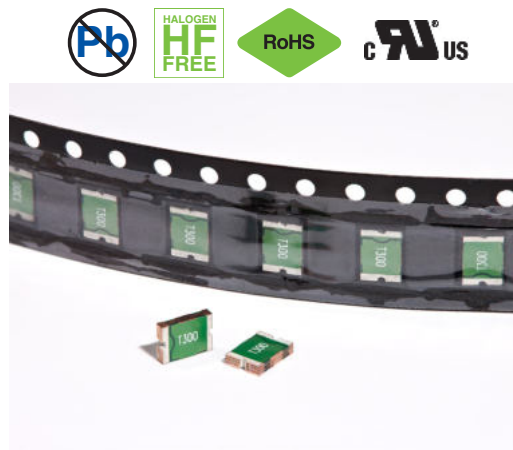


# PTS1812

## 6-60 Volt DC surface mount resettable PTC devices



### Product description

- Positive Temperature Coefficient (PTC)
- SMT resettable device
- Low resistance
- Fast time-to-trip
- Current range from 0.1A to 3.0A
- 1812 (4532 metric) compact footprint
- Halogen free, lead free, RoHS compliant

### Applications

- USB peripherals
- Plug and play protection for motherboards and peripherals
- Power tools
- Battery and port protection for mobile/smart phones
- Game console port protection
- Set-top-boxes
- Tablets, notebooks, netbooks, laptops and desktops
- Rechargeable battery packs
- Digital cameras
- Appliances and white goods
- Consumer electronics

