

## Power Thick Film Technology Overview



### KEY BENEFITS

- New thick film technology
- Custom designs available
- Standard packages available (TO-220, TO-247, SOT-227, TO-263, and TO-252) for easy design
- Compact, with high power dissipation to volume ratio
- Wide resistance range from 0.01  $\Omega$  to 100 G $\Omega$
- Low inductivity below 1  $\mu$ H
- AEC-Q200 and automotive qualifications

### APPLICATIONS

- Power conversion
- High-speed switching
- RF applications
- Current sensing
- Industrial and medical power supplies
- Test equipment
- Railroad electrical traction
- Variable speed drives
- Snubbers
- Control devices
- EV/HEV battery management

### RESOURCES


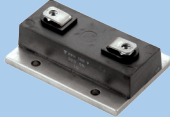



- For technical questions contact [sfer@vishay.com](mailto:sfer@vishay.com)





# POWER THICK FILM RESISTORS

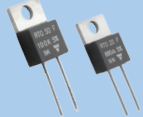


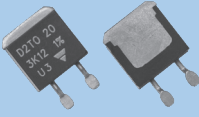

## 1 W to 1100 W

	RCH	RPH	RPS	LPS	RTOP
<b>Models</b>					
<b>Resistance Range</b>	0.010 $\Omega$ to 1 M $\Omega$	0.092 $\Omega$ to 1 M $\Omega$	0.24 $\Omega$ to 1 M $\Omega$	0.3 $\Omega$ to 900 k $\Omega$	0.046 $\Omega$ to 1 M $\Omega$
<b>Power Rating Mounted (PR)</b>	20 W and 50 W	100 W	250 W and 500 W	300 W, 600 W, 800 W and 1100 W	50 W to 200 W
<b>Nominal Voltage</b>	250 V to 300 V <sub>RMS</sub>	1900 V <sub>RMS</sub>	5000 V <sub>RMS</sub>	5000 V <sub>RMS</sub>	500 V to 1500 V <sub>RMS</sub>
<b>Temperature Range</b>	- 55 °C to + 155 °C	- 55 °C to + 125 °C	- 55 °C to + 125 °C	- 55 °C to 200 °C	- 55 °C to + 125 °C
<b>TC ppm/°C</b>	$\pm 150$ ppm/°C > 0.5 $\Omega$	$\pm 150$ ppm/°C > 1 $\Omega$	$\pm 150$ ppm/°C > 1 $\Omega$	$\pm 300$ ppm/°C $\leq$ 10 $\Omega$ $\pm 150$ ppm/°C > 10 $\Omega$	$\pm 150$ ppm/°C > 1 $\Omega$
<b>Thermal Resistance</b>	RTO20 = 6.5 °C/W RTO50 = 2.6 °C/W	0.55 °C/W	RPS250 = 0.22 °C/W RPS500 = 0.11 °C/W	0.039 °C to 0.112 °C/W	0.5 °C/W to 1 °C/W
<b>Inductance</b>	< 0.1 $\mu$ H	$\leq$ - 0.1 $\mu$ H	< 50 nH	$\leq$ 0.1 $\mu$ H	$\leq$ - 0.1 $\mu$ H
<b>Overload Capacity Short Duration (seconds)</b>	2 PR/5 s < 2 $\Omega$ 1.6 PR/5 s $\geq$ 2 $\Omega$	4 PR/5 s	RPS250 = 4 PR/10 s RPS500 = 2 PR/10 s	LPS300 = 4 PR/10 s LPS600 = 2 PR/10 s LPS800 = 1.5 PR/10 s LPS1100 = 1.6 PR/10 s	2.5 PR/5 s
<b>Dielectric Strength</b>	2000 V	5000 V	L: 7000 V H: 12 000 V	12 000 V <sub>RMS</sub>	2500 V
<b>Package</b>	TO220	N/A	N/A	N/A	SOT227B
<b>Standard Tolerance (Additional Tolerance)</b>	$\pm 5$ % (1 % to 10 %)	$\pm 5$ % (1 % to 10 %)	$\pm 5$ % (1 % to 10 %)	$\pm 5$ % (1 % to 10 %)	$\pm 5$ % (1 % to 10 %)
<b>Features</b>	<ul style="list-style-type: none"> <li>• 2 models within range</li> <li>• Custom designs available</li> <li>• Through-hole and SMD</li> <li>• Lead (Pb)-free and RoHS available</li> </ul>	<ul style="list-style-type: none"> <li>• Custom designs available</li> <li>• Connections: M4 screw</li> <li>• Lead (Pb)-free and RoHS available</li> </ul>	<ul style="list-style-type: none"> <li>• 2 models within range</li> <li>• Custom designs available</li> <li>• Connections: M4 screw</li> <li>• Lead (Pb)-free and RoHS available</li> </ul>	<ul style="list-style-type: none"> <li>• 4 models within range</li> <li>• Connections: M4 screw</li> <li>• RoHS compliant</li> <li>• Weight: 79 g to 83 g</li> </ul>	<ul style="list-style-type: none"> <li>• 4 models within range</li> <li>• Custom designs available</li> <li>• Connections: screw or shunt</li> <li>• Lead (Pb)-free and RoHS available</li> </ul>



