                        |                      |                                |                                |                         |                     |       |                           |       |                             |                    |     |
|----------------|------------------------|----------------------|--------------------------------|--------------------------------|-------------------------|---------------------|-------|---------------------------|-------|-----------------------------|--------------------|-----|
| Catalog Number | V <sub>max</sub> (Vdc) | I <sub>max</sub> (A) | I <sub>hold</sub> @ +23 °C (A) | I <sub>trip</sub> @ +23 °C (A) | P <sub>d</sub> Typ. (W) | Time to Trip (Max.) |       | Resistance (Ω)            |       |                             | Agency Information |     |
|                |                        |                      |                                |                                |                         |                     |       | Initial (R <sub>i</sub> ) |       | Post Trip (R <sub>f</sub> ) |                    |     |
|                |                        |                      |                                |                                |                         | (A)                 | (sec) | Min.                      | Max.  | Max.                        | cURus              | TUV |
| PTR016V0090    | 16                     | 40                   | 0.90                           | 1.80                           | 0.60                    | 8.00                | 1.20  | 0.070                     | 0.120 | 0.180                       |                    | X   |
| PTR016V0110    | 16                     | 40                   | 1.10                           | 2.20                           | 0.70                    | 8.00                | 2.30  | 0.050                     | 0.095 | 0.140                       |                    | X   |
| PTR016V0135    | 16                     | 40                   | 1.35                           | 2.70                           | 0.80                    | 8.00                | 4.50  | 0.040                     | 0.074 | 0.120                       |                    | X   |
| PTR016V0160    | 16                     | 40                   | 1.60                           | 3.20                           | 0.90                    | 8.00                | 9.00  | 0.030                     | 0.061 | 0.110                       |                    | X   |
| PTR016V0185    | 16                     | 40                   | 1.85                           | 3.70                           | 1.00                    | 8.00                | 10.00 | 0.030                     | 0.051 | 0.090                       |                    | X   |
| PTR016V0250    | 16                     | 40                   | 2.50                           | 5.00                           | 1.20                    | 8.00                | 40.00 | 0.020                     | 0.036 | 0.070                       |                    | X   |
| PTR016V0300    | 16                     | 100                  | 3.00                           | 5.10                           | 2.30                    | 15.00               | 1.00  | 0.038                     | 0.065 | 0.098                       | X                  | X   |
| PTR016V0400    | 16                     | 100                  | 4.00                           | 6.80                           | 2.40                    | 20.00               | 1.70  | 0.021                     | 0.038 | 0.060                       | X                  | X   |
| PTR016V0500    | 16                     | 100                  | 5.00                           | 8.50                           | 2.60                    | 25.00               | 2.00  | 0.010                     | 0.023 | 0.034                       | X                  | X   |
| PTR016V0600    | 16                     | 100                  | 6.00                           | 10.20                          | 2.80                    | 30.00               | 3.30  | 0.006                     | 0.018 | 0.028                       | X                  | X   |
| PTR016V0700    | 16                     | 100                  | 7.00                           | 11.90                          | 3.00                    | 35.00               | 3.50  | 0.006                     | 0.013 | 0.020                       | X                  | X   |
| PTR016V0800    | 16                     | 100                  | 8.00                           | 13.60                          | 3.00                    | 40.00               | 5.00  | 0.005                     | 0.011 | 0.018                       | X                  | X   |
| PTR016V0900    | 16                     | 100                  | 9.00                           | 15.30                          | 3.30                    | 45.00               | 5.50  | 0.005                     | 0.009 | 0.014                       | X                  | X   |
| PTR016V1000    | 16                     | 100                  | 10.00                          | 17.00                          | 3.60                    | 50.00               | 6.00  | 0.004                     | 0.007 | 0.010                       | X                  | X   |
| PTR016V1100    | 16                     | 100                  | 11.00                          | 18.70                          | 3.70                    | 55.00               | 7.00  | 0.003                     | 0.006 | 0.009                       | X                  | X   |
| PTR016V1200    | 16                     | 100                  | 12.00                          | 20.40                          | 4.20                    | 60.00               | 7.50  | 0.003                     | 0.006 | 0.009                       | X                  | X   |
| PTR016V1300    | 16                     | 100                  | 13.00                          | 22.10                          | 4.60                    | 65.00               | 8.50  | 0.002                     | 0.006 | 0.008                       | X                  | X   |
| PTR016V1400    | 16                     | 100                  | 14.00                          | 23.80                          | 4.60                    | 70.00               | 9.00  | 0.002                     | 0.005 | 0.007                       | X                  | X   |
| PTR016V1500    | 16                     | 100                  | 15.00                          | 25.50                          | 4.60                    | 75.00               | 10.00 | 0.002                     | 0.005 | 0.007                       | X                  | X   |

