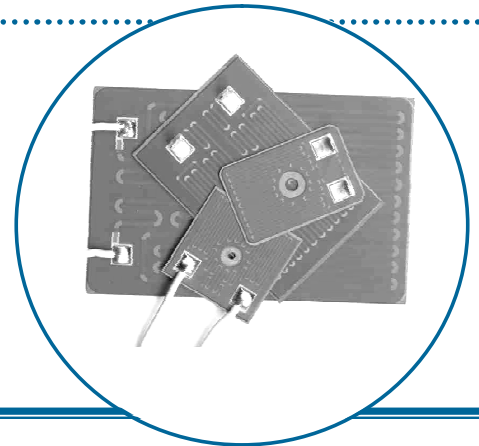


Ultra Low Profile Power Resistors

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

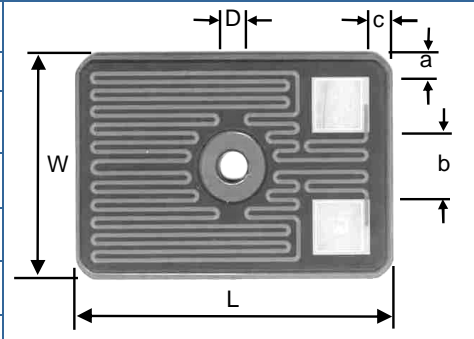
| | | WDBR1/2 | WDBR1 | WDBR2 | WDBR3 | WDBR5 | WDBR7 |
|--|----------------|--------------|----------------------|-------|-------|--------------|-------------------|
| Resistance range | ohms | 22, 47, 100 | 12, 22, 47, 100, 150 | | | 47, 100, 150 | |
| Resistance tolerance | % | 10 | | | | | |
| Pulse 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 | | | | | |
| Dielectric withstand | 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.

Physical Data

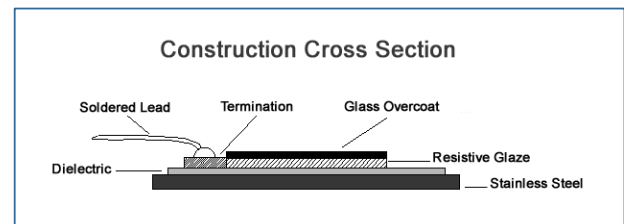
| Dimensions in mm, weight without terminations in g | | | | | | | | |
|--|--------|--------|--------|--------|-------|-------|-------|---------|
| | L ±0.1 | W ±0.1 | t ±0.1 | ØD nom | a nom | b nom | c nom | Wt. nom |
| WDBR1/2 | 31.9 | 28.1 | 0.9 | 2.2 | 7.5 | 3.1 | 4.3 | 6.5 |
| WDBR1 | 49.3 | 35.9 | | 3.2 | 3.2 | 11.2 | 6.2 | 12.6 |
| WDBR2 | 61 | 40.6 | | 5.3 | 4.7 | 13.0 | 5.8 | 17.1 |
| WDBR3 | 101.6 | 70 | | | 13.5 | 22.0 | 10.2 | 50.8 |
| WDBR5 | 122 | 70 | 14.0 | | 23.8 | 7.4 | 60.7 | |
| WDBR7 | 152.4 | 101.6 | 1.5 | 15.0 | 51.3 | 9.2 | 181.8 | |



Substrate thickness = t
Fixing hole is located centrally

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.



General Note

Welwyn Components reserves the right to make changes in product specification without notice or liability. All information is subject to Welwyn's own test data and is considered accurate at time of print.