### Agency information

- cURus Recognition file number: E343021
- TUV: R50192872

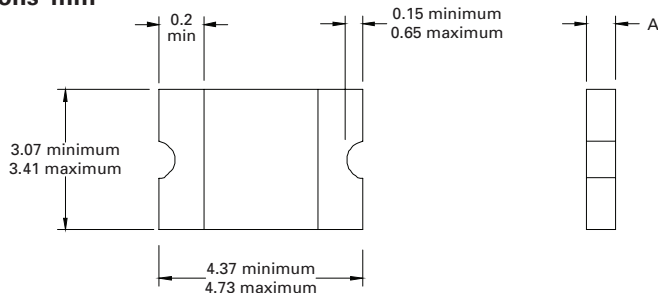
**Product specifications**

| Part Number <sup>7</sup> | V <sub>max</sub> <sup>1</sup> | I <sub>max</sub> <sup>2</sup> | I <sub>hold</sub> <sup>3</sup> | I <sub>trip</sub> <sup>4</sup> | P <sub>d</sub> <sup>5</sup> | Time to trip (maximum) |           | Resistance <sup>6</sup>               |   | Agency information |       |     |
|--------------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|-----------------------------|------------------------|-----------|---------------------------------------|---|--------------------|-------|-----|
|                          | (V <sub>DC</sub> )            | (A)                           | (A)                            | (A)                            | typical (W)                 | (A)                    | (Seconds) | Initial (R <sub>i</sub> ) minimum (Ω) | Post trip (R <sub>t</sub> ) maximum (Ω) | Part marking       | cURus | TUV |
| PTS181230V010            | 30                            | 100                           | 0.10                           | 0.30                           | 0.8                         | 0.5                    | 1.5       | 1.6                                   | 15                                      | T010               | x     | x   |
| PTS181260V014            | 60                            | 10                            | 0.14                           | 0.34                           | 0.8                         | 1.5                    | 0.2       | 1.5                                   | 6                                       | T014               | x     | x   |
| PTS181230V020            | 30                            | 100                           | 0.20                           | 0.40                           | 0.8                         | 8                      | 0.02      | 0.8                                   | 5                                       | T020               | x     | x   |
| PTS181216V035            | 16                            | 100                           | 0.35                           | 0.70                           | 0.8                         | 8                      | 0.1       | 0.32                                  | 1.5                                     | T035               | x     | x   |
| PTS181216V050            | 16                            | 100                           | 0.50                           | 1.0                            | 0.8                         | 8                      | 0.15      | 0.15                                  | 1                                       | T050               | x     | x   |
| PTS181213V075            | 13.2                          | 100                           | 0.75                           | 1.5                            | 0.8                         | 8                      | 0.2       | 0.11                                  | 0.45                                    | T075               | x     | x   |
| PTS181224V075            | 24                            | 100                           | 0.75                           | 1.5                            | 0.8                         | 8                      | 0.2       | 0.1                                   | 0.4                                     | T075<br>24         | x     | x   |
| PTS181233V075            | 33                            | 20                            | 0.75                           | 1.5                            | 0.8                         | 8                      | 0.2       | 0.11                                  | 0.4                                     | T075<br>33         | x     | x   |
| PTS18128V110             | 8                             | 100                           | 1.1                            | 2.2                            | 0.8                         | 8                      | 0.3       | 0.04                                  | 0.21                                    | T110               | x     | x   |
| PTS181216V110            | 16                            | 100                           | 1.1                            | 2.2                            | 0.8                         | 8                      | 0.5       | 0.1                                   | 0.18                                    | T110<br>16         | x     | x   |
| PTS181224V110            | 24                            | 20                            | 1.1                            | 2.2                            | 0.8                         | 8                      | 0.5       | 0.06                                  | 0.2                                     | T110<br>24         | x     | x   |
| PTS18126V125             | 6                             | 100                           | 1.25                           | 2.5                            | 0.8                         | 8                      | 0.4       | 0.05                                  | 0.14                                    | T125               | x     | x   |
| PTS181216V125            | 16                            | 100                           | 1.25                           | 2.5                            | 0.8                         | 8                      | 0.4       | 0.05                                  | 0.14                                    | T125<br>16         | x     | x   |
| PTS18128V150             | 8                             | 100                           | 1.5                            | 3.0                            | 0.9                         | 8                      | 0.3       | 0.04                                  | 0.11                                    | T150               | x     | x   |
| PTS181212V150            | 12                            | 100                           | 1.5                            | 3.0                            | 0.9                         | 8                      | 0.5       | 0.04                                  | 0.11                                    | T150<br>12         | x     | x   |
| PTS181224V150            | 24                            | 20                            | 1.5                            | 3.0                            | 0.9                         | 8                      | 1.5       | 0.04                                  | 0.12                                    | T150<br>24         | x     | x   |
| PTS18128V160             | 8                             | 100                           | 1.6                            | 3.2                            | 0.8                         | 8                      | 1         | 0.03                                  | 0.1                                     | T160               | x     | x   |
| PTS18128V200             | 8                             | 100                           | 2.0                            | 3.5                            | 1.2                         | 8                      | 2         | 0.02                                  | 0.06                                    | T200               | x     | x   |
| PTS18126V260             | 6                             | 100                           | 2.6                            | 5.0                            | 1.2                         | 8                      | 2.5       | 0.015                                 | 0.047                                   | T260               | x     | x   |
| PTS18126V300             | 6                             | 100                           | 3.0                            | 5.0                            | 1.2                         | 8                      | 4         | 0.012                                 | 0.04                                    | T300               | x     | x   |

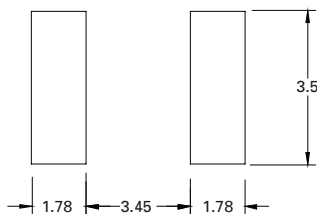
1. V<sub>max</sub>: Maximum continuous voltage the device can withstand without damage at current
2. I<sub>max</sub>: Maximum fault current the device can withstand without damage at rated voltage
3. I<sub>hold</sub>: Maximum current the device will pass without interruption at 23°C still air
4. I<sub>trip</sub>: Minimum current that will transition the device from low resistance to high resistance at 23°C still air
5. P<sub>d</sub>: Power dissipated from the device when in tripped state at 23°C still air