# POWER THICK FILM RESISTORS

## 1 W to 1100 W

	RTO	LTO	HTS	D2TO	DTO25
<b>Models</b>					
<b>Resistance Range</b>	0.010 $\Omega$ to 1 M $\Omega$	0.010 $\Omega$ to 1 M $\Omega$	1 k $\Omega$ to 100 G $\Omega$	0.010 $\Omega$ to 500 k $\Omega$	0.016 $\Omega$ to 700 k $\Omega$
<b>Power Rating Mounted (PR)</b>	20 W and 50 W	30 W to 100 W	0.25 W to 5 W	20 W and 35 W	25 W
<b>Nominal Voltage</b>	250 V to 300 V <sub>RMS</sub>	250 V <sub>RMS</sub> to 375 V <sub>RMS</sub>	0.5 kV to 50 kV <sub>RMS</sub>	250 V	200 V
<b>Temperature Range</b>	-55 °C to +155 °C	LTO 30-50: -55 °C to +150 °C LTO 100: -55 °C to +175 °C	-55 °C to +155 °C	D2TO20: -55 °C to +155 °C D2TO35: -55 °C to +175 °C	-55 °C to +150 °C
<b>TC ppm/°C</b>	$\pm 150$ ppm/°C > 0.5 $\Omega$	$\pm 150$ ppm/°C > 0.5 $\Omega$	$\pm 100$ ppm/°C	$\pm 150$ ppm/°C > 0.5 $\Omega$	$\pm 150$ ppm/°C > 0.5 $\Omega$
<b>Thermal Resistance</b>	RTO20 = 6.5 °C/W RTO50 = 2.6 °C/W	4.2 °C/W to 1.5 °C/W	N/A	D2TO20: 6.5 °C/W D2TO35: 4.2 °C/W	5 °C/W
<b>Inductance</b>	< 0.1 $\mu$ H	$\leq$ 0.1 $\mu$ H	N/A	$\leq$ 0.1 $\mu$ H	$\leq$ 0.1 $\mu$ H
<b>Overload Capacity Short Duration (seconds)</b>	2 PR/5 s < 2 $\Omega$ 1.6 PR/5 s $\geq$ 2 $\Omega$	1.5 PR/5 s	N/A	D2TO20: 2 PR/5 s < 2 $\Omega$ 1.6 PR/5 s $\geq$ 2 $\Omega$ D2TO35: 1.7 PR/5 s < 2 $\Omega$ 1.4 PR/5 s $\geq$ 2 $\Omega$	1.6 PR/5 s
<b>Dielectric Strength</b>	2000 V	1500 V	N/A	2000 V	1500 V
<b>Package</b>	TO220	TO220 and TO247	N/A	TO263 Style (D <sup>2</sup> PAK)	TO252 Style (DPAK)
<b>Standard Tolerance (Additional Tolerance)</b>	$\pm 5$ % (1 % to 10 %)	$\pm 5$ % (1 % to 10 %)	$\pm 1$ % (0.5 % to 10 %)	$\pm 5$ % (1 % to 10 %)	$\pm 5$ % (1 % to 10 %)
<b>Features</b>	<ul style="list-style-type: none"> <li>• 2 models within range</li> <li>• Custom designs available</li> <li>• Through-hole and SMD</li> <li>• Lead (Pb)-free and RoHS available</li> </ul>	<ul style="list-style-type: none"> <li>• 3 models within range</li> <li>• Direct mounting ceramic on heatsink</li> <li>• Lead (Pb)-free and RoHS compliant</li> <li>• Custom designs available</li> <li>• AEC-Q200 qualified</li> </ul>	<ul style="list-style-type: none"> <li>• 12 models within range</li> <li>• Special matching tolerance 0.25 %</li> <li>• Special tracking in TCR: 25 ppm/°C</li> </ul>	<ul style="list-style-type: none"> <li>• 2 models within range</li> <li>• Standard package for SMD</li> <li>• Lead (Pb)-free and RoHS compliant</li> <li>• Solder reflow secure at 270 °C/10 s</li> <li>• AEC-Q200 qualified</li> </ul>	<ul style="list-style-type: none"> <li>• Standard package for SMD</li> <li>• Lead (Pb)-free and RoHS compliant</li> <li>• Solder reflow secure at 270 °C/10 s</li> <li>• AEC-Q200 qualified</li> </ul>



# POWER THICK FILM RESISTORS

1 W to 1100 W

## WORLDWIDE SALES CONTACTS

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