THICK FILM POWER RESISTORS

TYPE BDS100 SERIES

INTRODUCTION



The BDS100 Series is a high-power thick film resistor designed for demanding power electronic applications requiring exceptional power density, low inductance, and long-term reliability. Delivering up to 100W continuous power dissipation, the BDS100 combines compact design, excellent thermal performance, and high-voltage capability to support today's advanced industrial and energy systems. With a wide resistance range, robust isolation characteristics, and multiple terminal configurations, the BDS100 provides engineers with a versatile solution for snubber circuits. power supplies, braking circuits, energy storage systems, motor drives, and high-frequency applications. Built for reliability in harsh operating environments, the BDS100 helps improve system performance, efficiency, and operational life.

FEATURES

- 100W Continuous Power
- Low Inductance
- High Pulse Capability
- Industrial Reliability

APPLICATIONS

- Dynamic Braking Systems
- Snubber Networks
- Inverters
- Renewable Energy Systems
- Power Supplies
- Energy Storage Systems

ELECTRICAL CHARACTERISTICS

Type	Characteristics
Resistance Range	R47 - 1M0
Resistance Tolerance	±10%, 5% (Tighter by discussion)
TCR	R<1Ω ±250ppm/°C R>1Ω ±150ppm/°C
Power Rating	100W @60°C
Capacitance	Parallel 15pF; to Earth 40pF
Series Inductance	40nH (Maximum)
Limiting Element Voltage	500Vdc/ac rms (100W or Less)
Isolating Voltage	2.5kVac rms (Terminal to Heatsink)
Single Shot Voltage	4kV 1.5/50ms
Insulation Resistance	>100GΩ (at 500V dc)
Partial Discharge	<10pC at 2kV
Terminal Size	M4
Terminal Torque	(max.) 1.3Nm
Creepage Distance	10mm
Clearance	Terminal to Heatsink 10mm Terminal to Terminal 3mm
Heatsink Surface Finish	Ra < 6 μm
Heatsink Flatness	0.05mm
Weight	35g

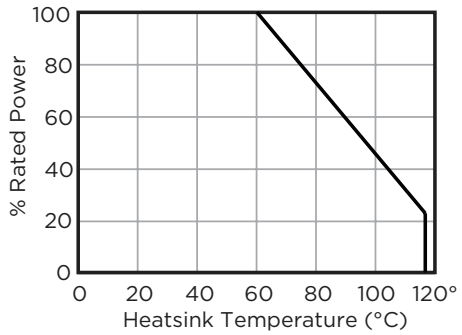
CATEGORY INDEX

CONTENTS	QUICK NAVIGATION	PAGE NO.
Electrical characteristics	VIEW SPEC	01
Environmental characteristics	VIEW SPEC	03
Derating Curve	VIEW SPEC	03
Voltage Rating	VIEW SPEC	03
Construction & Dimension	VIEW SPEC	04
Recommended Land Pattern	VIEW SPEC	04
Multiplier code	VIEW SPEC	05
Environmental Related Substance	VIEW SPEC	06
Storage Conditions	VIEW SPEC	06
Ordering Information	VIEW SPEC	06
Disclaimer	VIEW SPEC	07

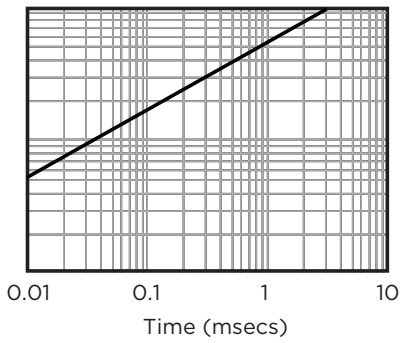
ENVIRONMENTAL CHARACTERISTICS

Type	Standards	Test Methods
Endurance (Rated Power)	ΔR 0.25% Typ	2000 cycles at P Rated
Humidity Load Life	ΔR 0.25% Typ (I.R.>10GΩ)	56 days, 40°C, 95% RH
Temperature Cycling	ΔR 0.25% Typ	-55°C to +125°C, 5 cycles
Operating Storage Temp	-	-55°C to +125°C
Short Term Overload	ΔR 0.25% Typ	3 x P Rated (10s)
Vibration	ΔR 0.25% Typ	10/500Hz