6. R<sub>i</sub>: Minimum resistance of the device at 23°C  
R<sub>t</sub>: Maximum resistance of the device when measured one hour post reflow at 23°C
7. Part Number Definition: PTS1206xVxxx  
PTS1206 = Product code and size  
xV = Voltage rating (V<sub>max</sub>)  
xxx = Ampere rating (I<sub>hold</sub>)

**Dimensions—mm**

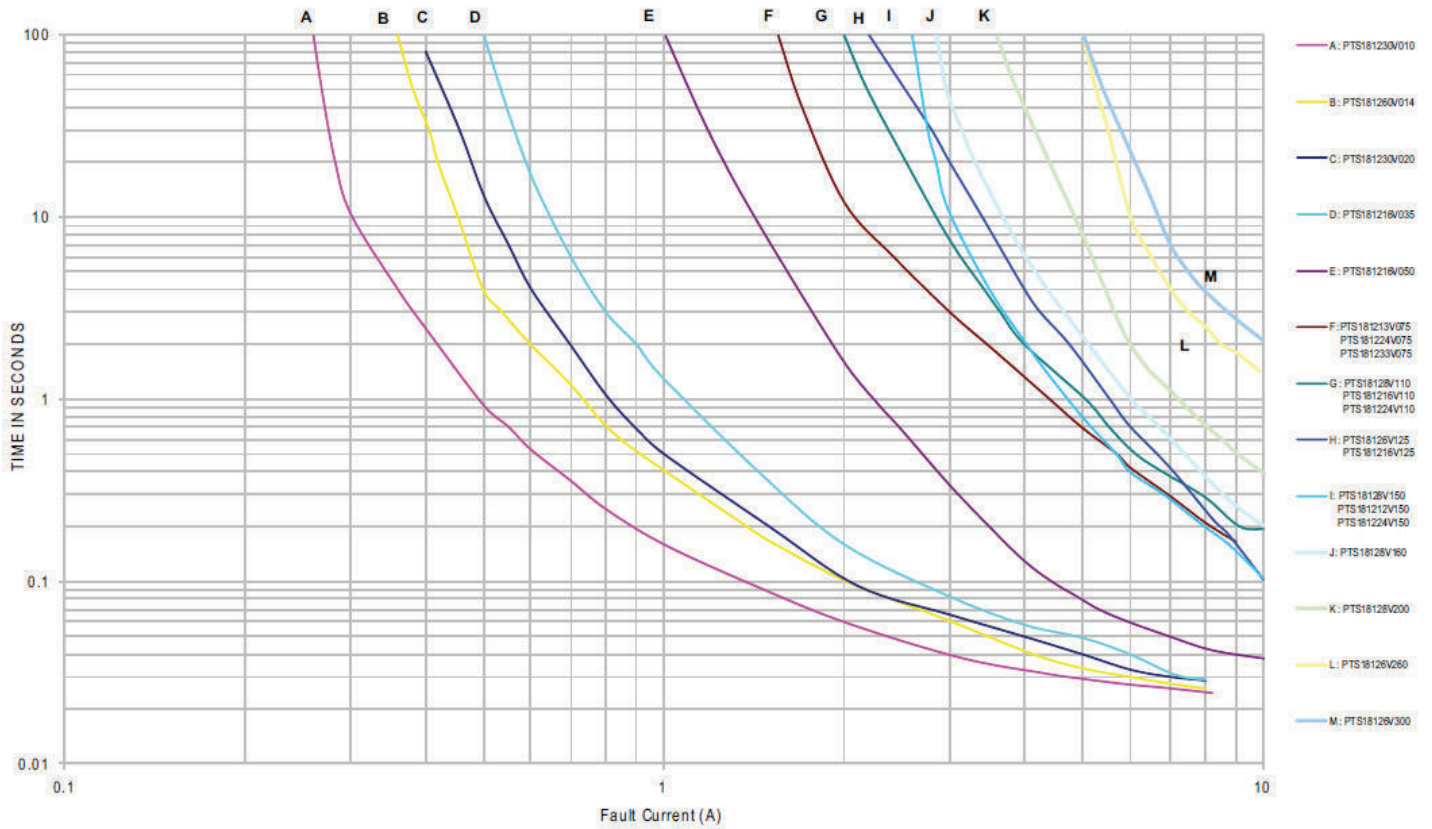


**Recommended pad layout—mm**

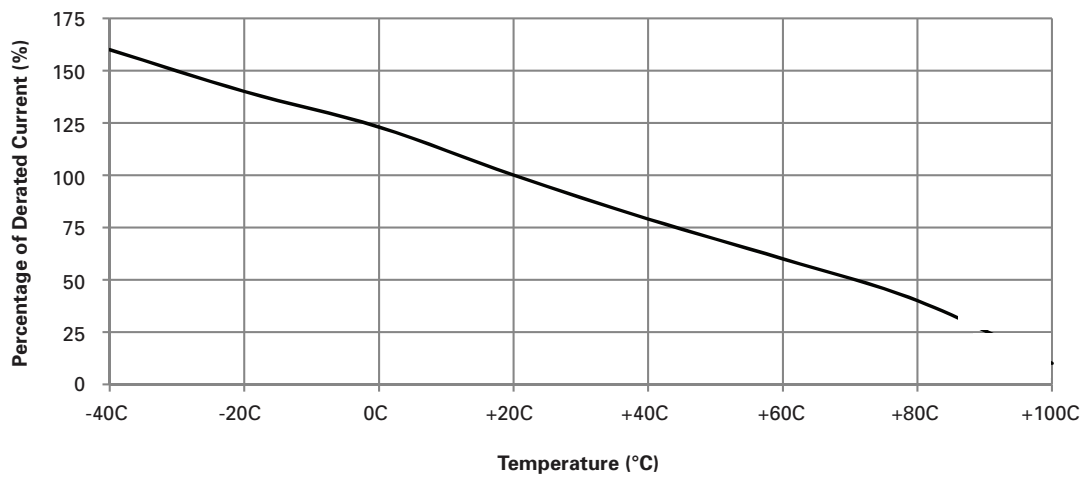


| Part number   | A minimum | A maximum |
|---------------|-----------|-----------|
| PTS181230V010 | 0.50      | 0.90      |
| PTS181260V014 | 0.50      | 0.90      |
| PTS181230V020 | 0.50      | 0.90      |
| PTS181216V035 | 0.28      | 0.68      |
| PTS181216V050 | 0.28      | 0.68      |
| PTS181213V075 | 0.28      | 0.68      |
| PTS181224V075 | 0.60      | 1.2       |
| PTS181233V075 | 0.60      | 1.2       |
| PTS18128V110  | 0.28      | 0.68      |
| PTS181216V110 | 0.60      | 1.0       |
| PTS181224V110 | 0.60      | 1.0       |
| PTS18126V125  | 0.28      | 0.68      |
| PTS181216V125 | 0.30      | 0.90      |
| PTS18128V150  | 0.28      | 0.68      |
| PTS181212V150 | 0.60      | 1.0       |
| PTS181224V150 | 0.70      | 1.5       |
| PTS18128V160  | 0.28      | 0.68      |
| PTS18128V200  | 0.35      | 0.90      |
| PTS18126V260  | 0.35      | 0.90      |
| PTS18126V300  | 0.60      | 1.2       |

