

## Thick Film Power Resistors

### Type BDS250/400 Series

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With less than 40nH inductance and a 250W or 400W power rating (100°C/70°C Heatsink) in a 67mm x 60mm casing, the BDS250/400 offers high power density over a wide range of ohmic values (0R47 – 1M $\Omega$ ) and benefits from 10 years experience in the field. Available in 5 resistor configurations with 2 or 4 easy to connect terminals, the resistors are made from quality materials for optimum reliability and stability with very low partial discharge.

Tyco can test resistors to conform to relevant customer specifications, and will advise on the use of resistors for pulse energy and high voltage applications (HV designs available). Resistors with 1% tolerance, alternative terminations or flying leads are available, and custom designs are welcome.

This product is available via distribution.

#### Key Features

- **400W in a 40.2cm<sup>2</sup> footprint**
  - Gives an impressive power density of 10W/cm<sup>2</sup>
- **Virtually inductance-free**
  - Inductance < 40nH
- **Wide resistance range: 0.47 $\Omega$  to 1M $\Omega$** 
  - Coupled with 1% tolerance gives ultimate design flexibility
- **Multiple terminal configurations and multi-resistor packages**
  - The space saving solution for demanding creep and clearance requirements
- **Partial discharge <10pC at 7.5kV**
  - Guaranteeing quality, reliability and long life

#### Characteristics - Electrical

<b>Resistance Range:</b>	0R47 - 1M	
<b>Resistance Tolerance:</b>	± 10%, 5% (Tighter by discussion)	
<b>TCR:</b>	R<1 $\Omega$	± 250ppm/°C
	R>1 $\Omega$	± 150ppm/°C
<b>Rated Power:</b>	Heatsink: 100°C / 70°C	250W / 400W
<b>Capacitance:</b>	Parallel	40pF
	To Earth	160pF
<b>Series Inductance:</b>	40nH (Maximum)	
<b>Limiting Element Voltage:</b>	5kV dc/ac rms	
<b>Isolating Voltage:</b>	(Terminal to Heatsink)	7kV ac rms
<b>Single Shot Voltage:</b>	1.5/50ms	12kV
<b>Insulation Resistance:</b>	(at 500V dc)	>100G $\Omega$
<b>Partial Discharge:</b>	at 7.5kV	<10pC
<b>Heat Dissipation:</b>	Although the use of proprietary heat sinks with lower thermal resistance is acceptable, up rating is not recommended. The use of proprietary heat sink compound to improve thermal conductivity is essential.	

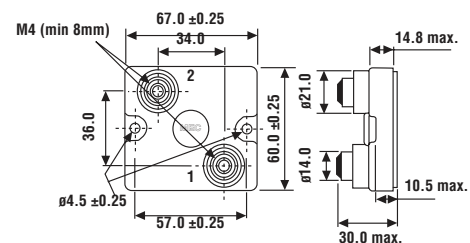
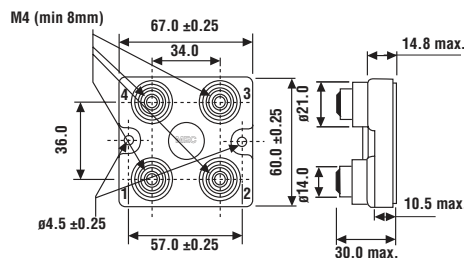
#### Characteristics - Environmental

<b>Endurance (Rated Power):</b>	Full Load, 1000h, 25°C	$\Delta$ R 0.25% Typ
<b>Humidity Load Life:</b>	56 Days, 40°C, 95% RH	$\Delta$ R 0.2% Typ (I.R.>10G $\Omega$ )
<b>Temperature Cycling:</b>	-55°C to +125°C, 5cycles	$\Delta$ R 0.2% Typ
<b>Operating Storage Temp:</b>	-55°C to +125°C	
<b>Short Term Overload:</b>	750W, 10s	$\Delta$ R 0.2% Typ
<b>Vibration:</b>	10/500Hz	$\Delta$ R 0.25% Typ
<b>Bump:</b>	40g 4000 bumps	$\Delta$ R 0.25% Typ