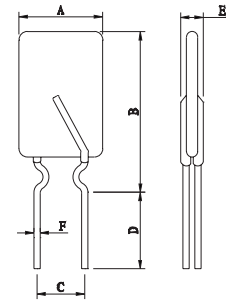
Notes:  $I_{hold}$  - Hold current: Maximum current device will pass without interruption in +23 °C still air. $I_{trip}$  - Trip current: Minimum current that will switch the device from low resistance to high resistance in +23 °C still air. $V_{max}$ : Maximum continuous voltage device can withstand without damage at rated current. $I_{max}$ : Maximum fault current device can withstand without damage at rated voltage. $P_d$ : Power dissipated from device when in the tripped state in +23 °C still air. $R_i$  (min.): Minimum resistance of device as supplied at +23 °C unless otherwise specified. $R_i$  (max.): Maximum resistance of device when measured one hour post reflow (SMD) or one hour post trip (radial-leaded device) at +23 °C unless otherwise specified.

Powering Business Worldwide

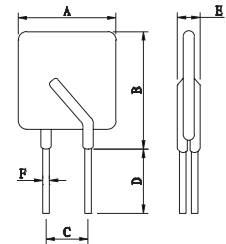
## Dimensions - mm

| Part Number | A Max. | B Max Lead Type |             | C        | D Min. | E Max. | F        | Figure/Lead Style |          |
|-------------|--------|-----------------|-------------|----------|--------|--------|----------|-------------------|----------|
|             |        | Straight (-TR)  | Kink (-TR1) |          |        |        |          | Straight TR       | Kink TR1 |
| PTR016V0090 | 7.4    | 12.2            | 12.2        | 5.0±0.8  | 7.6    | 3.5    | 0.5±0.02 | 2                 | 1        |
| PTR016V0110 | 7.4    | 14.2            | 14.2        | 5.0±0.8  | 7.6    | 3.5    | 0.5±0.02 | 2                 | 1        |
| PTR016V0135 | 8.9    | 13.5            | 13.5        | 5.0±0.8  | 7.6    | 3.5    | 0.5±0.02 | 2                 | 1        |
| PTR016V0160 | 8.9    | 15.2            | 15.2        | 5.0±0.8  | 7.6    | 3.5    | 0.5±0.02 | 2                 | 1        |
| PTR016V0185 | 10.2   | 15.7            | 15.7        | 5.0±0.8  | 7.6    | 3.5    | 0.5±0.02 | 2                 | 1        |
| PTR016V0250 | 11.4   | 18.3            | 20.5        | 5.0±0.8  | 7.6    | 3.5    | 0.5±0.02 | 2                 | 1        |
| PTR016V0300 | 7.1    | 11.0            | 14.0        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V0400 | 8.9    | 12.8            | 14.8        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V0500 | 10.4   | 14.3            | 16.0        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V0600 | 10.7   | 17.1            | 19.0        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V0700 | 11.2   | 19.7            | 22.0        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V0800 | 12.7   | 20.9            | 23.0        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V0900 | 14.0   | 21.9            | 24.0        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V1000 | 16.5   | 25.2            | 28.0        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V1100 | 17.5   | 26.0            | 29.0        | 5.0±0.8  | 7.6    | 3.5    | 0.8±0.02 | 2                 | 1        |
| PTR016V1200 | 17.5   | 28.0            | 31.0        | 10.0±0.8 | 7.6    | 3.5    | 1.0±0.02 | 2                 | 1        |
| PTR016V1300 | 21.6   | 29.2            | 32.0        | 10.0±0.8 | 7.6    | 3.5    | 1.0±0.02 | 2                 | 1        |
| PTR016V1400 | 23.5   | 27.9            | 30.0        | 10.0±0.8 | 7.6    | 3.5    | 1.0±0.02 | 2                 | 1        |
| PTR016V1500 | 25.1   | 29.0            | 32.0        | 10.0±0.8 | 7.6    | 3.5    | 1.0±0.02 | 2                 | 1        |