Time to trip curves at 23°C



Temperature derating curve



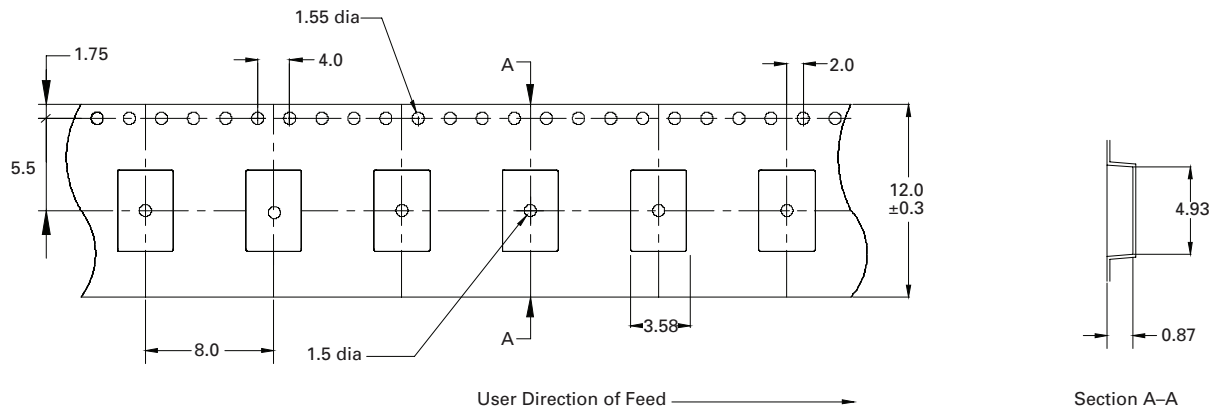
**Environmental data**

|  |
|--|
| Operating temperature: -40°C to +85°C (with derating)                            |
| Storage temperature: -10°C to +40°C  |
| Storage relative humidity: ≤75%  |
| Storage condition: Keep away from corrosive atmosphere and sunlight              |
| Storage duration: 1 year   |
| Thermal shock: (20 cycles - 40°C to +85°C) -33% typical resistance change        |
| Humidity: +85°C, 85% relative humidity, 1000 hours ±5% typical resistance change |
| Resistance to solvents: MIL-STD- 202 Method 215                                  |

**Packaging information-mm**

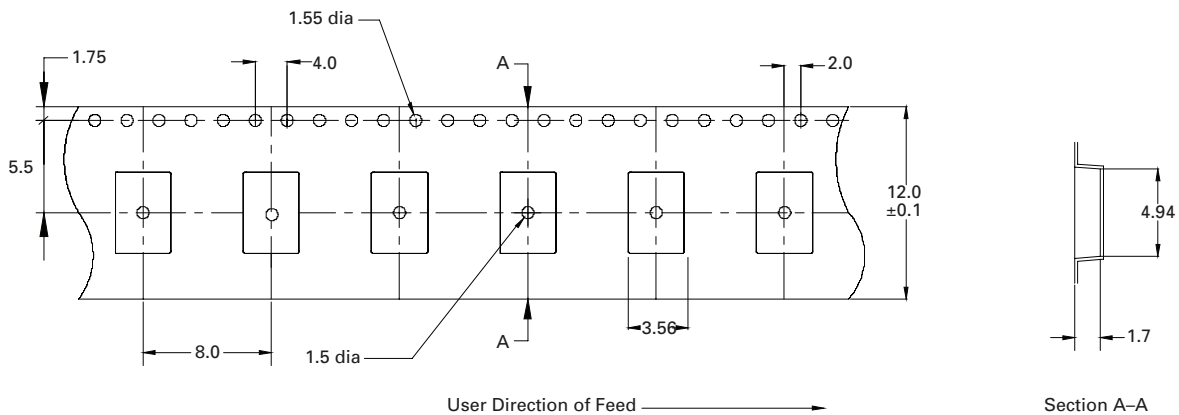
Supplied in tape and reel packaging , 2000 parts per 7.0" diameter reel

