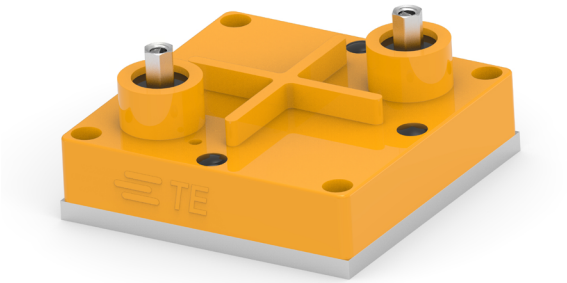
THICK FILM HIGH POWER RESISTORS

TYPE BDS SERIES

INTRODUCTION

TE Connectivity (TE) introduces the high power version of our BDS thick film resistors that are able to deliver 1000 Watt and 2000 Watt power dissipation capability with an easy-mounting 76 mm x 76 mm case. The BDS series offers high power density over a wide range of ohmic values (500 mΩ ~ 1000 Ω). Available with two easy to connect terminals, the resistors are made from quality materials for enhanced reliability and stability with very low partial discharge.



FEATURES

- High energy rating
- Low Inductance
- Resistor element electrically isolated
- High dielectric strength
- Small footprint

APPLICATIONS

- Power semiconductor balancing
- Motor control
- Inrush current limiting

ELECTRICAL CHARACTERISTICS

	BDS 1K	BDS 2K
Power Rating (85°C mounting plate)	1000 W	2000 W
Ohmic value minimum (Ω)	0.5	0.5
Ohmic value maximum (Ω)	1000	1000
Resistance tolerance	± 10 %	
Maximum operating voltage	2000 VDC	
Temperature coefficient	± 250 PPM/°C	
Dielectric strength	6 kV standard	
Operating temperature range	-55 °C ~ 85 °C	
Resistor element	Thick film on alumina substrate	
Terminal screws	#10-32	
Maximum contacts torque	10 in-lb	
Mounting screws	#8-32	
Maximum mounting torque	15 in-lb	
Creepage distance	50 mm ± 1 mm (min)	

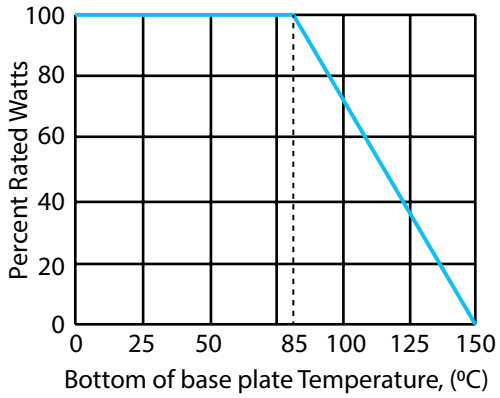
		BDS 1K	BDS 2K
Inductance typical of frequencies	100 Hz	0.14367 µH	-176.703 µH
	120 Hz	0.18943 µH	-152.758 µH
	1 kHz	0.34512 µH	-39.8951 µH
	10 kHz	0.20133 µH	-25.6058 µH
	120 kHz	0.16525 µH	-25.6180 µH

ENVIRONMENTAL CHARACTERISTICS

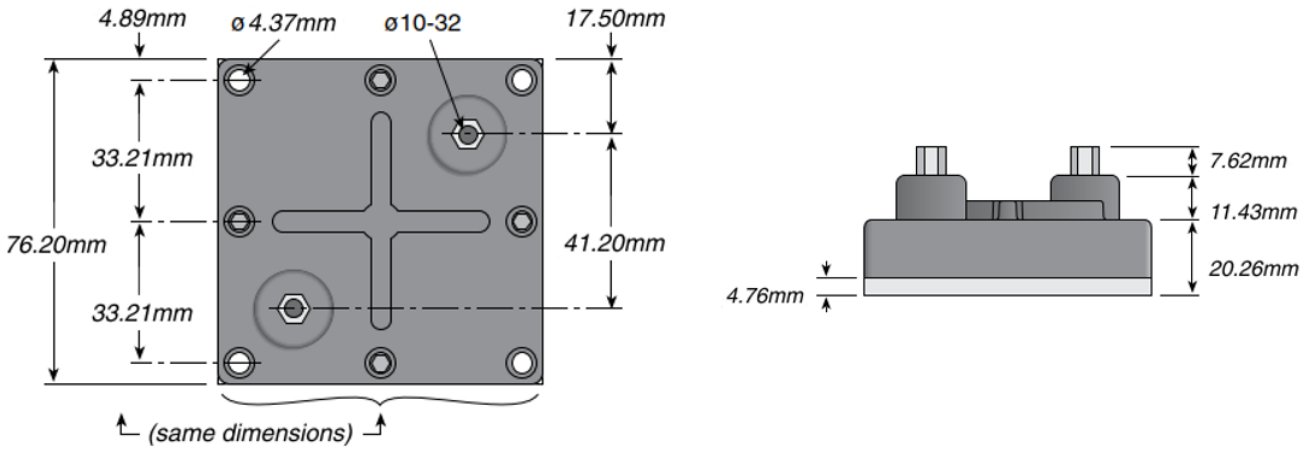
Characteristic		Rating	
		Continuous	Pulse
Rated power, maximum current and heat sink plate temperature limited	BDS 1K	1000 W	-
	BDS 2K	2000 W	-
Operating voltage		√P*R	N/A
Maximum applied voltage, ohms law limited		223 V	2000 VDC
Maximum current		10 A	53.33 A
Critical resistance; below this resistance power has to be de-rated due to exceeding current	BDS 1K	Max. 10 Ω	-
	BDS 2K	Max. 20 Ω	-

