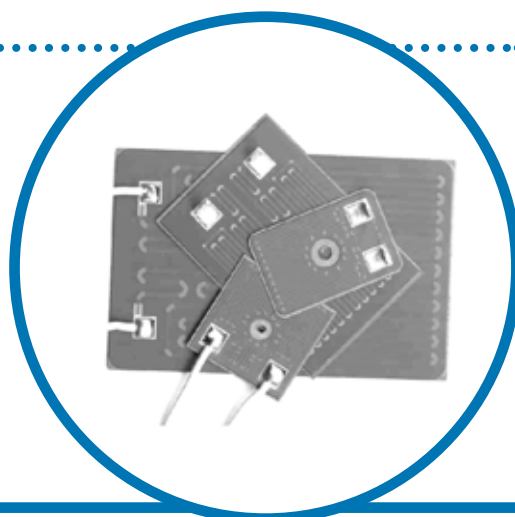


Ultra Low Profile Power Resistors

WDBR Series

- Ultra low profile thick-film on steel
- 500W to 7kW peak power
- Single fixing heatsink mountable
- Ideal for dynamic braking, inrush limit and snubber circuits
- Choice of flying lead, push-on or solder terminations
- Low inductance design
- High isolation, even after failsafe overload fusing
- RoHS compliant, non-flammable construction



Electrical Data

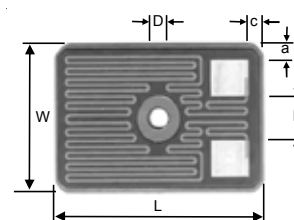
		WDBR1/2	WDBR1	WDBR2	WDBR3	WDBR5	WDBR7
Resistance range	ohms	22, 47, 100		12, 22, 47, 100, 150			47, 100, 150
Resistance tolerance	%			10			
Pulse power rating ¹	kW	0.5	1.5	2.0	3.5	5.0	7.0
Power rating on heatsink ²	W	160	180	200	260	270	280 ⁴
Power rating on fan-cooled heatsink ³	W	300	700	780	900	1000	1490 ⁴
TCR	ppm/°C			+500 to +600			
Maximum element temperature	°C			365			
Ambient temperature range (heatsink)	°C			-55 to +200			
Dielectric withstand ⁵	V (dc/ac peak)			2500			
Inductance (typical)	µH		<3		<4	<5	<6

Notes:

1. For details of pulse condition see Fig. 1 in Performance Data.
2. Mounted on a 0.53°C/W heatsink with no forced air cooling, air temperature 25°C.
3. Mounted on a 0.53°C/W heatsink with 5m/s forced air cooling, air temperature 25°C.
4. Limited by the solder type; the rating can be improved for non-standard parts by using HMP solder.
5. Based on 100% production test, duration 2s minimum

Physical Data

Dimensions in mm, weight without terminations in g								
	L ±0.1	W ±0.1	t ±0.1	ØD nom	a nom	b nom	c nom	Wt. nom
WDBR1/2	31.9	28.1	0.9	2.2	7.5	3.1	4.3	6.5
WDBR1	49.3	35.9		3.2	3.2	11.2	6.2	12.6
WDBR2	61	40.6		4.7	13.0	5.8	17.1	
WDBR3	101.6	70		13.5	22.0	10.2	50.8	
WDBR5	122	70	1.5	14.0	23.8	7.4	60.7	
WDBR7	152.4	101.6		15.0	51.3	9.2	181.8	



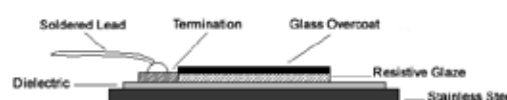
Substrate thickness = t

Fixing hole is located centrally except on WDBR1/2 where the dimension from the edge by the terminations to the mounting hole centre is 16.68mm

Construction

A high integrity dielectric layer is applied to a machined stainless steel substrate. Thick-film conductor and resistor patterns are printed and fired, then protected with a high temperature overglaze. The termination pads are tinned with Pb-free solder and optional terminals or leads are soldered on.

Construction Cross Section


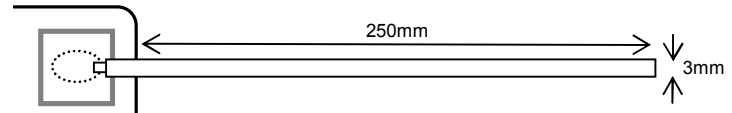
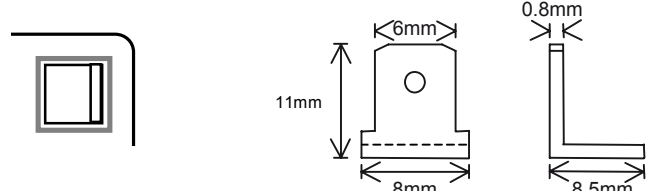