#### Characteristics - Mechanical

<b>Terminal Size:</b>	M4	
<b>Terminal Torque (max.):</b>	1.3Nm	
<b>Creepage Distance:</b>	40mm	
<b>Clearance:</b>	Terminal to Heatsink	28mm
	Terminal to Terminal	40mm
<b>Heatsink Surface Finish:</b>	R <sub>s</sub>	< 6 $\mu$ m
<b>Heatsink Flatness:</b>	0.05mm	
<b>Thermal Grease:</b>	Required	
<b>Weight:</b>	190g	

#### Dimensions



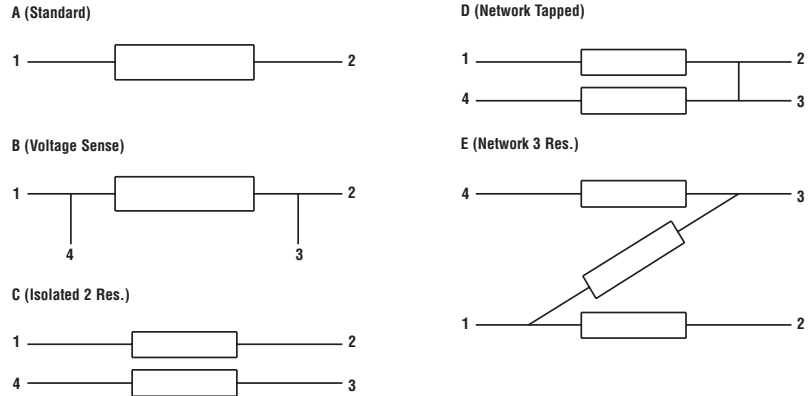
#### Applications

- Snubbing (Low inductance)
- High Voltage
- Balancing Resistor (Multi-resistor package)
- High Frequency
- Filter (Low inductance)

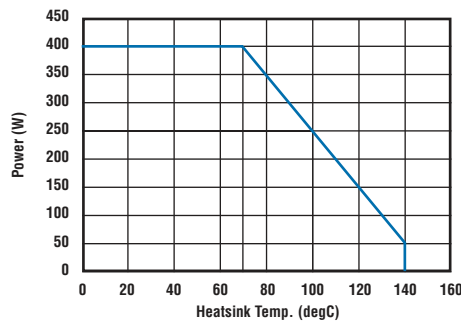
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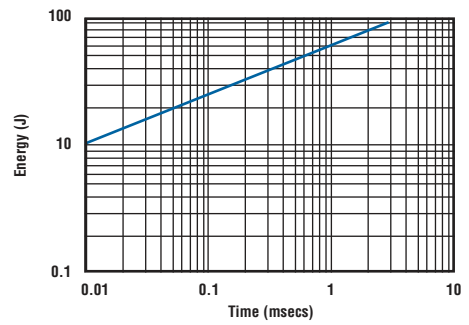
### Terminal Circuit Type



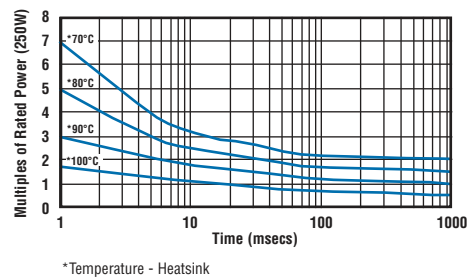
### Derating Curve



### Pulse Energy



### Power Overload



\*Temperature - Heatsink

### How to Order

BDS 2	A	250/400	1K0	J
<b>Common Part</b>	<b>Circuit Type</b>	<b>Power Dissipation</b>	<b>Resistance Value</b>	<b>Tolerance</b>
BDS 2 (2 Terminal) BDS 4 (4 Terminal)	A: Standard B-E: See above	250 - 250 Watts 400 - 400 Watts	0.47Ω (470mΩ) R47 1Ω (1000mΩ) 1R0 1K (1000Ω) 1K0 1M (1000000Ω) 1M0	F - 1% J - 5% K - 10%