DERATING CURVE



PULSE ENERGY



VOLTAGE RATING

Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial- line frequency and waveform corresponding to the power rating, as determined from the following formula:

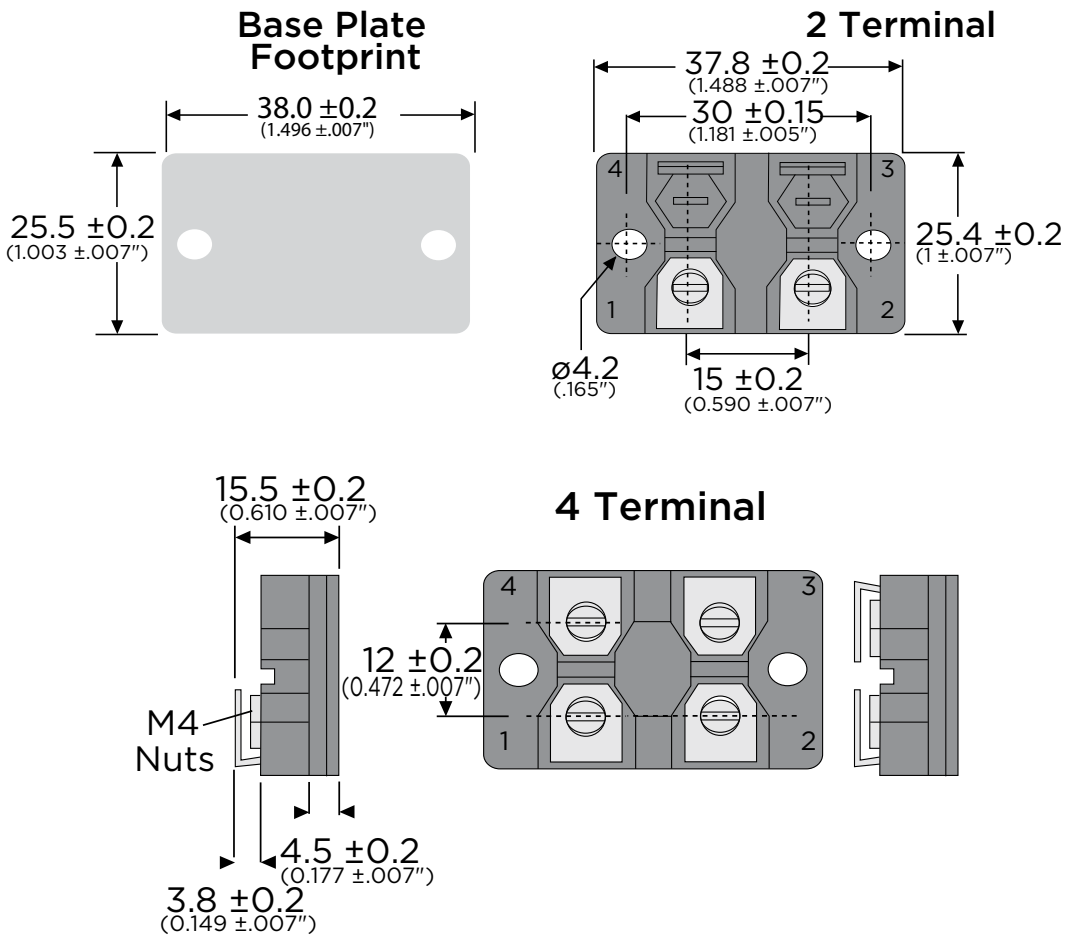
$$RCWV = \sqrt{P \times R}$$

Note:

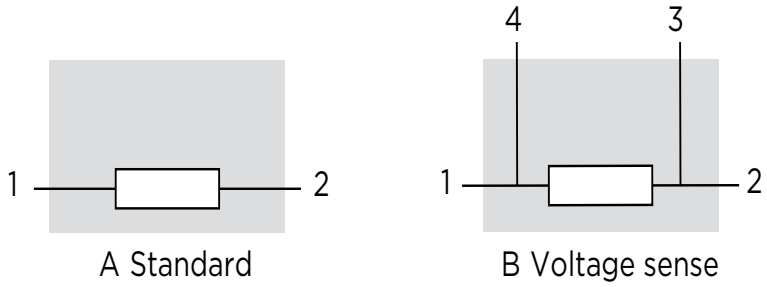
1. Maximum working voltage or $\sqrt{(P \times R)}$, whichever is lower.
2. Maximum overload voltage or $2.5\sqrt{(P \times R)}$, whichever is lower.

Where : RCWV = Rated DC or RMS AC continuous working voltage at commercial-line frequency and waveform (volt) and
P = Power Rating (watt)
R = Nominal Resistance (ohm)

CONSTRUCTION AND DIMENSIONS (Unit: mm)



RECOMMENDED LAND PATTERN (Unit: mm)



MULTIPLIER CODE

Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7	10^{-1}	10^{-2}	10^{-3}

Coding

XX — Resistance Code

Formula

X — Multiplier Code

Example :

$10.2K\Omega = 102 \times 10^{2}\ \Omega = 02C$ (02, C)

$33.2\Omega = 332 \times 10^{-1}\ \Omega = 51X$ (51, X)

Value	Code	Value	Code	Value	Code	Value	Code	Value	Code
100	01	162	21	261	41	422	61	681	81
102	02	165	22	267	42	432	62	698	82
105	03	169	23	274	43	442	63	715	83
107	04	174	24	280	44	453	64	732	84
110	05	178	25	287	45	464	65	750	85
113	06	182	26	294	46	475	66	768	86
115	07	187	27	301	47	487	67	787	87
118	08	191	28	309	48	499	68	806	88
121	09	196	29	316	49	511	69	825	89
124	10	200	30	324	50	523	70	845	90
127	11	205	31	332	51	536	71	866	91
130	12	210	32	340	52	549	72	887	92
133	13	215	33	348	53	562	73	909	93
137	14	221	34	357	54	576	74	931	94
140	15	226	35	365	55	590	75	953	95
143	16	232	36	374	56	604	76	976	96
147	17	237	37	383	57	619	77		
150	18	243	38	392	58	634	78		
154	19	249	39	402	59	649	79		
158	20	255	40	412	60	665	80		

ENVIRONMENT RELATED SUBSTANCE

This product complies with the applicable requirements of the EU RoHS Directive, EU PAHs requirements, EU PFOS requirements, and halogen-free material expectations. Ozone-depleting substances are not used in the manufacturing process for this product. This product is not manufactured using chlorofluorocarbons (CFCs), Hydrochlorofluorocarbons (HCFCs), hydrobromofluorocarbons (HBFCs), or other ozone-depleting substances at any stage of manufacture.

STORAGE CONDITION (MSL1)

The performance of these products, including solderability, provided the products remain in the original delivered packaging and are stored. Even within this period, the products should not be stored under conditions that may adversely affect electrical performance, solderability, or packaging integrity.

1. In salty air or in atmospheres containing corrosive gases such as Cl2, H2S, NH3, SO2, or NO2.
2. In direct sunlight

ORDERING INFORMATION

Typical product code

BDS 100 A 1R00 J

Product Type

BDS	Thick Film Power Resistors

Wattage

100W

Configuration

A	2-terminal standard
B	Voltage Sense

Tolerance

J	5%
K	10%

Resistance value

R500	0.500Ω
1R00	1Ω
250R	250Ω
1K00	1000Ω
10K0	10,000Ω

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