Style 1



Style 2

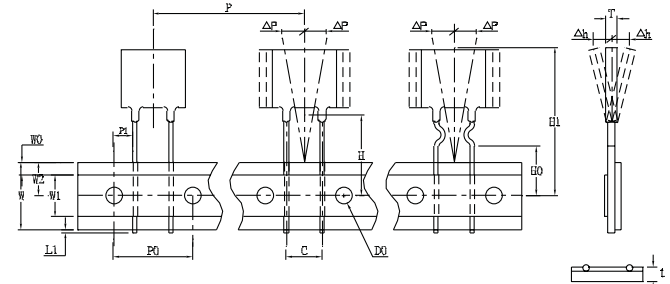


## Packaging/Taping Specifications

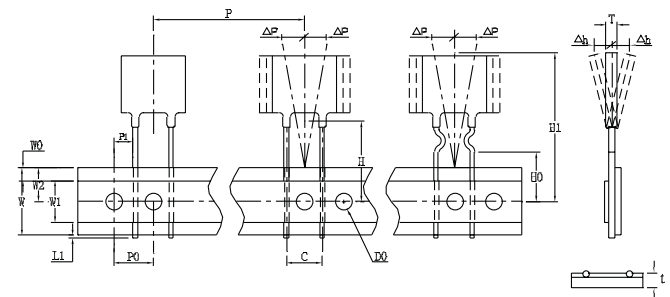
| Description                          | IEC Mark       | Dimension (mm) | Tolerance (mm) |
|--------------------------------------|----------------|----------------|----------------|
| Sprocket hole pitch                  | P <sub>0</sub> | 12.7           | ±0.3           |
| Ordinate to adjacent component lead: |                |                |                |
| PTR016V0090~PTR016V0250              | P <sub>1</sub> | 3.6            | ±1.0           |
| PTR016V0300~PTR016V1100              | P <sub>1</sub> | 4.5            | ±1.0           |
| PTR016V1200~PTR016V1500              | P <sub>1</sub> | 7.2            | ±1.0           |
| Device pitch:                        |                |                |                |
| PTR016V0090~PTR016V0600              | P              | 12.7           | ±1.0           |
| PTR016V0700~PTR016V1400              | P              | 25.4           | ±1.0           |
| PTR016V1500                          | P              | 38.1           | ±1.0           |
| Lead spacing                         | C              | *              | --             |
| Carrier tape width                   | W              | 18             | ±1.0           |
| Top distance between tape edges      | W <sub>0</sub> | 3.0            | Max.           |
| Hold-down tape width                 | W <sub>1</sub> | 12             | ±1.0           |
| Sprocket hole position               | W <sub>2</sub> | 9.0            | +0.75/-0.5     |
| Abscissa to top:                     |                |                |                |
| PTR016V0090~PTR016V0600              | H <sub>1</sub> | 32.2           | Max.           |
| PTR016V0700~PTR016V1500              | H <sub>1</sub> | 47.5           | Max.           |
| Abscissa to plane                    |                |                |                |
| (straight lead)                      | H              | 18.0           | +2/-0          |
| (kinked lead)                        | H <sub>0</sub> | 16.0           | ±0.5           |
| Sprocket hole diameter               | D <sub>0</sub> | 4              | ±0.2           |
| Lead protrusion                      | L <sub>1</sub> | 1              | Max.           |
| Tape thickness                       | t              | 0.9            | Max.           |
| Body lateral deviation               | Δ <sub>h</sub> | 0              | ±1.0           |
| Body tape plane deviation            | Δ <sub>p</sub> | 0              | ±1.3           |
| Reel width                           | W <sub>3</sub> | 56             | Max.           |
| Reel diameter                        |                | 340            | ±10            |
| Arbor hole diameter                  | n <sub>0</sub> | 31             | ±1             |
| Core diameter                        | n              | 80             | Min.           |

\* See Dimensions table.