Characteristic		Test Method	Standard
Short time overload		1.14 x √P*R/10 sec @ 70 °C	Max. % ΔRsto = ±(2% + 0.05 Ω)
Moisture resistance	BDS 1K	1000 hrs @ 40 °C, 90-95 % RH	≤ 1 %
	BDS 2K	1750 hrs @ 40 °C, 90-95 % RH	≤ 1 %
Thermal shock		MIL-STD-202, Method 107	-
Vibration, electrical		MIL-STD-202, Method 201	±2 % Resistance
Vibration, mechanical		MIL-STD-202, Method 201	No loose terminal screws
Load life	BDS 1K	1000 hrs 90 min ON / 30 min OFF	≤ 1 %
	BDS 2K	1750 hrs 90 min ON / 30 min OFF	-
Pulse tolerance		52 µF @ 2 kV / 60 sec intervals, 104 J, 20,000 pulses	≤ 1 %
Dielectric strength		6 kVDC for 1 min	≤ 1 %

DERATING CURVE



DIMENSIONS (Unit: mm)



Application Notes:
When designing your system, please follow these guidelines which are essential to the performance of the resistor.

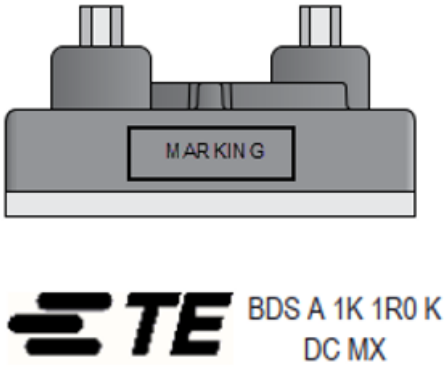
Heatsink plate (base plate of the resistor) temperature must be monitored to establish the correct de-rating. Reliable technique is to attach a thermocouple to the side of the base plate of the resistor. Temperature of the plastic housing or heatsink cannot be used to establish the rating of the resistor. Usage of laser thermometers should be avoided.

To obtain a power rating of 1000 W or 2000 W, the bottom case temperature must not exceed 85 °C. This can only be achieved if the thermal conduction to the heatsink Rth-cs < 0.025 °K/W. This value can be reached by using a thermal transfer compound with a heat conductivity of 1 W/mK. The flatness of the cooling plate must be better than 0.05 mm overall. The roughness of the surface should not exceed 6.4 µm.

Due to very high power density, only liquid cooled heatsinks are recommended for applications when >300 W power rating is desired.

A correctly designed heatsink should have more than 2 cooling pipes under the surface of the resistor.

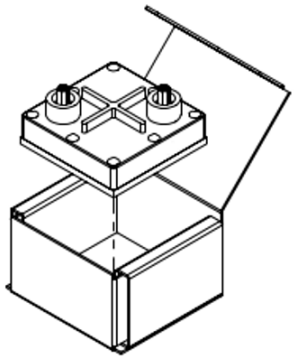
LASER MARKING



1. Company name or Logo
2. TE Series Number
3. Circuit type
4. Power rating
5. Resistance
6. Tolerance
7. Date code
8. Country of origin

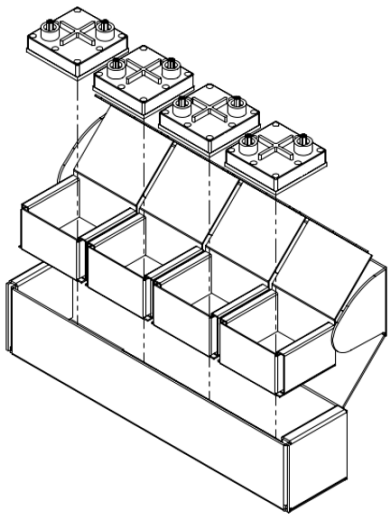
PACKAGING

Unit Box Dimensions (mm)



	BDS 1K	BDS 2K
L	93.34	93.34
W	86.63	86.63
H	58.72	58.72
Quantity per box	1	1
Gross Weight (GR's)	483.08	483.08

Outer Box Dimensions (mm)



	BDS 1K	BDS 2K
L	419.10	419.10
W	90.17	90.17
H	90.80	90.80
Quantity per box	4	4

ORDERING INFORMATION

Part Number
BDS A 1K 10R K

Common Part

BDS	Thick film high power resistor

Circuit Type

A	Standard

Power Rating

1K	1000 W
2K	2000 W

Resistance Value

K	10 %

Impedance

R50	0.5 ohm (500 mΩ)
1R	1 ohm (1 Ω)
10R	10 ohm (10 Ω)
100	100 ohm (100 Ω)
1K0	1K (1000 Ω)

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