Welwyn Components Limited


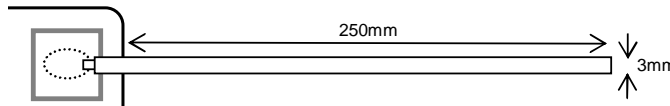
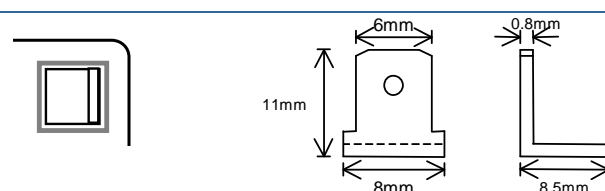
Welwyn Electronics Park, Bedlington, Northumberland, NE22 7AA, England. Tel: 01670 822181 Fax: 01670 829465 Web: www.welwyn-tt.com

Ultra Low Profile Power Resistors

WDBR Series

Terminations

The following termination options are available

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

Performance Data

| | 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 |

Fig. 1: Duty Cycle Waveform

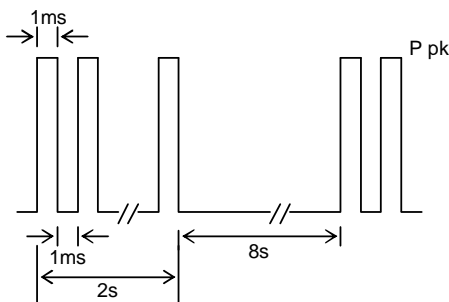
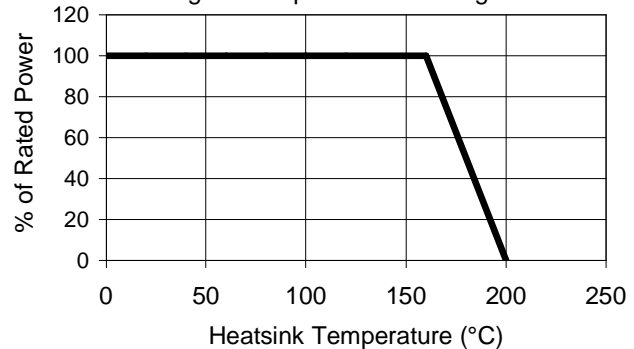


Fig. 2: Temperature Derating



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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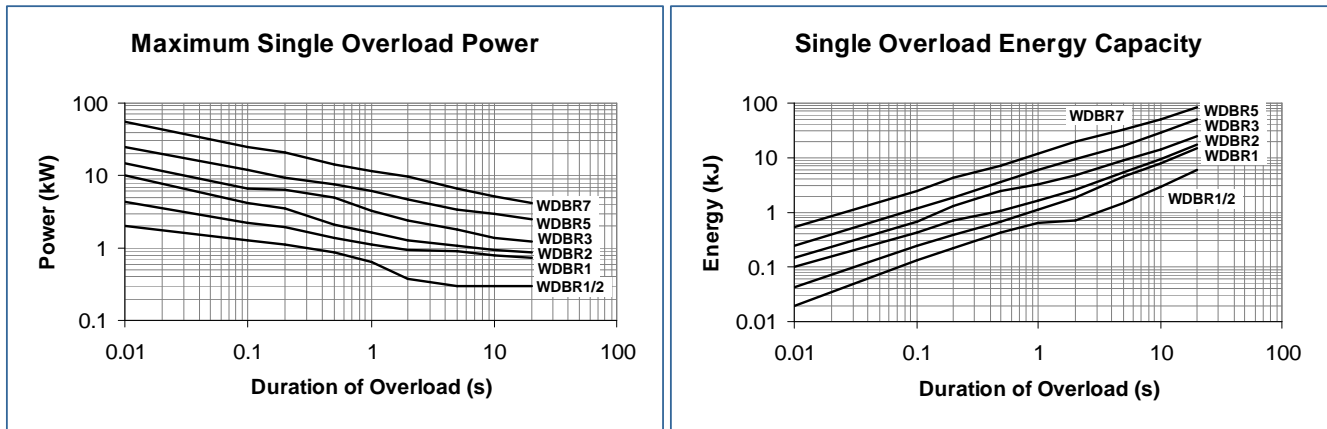
WDBR Series

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) _____

| | |
|---|-----|
| K | 10% |
|---|-----|

Termination _____

| | |
|---|--------------------|
| I | Solder pad only |
| L | Flying leads |
| T | Push-on connectors |

Packing _____

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

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10/08

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