



# PTNF-SERIES

## TANTALUM NITRIDE THIN FILM PRECISION CHIP RESISTOR

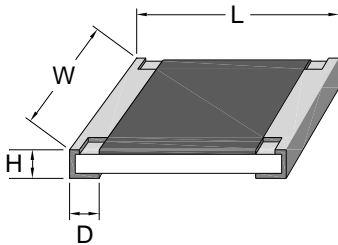
PRECISION RESISTIVE PRODUCTS, INC.  
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### Features:

- High Stability in Humid Environments
- Power Rating 1/16W, 1/6W, 1/5W, & 1/2W
- Resistance Tolerances  $\pm 0.05\%$ ,  $\pm 0.1\%$ ,  $\pm 0.25\%$ ,  $\pm 0.5\%$ , &  $\pm 1\%$
- Resistance Range 10 $\Omega$  – 1M $\Omega$
- Temperature Coefficient  $\pm 10\text{PPM}/^\circ\text{C}$ ,  $\pm 15\text{PPM}/^\circ\text{C}$ ,  $\pm 25\text{PPM}/^\circ\text{C}$ , &  $\pm 50\text{PPM}/^\circ\text{C}$
- Special Materials, Design, and Processing for High Sulfur Applications
- Test Proven Immunity to Humidity, Moisture, and Sulfur
- AEC-Q200 Compliance
- Packaging is Tape and Reel

### Applications:

- Automotive
- Converters
- Medical Equipment
- Testing / Measurement Equipment
- Converters
- Communication Device



### Dimensions Inches (mm)

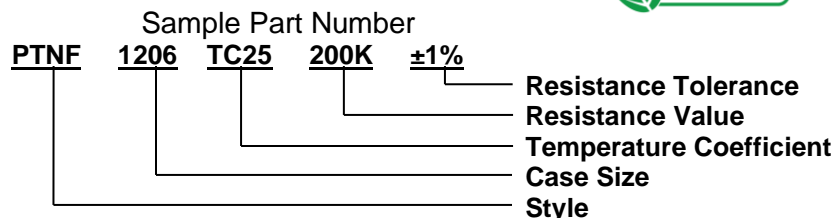
Style	L	W	H	D
PTNF 0402	0.039 $\pm$ 0.002 (1.00 $\pm$ 0.05)	0.020 $\pm$ 0.002 (0.50 $\pm$ 0.05)	0.012 $\pm$ 0.002 (0.30 $\pm$ 0.05)	0.008 $\pm$ 0.004 (0.20 $\pm$ 0.10)
PTNF 0603	0.061 $\pm$ 0.004 (1.55 $\pm$ 0.10)	0.031 $\pm$ 0.004 (0.80 $\pm$ 0.10)	0.018 $\pm$ 0.004 (0.45 $\pm$ 0.10)	0.012 $\pm$ 0.008 (0.30 $\pm$ 0.20)
PTNF 0805	0.079 $\pm$ 0.006 (2.00 $\pm$ 0.15)	0.049 $\pm$ 0.006 (1.25 $\pm$ 0.15)	0.024 $\pm$ 0.004 (0.55 $\pm$ 0.10)	0.016 $\pm$ 0.008 (0.40 $\pm$ 0.20)
PTNF 1206	0.120 $\pm$ 0.006 (3.05 $\pm$ 0.15)	0.061 $\pm$ 0.006 (1.55 $\pm$ 0.15)	0.024 $\pm$ 0.004 (0.55 $\pm$ 0.10)	0.014 $\pm$ 0.010 (0.35 $\pm$ 0.25)

Operating Temperature Range is  $-55^\circ\text{C}$  to  $155^\circ\text{C}$

### Specifications

Style	Wattage @ 85 $^\circ\text{C}$	Operating Voltage (Max)	Overload Voltage (Max)	Resistance Range					TCR PPM/ $^\circ\text{C}$
				$\pm 0.05\%$	$\pm 0.1\%$	$\pm 0.25\%$	$\pm 0.5\%$	$\pm 1\%$	
PTNF 0402	1/16W	50V	100V	40 $\Omega$ – 35K $\Omega$					$\pm 10$ , $\pm 15$ , $\pm 25$ , $\pm 50$
PTNF 0603	1/6W	75V	150V	40 $\Omega$ – 130K $\Omega$					
PTNF 0805	1/5W	100V	200V	10 $\Omega$ – 350K $\Omega$					
PTNF 1206	1/2W	200V	400V	10 $\Omega$ – 1M $\Omega$					

### How to Order



### Performance Data

Requirements	Performance	Test Method
Load Life	$\Delta R \pm 0.1\%$	<b>IEC-60115-1 4.25</b> 1000 +48/-0 hours, loaded with RCWV or Vmax in chamber controller $85 \pm 2^\circ\text{C}$ , 1.5 hours on and 0.5 hours off
Biased Humidity	$\Delta R \pm 0.1\%$	<b>MIL-STD-202F Method 103</b> 1000 hours $85^\circ\text{C}/85\%\text{RH}$ 10% of operating power.
Resistance to solder heat	$\Delta R \pm 0.1\%$	<b>JIS-C-5201-1 4.18</b> <b>IEC-60115-1 4.18</b> $260^\circ\text{C} \pm 5^\circ\text{C}$ , 10 sec.
Short Time Overload	$\Delta R \pm 0.1\%$	<b>JIS-C-5201-1 4.13</b> RCWV*2.5 or Max Overload Voltage, whichever is lower for 5 sec.
High Temp Exposure	$\Delta R \pm 0.15\%$	<b>MIL-STD-202 Method 108</b> At $155^\circ\text{C}$ for 1000 hours
Vibration	$\Delta R \pm 0.1\%$	<b>MIL-STD-202 Method 204</b> 5 g's for 20 min., 12 cycles each of 3 orientations, 10-2000 Hz
Solderability	95% minimum coverage	<b>JIS-C-5201-1 4.17</b> <b>IEC-60115-1 4.17</b> $245^\circ\text{C} \pm 5^\circ\text{C}$ , 3 sec.
ESD	$\Delta R \pm 0.1\%$	<b>AEC-Q200-002</b> Human body model 0402, 0603 0.2KV; 0805, 1206 1.0KV
Temperature Cycle	$\Delta R \pm 0.1\%$ for $125^\circ\text{C}$	<b>JESD22 Method JA-104</b> $-55^\circ\text{C} \sim +125^\circ\text{C}$ , 1000 cycles $-55^\circ\text{C} \sim +155^\circ\text{C}$ , 1000 cycles
	$\Delta R \pm 0.2\%$ for $155^\circ\text{C}$	
Insulation Resistance	$>1\text{G}\Omega$	<b>JIS-C-5201-1 4.6</b> <b>IEC-60115-1 4.6</b> Apply 100Vdc for 1 minute
Sulfur Test	$\Delta R \pm 1\%$	<b>EIA-977(Condition B)</b> $105 \pm 2^\circ\text{C}$ no power rating for 750 hours
Moisture Resistance	$\Delta R \pm 0.1\%$	<b>MIL-STD-202 Method 106</b> $62 \pm 2^\circ\text{C}$ , 80~100% RH, 10 cycles, 24 hours/cycle

## Derating Curve

Power dissipation must be derated in accordance with curve.

