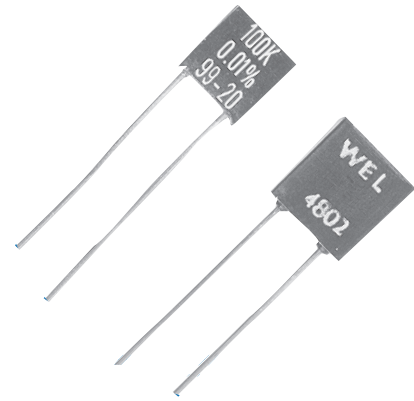


Ultra Precision Bulk Metal Film Resistors

OBSOLETE

4800 Series

- Tolerances down to 0.005%
- Current noise and distortion below level of practicable measurement
- Low thermal e.m.f
- Ideal resistor for precision instrumentation
- Use of bulk metal gives superior stability
- Planar construction gives low residual capacitance and inductance



All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

Electrical Data

| Commercial | | 4802/12/32 | 4804 | 4805 | Notes |
|---------------------------|---------|-----------------------|-------------|-------------|-------------------------|
| Power Rating at 70°C | watts | 0.5 | 1 | 1.5 | |
| Resistance Range | ohms | 1R0 to 100K | 0R5 to 200K | R33 to 300K | |
| Limiting element voltage | volts | 200 | 350 | 500 | |
| TCR (20 to 70°C) | ppm/°C | 5 | 5 | 5 | |
| Resistance tolerance | | | | | See table 1 below |
| Thermal impedance | °C/watt | 250 | 130 | 80 | |
| Values | | E24 and E96 preferred | | | Any value to order |
| Ambient temperature range | °C | -55 to 155 | | | All styles and products |

Table 1. Resistance Range (ohms) and Tolerance (%)

| Tolerance (code) | 4802/12/32 | 4804 | 4805 |
|------------------|--------------|--------------|---------------|
| 0.005 (E) | 200R to 100K | 100R to 200K | 65R to 300K |
| 0.01 (L) | 100R to 100K | 50R to 200K | 33R to 300K |
| 0.02 (P) | 50R to 100K | 25R to 200K | 17R to 300K |
| 0.05 (W) | 25R to 100K | 10R to 200K | 8R to 300K |
| 0.1 (B) | 10R to 100K | 5R to 200K | 3.3R to 300K |
| 0.25 (C) | 5R to 100K | 2R to 200K | 1.7R to 300K |
| 0.5 (D) | 2R to 100K | 10R to 200K | 0.6R to 300K |
| 1.0 (F) | 1R to 100K | 0.5R to 200K | 0.33R to 300K |

General Note

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Physical Data

| Dimensions (mm) & Weight (g) | | | | | | | |
|------------------------------|-------|-------|-------|-------|-------|-------|---------|
| Type | L max | H max | W max | T min | d nom | S nom | Wt. nom |
| 4802 | 8.9 | 10.2 | 3.8 | 30 | 0.6 | 5.1 | 1 |
| 4812 | 7.5 | 8 | 2.5 | 30 | 0.6 | 5.1 | 0.6 |
| 4804 | 15.2 | 13.2 | 3.8 | 30 | 0.6 | 10.2 | 1.5 |
| 4805 | 22.6 | 13.2 | 3.8 | 30 | 0.6 | 17.8 | 2 |
| 4832 | 9.7 | 5.4 | 9.7 | 30 | 0.6 | 1.5 | 1.1 |

Construction

The resistor element is an etched bulk metal foil, bonded to an alumina substrate. Connections to the foil are made by copper wires welded to the foil to minimise thermal e.m.f. Before encapsulation, the resistor element is coated with silicone rubber to isolate the element from mechanical stress which would adversely affect the carefully balanced construction and result in poor resistance/temperature characteristics.

Terminations

- Material** Solderable finish copper wire
- Strength** The terminations meet the requirements of IEC 68.2.21.
- Solderability** The terminations meet the requirements of IEC 115-1, Clause 4.17.3.2.

Marking

Type reference, resistance value, tolerance and date code are legend marked. The resistance value conforms to IEC 62.

Solvent Resistance

The protection will withstand all normal industrial solvents suitable for cleaning printed circuit boards.

Performance Data

| | | Actual | |
|---|-------|--|---------|
| | | Maximum | Typical |
| Load at commercial rating: 1000 hours at 70°C | ΔR% | 0.05 | 0.02 |
| Dry heat: 1000 hours at 155°C | ΔR% | 0.05 | 0.02 |
| Shelf life: 12 months at room temperature | ΔR% | | 0.0025 |
| Derating from rated power at 70°C | | Zero at 155°C | |
| Short term overload | ΔR% | 0.01 | 0.005 |
| Climatic category | | 55/155/56 | |
| Climatic | ΔR% | 0.05 | 0.03 |
| Long term damp heat | ΔR% | 0.05 | 0.03 |
| Temperature rapid change | ΔR% | 0.01 | 0.005 |
| Resistance to solder heat | ΔR% | 0.01 | 0.005 |
| Vibration and bump | ΔR% | 0.01 | 0.005 |
| Noise. (in a decade of frequency) | μV/V | Below level of practicable measurement | |
| Voltage coefficient of resistance | ppm/V | Below level of practicable measurement | |
| Insulation Resistance | ohms | >1000M | |
| Inductance | μH | 0.2 | 0.08 |
| Capacitance | pF | 1 | 0.5 |

Packaging

All components are supplied loose packed in either plastic bags or panel boxes. Quantity per box will depend on resistor size.

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Ordering Procedure

Example: 4812-73K2LI (4812, 73.2 kilohms $\pm 0.01\%$, Pb-free)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 8 | 1 | 2 | - | 7 | 3 | K | 2 | L | I |
| 1 | | | | 2 | | | | 3 | 4 | |

| 1 Type | 2 Value | 4 Tolerance | 5 Finish & Packing |
|-----------|---|-------------------|------------------------------|
| 4802 | E24 & E96 = 3/4 characters More characters may be used for non-standard values R = ohms K = kilohms | E = $\pm 0.005\%$ | I Pb-free, bulk in bag & box |
| 4804 | | L = $\pm 0.01\%$ | |
| 4805 | | P = $\pm 0.02\%$ | |
| 4812 | | W = $\pm 0.05\%$ | |
| 4832 | | B = $\pm 0.1\%$ | |
| | | C = $\pm 0.25\%$ | |
| | | D = $\pm 0.5\%$ | |
| | F = $\pm 1\%$ | | |

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