Electronics

## Type BDS600 Series



With a maximum inductance of 80 nH and a rated power of $600 \mathrm{~W}\left(60^{\circ} \mathrm{C}\right.$ Heatsink) in a $57 \mathrm{~mm} \times 60 \mathrm{~mm}$ casing, the BDS600 offers high power density over a wide range of ohmic values (0R5-100K).
This high power density resistor is made from quality materials for optimum reliability and stability with very low partial discharge.
Tyco can test resistors to conform to relevant international, MIL or customer specifications, and will advise on the use of resistors for pulse applications (special pulse duty options available) and high voltage usage (high voltage designs available). The BDS600 offers a limiting element voltage of 5 kVac rms, and 10 kV isolation voltage (terminal to heatsink).
Resistors with $1 \%$ tolerance, alternative terminations or flying leads are available, and custom designs are welcome.
This product is available via distribution.

## Key Features

■ 600W in a $34.2 \mathrm{~cm}^{2}$ footprint

- Gives an impressive power density of $17.5 \mathrm{~W} / \mathrm{cm}^{2}$

■ Inductance < 80nH

- Virtually inductance-free

■ Wide resistance range:
$0.5 \Omega$ to $100 \mathrm{k} \Omega$

- Coupled with 1\% tolerance gives ultimate design flexibility
■ Multiple terminal configurations
- For demanding creep and clearance requirements
- Partial discharge
$<5 \mathrm{pC}$ at 5 kV
- Guaranteeing quality, reliability and Iong life

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## Characteristics Electrical

| Resistance Range: | OR5 $-100 \mathrm{~K}$ |  |
| :--- | :---: | :---: |
| Resistance Tolerance: | Heatsink: $60^{\circ} \mathrm{C}$ | $\pm 10 \%, 5 \%$ (Tighter by discussion) |
| TCR: | Parallel | $\pm 150 \mathrm{ppm} /{ }^{\circ} \mathrm{C}$ |
| Rated Power: | To Earth | 600 W |
| Capacitance: |  | 40 pF |
|  |  | 110 pF |
| Series Inductance: | (Terminal to Heatsink) | $<80 \mathrm{nH}$ (Maximum) |
| Limiting Element Voltage: | $1.5 / 50 \mathrm{~ms}$ | $5 \mathrm{kV} \mathrm{dc} / \mathrm{ac} \mathrm{rms}$ |
| Isolating Voltage: | (at 500 V dc) | 10 kV ac rms |
| Single Shot Voltage: | at 7 kV | 12 kV |
| Insulation Resistance: | at 5 kV | $>1000 \mathrm{M} \Omega$ |
| Partial Discharge: | Although the use of proprietary heat sinks with lower thermal resistance is |  |
|  | acceptable, up rating is not recommended. The use of proprietary heat sink |  |
| Heat Dissipation: | compound to improve thermal conductivity is essential. |  |

Characteristics -
Environmental

| Endurance (Rated Power): | Full Load, $1000 \mathrm{~h}, 25^{\circ} \mathrm{C}$ | $\Delta \mathrm{R} 0.4 \%$ Typ |
| :--- | :---: | :---: |
| Humidity Load Life: | 56 Days, $40^{\circ} \mathrm{C}, 95 \% \mathrm{RH}$ | $\Delta \mathrm{R} 0.25 \%$ Typ |
| Temperature Cycling: | $-55^{\circ} \mathrm{C}$ to $+125^{\circ} \mathrm{C}, 5 \mathrm{cycles}$ | $\Delta \mathrm{R} 0.2 \%$ Typ |
| Storage Temp: | $-55^{\circ} \mathrm{C}$ to $+155^{\circ} \mathrm{C}$ |  |
| Operating Temp: | $-55^{\circ} \mathrm{C}$ to $+140^{\circ} \mathrm{C}\left(200^{\circ} \mathrm{C}\right.$ on req.) |  |
| Short Term Overload: | $1000 \mathrm{~W}, 10 \mathrm{~s}$ | $\Delta \mathrm{R} 0.4 \%$ Typ |
| Vibration: | $2-5000 \mathrm{~Hz} / 10 \mathrm{~g}$ | $\Delta \mathrm{R} 0.25 \%$ Typ |
| Bump: | 40 g 4000 bumps | $\Delta \mathrm{R} 0.25 \%$ Typ |

## Characteristics -

Mechanical

| Terminal Size: | M5 |  |
| :--- | :---: | :---: |
| Terminal Torque (max.): | To Heatsink | 2 Nm |
| Creepage Distance: | $\mathrm{Ra}_{\mathrm{a}}$ | 48 mm |
| Air Gap: |  | 14 mm |
| Heatsink Surface Finish: | $\left(0.05^{\circ} \mathrm{C} / \mathrm{Wmm}\right)$ | $<6 \mu \mathrm{~m}$ |
| Heatsink Flatness: | 0.05 mm |  |
| Thermal Grease: | Required |  |
| Weight: | 160 g |  |
| Max. Mounting Torque: | 1.8 Nm |  |

## Dimensions



## Applications

■ Snubbing (Low inductance) ■ High Frequency
$\square$ Filter (Low inductance) ■ Balancing

- High Voltage

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## Derating Curve



Pulse Energy


## Power Overload



How to Order

| BDS 2 | A | $600$ | 1K0 | $J$ |
| :---: | :---: | :---: | :---: | :---: |
| Common Part | Circuit Type | Power Dissipation | Resistance Value | Tolerance |
| BDS 2 (2 Terminal) | A: Standard | 600-600 Watts | $\begin{gathered} 0.5 \Omega \\ (500 \mathrm{~m} \Omega) \\ \mathrm{R} 50 \\ 1 \Omega \\ (1000 \mathrm{~m} \Omega) \\ 1 \mathrm{RO} \end{gathered}$ | $\begin{gathered} \text { F }-1 \% \\ \text { J- } 5 \% \\ \text { K- } 10 \% \end{gathered}$ |
|  |  |  | $\begin{gathered} 1 \mathrm{~K} \\ (1000 \Omega) \\ 1 \mathrm{KO} \end{gathered}$ |  |