PTS181216V035, PTS181216V050, PTS181213V075, PTS18128V110, PTS18126V125, PTS18128V150, PTS18128V160, PTS18128V200

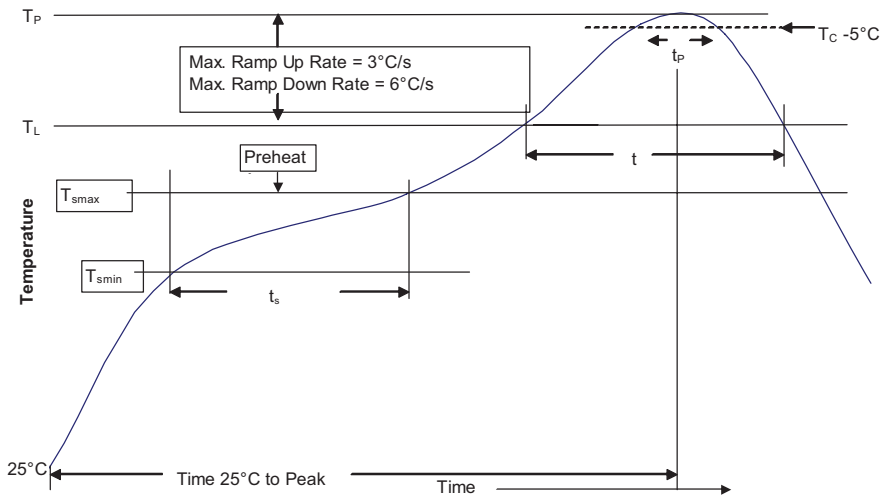


Supplied in tape and reel packaging , 1000 parts per 7.0" diameter reel

PTS181230V010, PTS181260V014, PTS181230V020, PTS181224V075, PTS181233V075, PTS181216V110, PTS181224V110, PTS181216V125, PTS181212V150, PTS181224V150, PTS18126V260, PTS18126V300



**Solder reflow profile**



**Table 1 - Standard SnPb Solder (T<sub>C</sub>)**

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> ≥350 |
|-------------------|-----------------------------|-----------------------------|
| <2.5mm)           | 235°C                       | 220°C                       |
| ≥2.5mm            | 220°C                       | 220°C                       |

**Table 2 - Lead (Pb) Free Solder (T<sub>C</sub>)**

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350 - 2000 | Volume mm <sup>3</sup> >2000 |
|-------------------|-----------------------------|-----------------------------------|------------------------------|
| <1.6mm            | 260°C                       | 260°C                             | 260°C                        |
| 1.6 – 2.5mm       | 260°C                       | 250°C                             | 245°C                        |
| >2.5mm            | 250°C                       | 245°C                             | 245°C                        |

**Reference JEDEC J-STD-020D**

| Profile Feature  | Standard SnPb Solder | Lead (Pb) Free Solder |
|--|----------------------|-----------------------|
| Preheat and Soak   |                      |                       |
| • Temperature min. (T <sub>smin</sub> )  | 100°C                | 150°C                 |
| • Temperature max. (T <sub>smax</sub> )  | 150°C                | 200°C                 |
| • Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )                                 | 60-120 Seconds       | 60-120 Seconds        |
| Average ramp up rate T <sub>smax</sub> to T <sub>p</sub>   | 3°C/ Second Max.     | 3°C/ Second Max.      |
| Liquidous temperature (T <sub>L</sub> )  | 183°C                | 217°C                 |
| Time at liquidous (t <sub>L</sub> )  | 60-150 Seconds       | 60-150 Seconds        |
| Peak package body temperature (T <sub>p</sub> )*   | Table 1              | Table 2               |
| Time (t <sub>p</sub> )** within 5 °C of the specified classification temperature (T <sub>C</sub> ) | 20 Seconds**         | 30 Seconds**          |
| Average ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )                                      | 6°C/ Second Max.     | 6°C/ Second Max.      |
| Time 25°C to Peak Temperature  | 6 Minutes Max.       | 8 Minutes Max.        |

\* Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.  
\*\* Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as a supplier minimum and a user maximum.

**Wave solder**

Reservoir temperature: 260°C  
Time in reservoir: 10 seconds maximum

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