General Note

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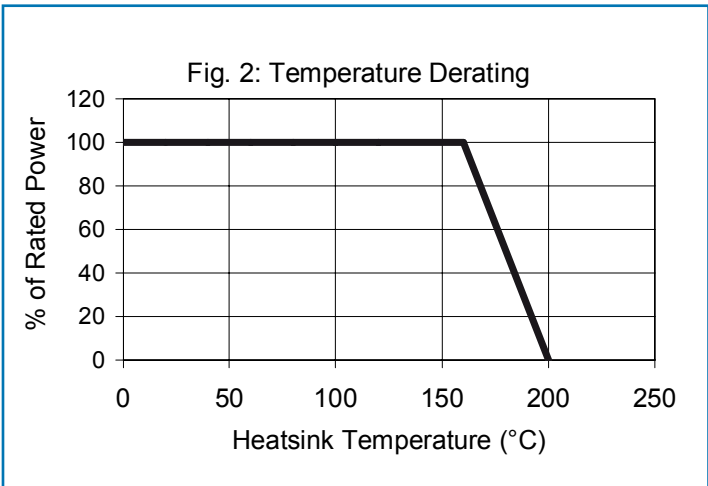
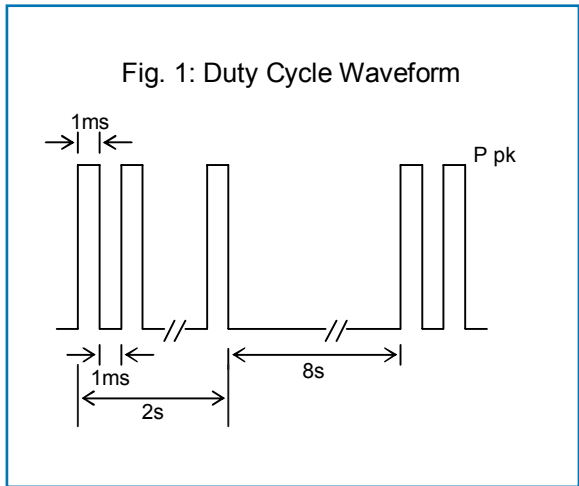
Terminations

The following termination options are available

Option	Code	Nominal Dimensions
Solder pad only SnAg (96S)	I	
Flying leads UL3134/5 40A, 600V	L	
Push-on connectors (WDBR1,2,3,5&7)	T	

Thermal Performance

	Maximum
Pulsed load at full pulse power rating 50,000 cycles (see Fig 1) Mounted on a 0.53°C/W heatsink with 5m/s forced air cooling, air temperature 25°C.	5
Derating at heatsink temperatures >160°C	See Fig. 2



Application Notes

A heatsink with thermal resistance $\leq 0.53^{\circ}\text{C/W}$ will enable the component to operate at its continuous power rating. Thermal grease (e.g. Dow Corning DC340) should be used and the heatsink should have a surface finish of $<6.3\mu\text{m}$ with flatness of $<0.05\text{mm}$. The resistor should be mounted using a screw head bolt of size M5 for WDBR2, 3, 5 & 7, M3 for WDBR1 and M2 for WDBR1/2. This should be torqued to $2.5\text{Nm} \pm 10\%$.

WDBR resistors will fail safe (open circuit) under overload fault conditions and still maintain a 1kV dielectric withstand.

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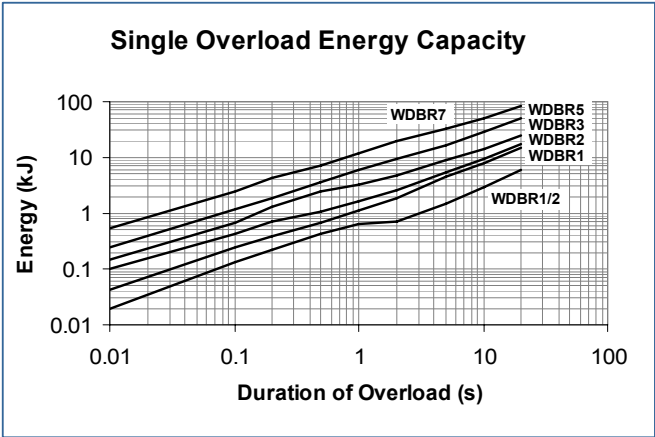
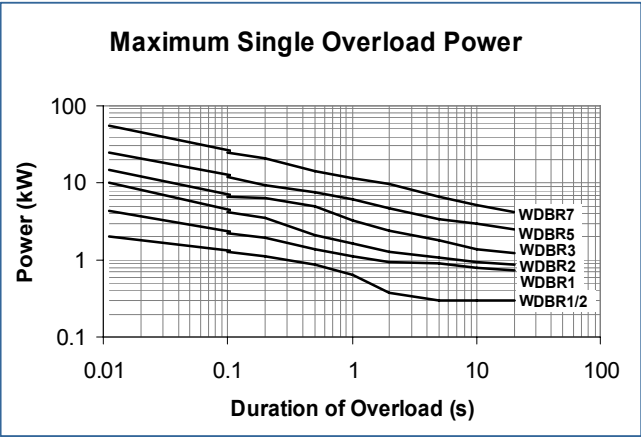
www.bitechnologies.com www.irctt.com www.welwyn-tt.com

WDBR resistors may be customised in various ways including:

- Alternative shapes and dimensions up to 406mm x 406mm
- Integration of temperature measurement elements
- Alternative ohmic values, tolerance & TCR
- Increased dielectric withstand voltage
- Custom braking resistors with UL approval

For a full Applications Note for dynamic braking see http://www.welwyn-tt.com/pdf/application_notes/WDBR.pdf

Overload Conditions



Ordering Procedure

Example: WDBR2 at 100 ohms and 10% tolerance with flying leads and packed in a box of 84 pieces:

WDBR2-100RKLW

Type

Value (use IEC62 code)

Tolerance (use IEC62 code)

Termination

Packing

K

10%

I

Solder pad only

L

Flying leads

T

Push-on connectors

W	Bulk Pack	WDBR1/2,1&2	84/box	Standard
		WDBR3	70/box	
		WDBR5&7	60/box	

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