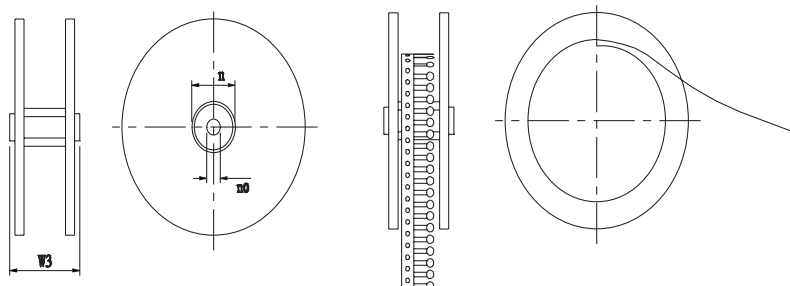
Style 1 - PTR016V0090, PTR016V0110, PTR016V0135, PTR016V0160-PTR016V1000



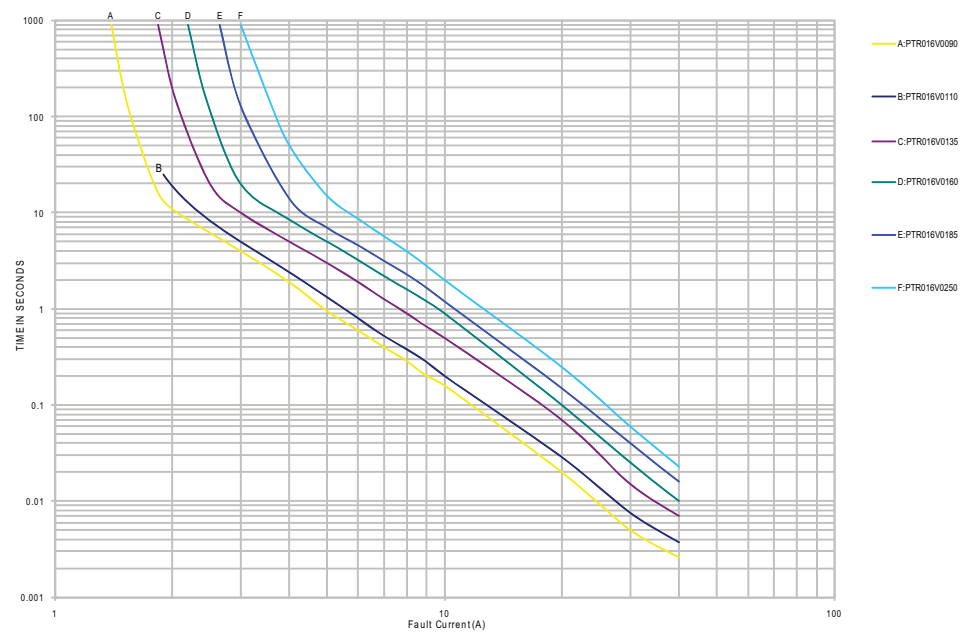
Style 2 - PTR016V1200-PTR016V1500



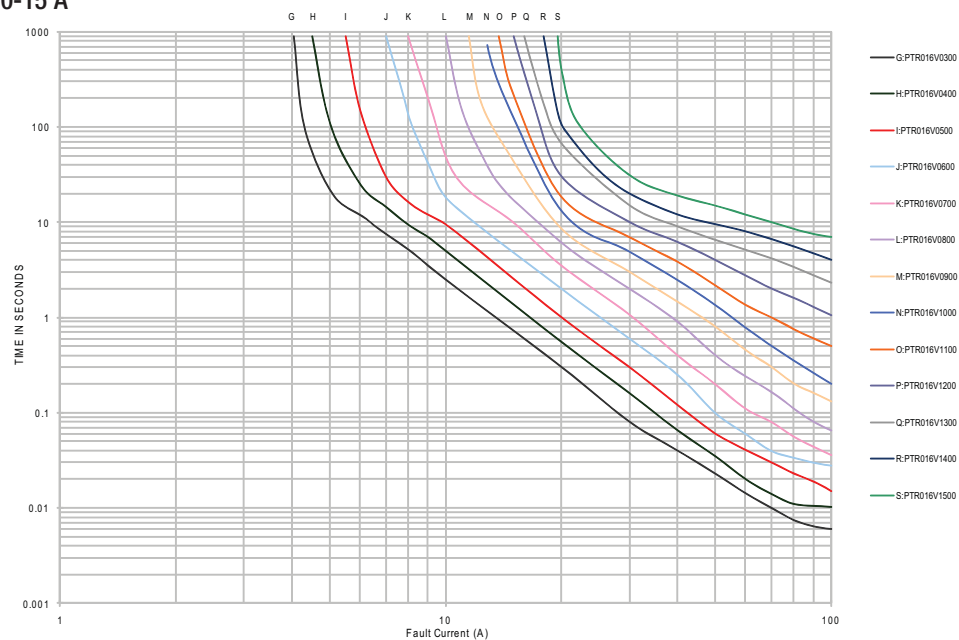
## Reel Specifications



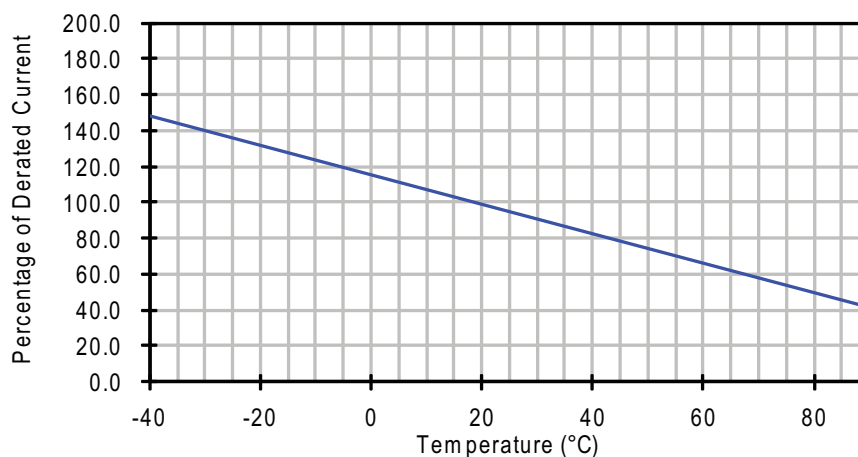
Time-to-Trip Curves at +23 °C - 0.9-2.5 A



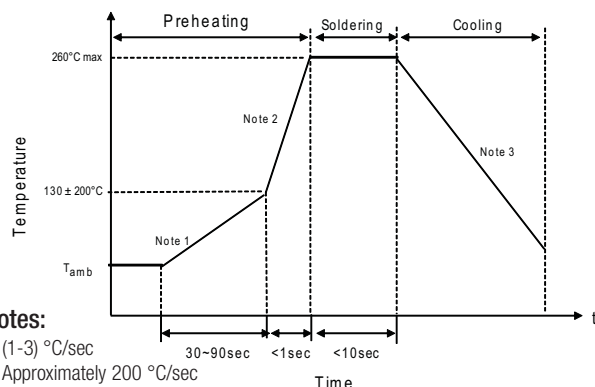
Time-to-Trip Curves at +23 °C - 3.0-15 A



### Thermal Derating Curve



### Recommended Wave Solder Profile



### Recommended Reworking Conditions with Soldering Iron

- Soldering Iron Tip Temperature: +360 °C max.
- Solder Time: 3 seconds max.
- Distance from Thermistor: 2 mm min.

### Environmental Specifications

| Characteristic                 | Value                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------------|
| Operating Temperature Range    | -40 °C to +85 °C                                                                                        |
| Surface Temperature Trip State | +125 °C max.                                                                                            |
| Thermal Shock                  | +85 °C to -40 °C, 10 cycles, 5% typical resistance change                                               |
| Solvent Resistance             | MIL-STD-202 Method 215, no change                                                                       |
| Humidity Age Test              | +85 °C, 85% R.H., 1000 hours<br>±5% typical resistance change.<br>Specified temperature (+23 °C ± 3 °C) |
| Storage Temperature Range      | -10 °C to +40 °C                                                                                        |
| Storage Duration               | One year                                                                                                |
| Storage Relative Humidity      | ≤75%                                                                                                    |
| Storage Conditions             | Keep away from corrosive atmosphere and sunlight                                                        |

### Material Composition

- Lead material:
  - PTR016V0090-PTR016V0250 Tin-plated copper clad steel
  - PTR016V0300-PTR016V1500 Tin-plated copper
- Insulating material: Cured epoxy resin meeting UL 94V0 requirements

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

**Eaton**  
Electronics Division  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
www.eaton.com/electronics

© 2017 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. 4399 BU-SB111164  
October 2017