

**FEATURES**

- Resistances from 0.001Ohm to 50Ohms
- Power Rating to 40Watt
- Resistance Tolerances to  $\pm 0.1\%$
- TCR to  $\pm 15\text{ppm/K}$
- Very Low Inductance
- Load Stability to 0.1%

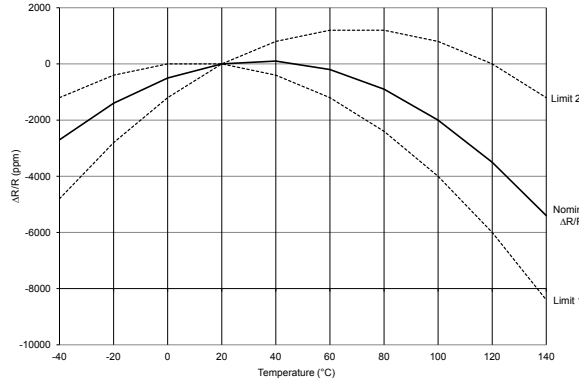


**RoHS\***  
COMPLIANT

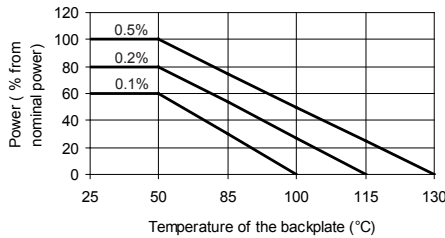
| TABLE 1 – SPECIFICATIONS                      |               |  |
|---|---------------|--|
| TYPE  |               | FHR 4-2321   |
| Resistance Range                              |               | 0.001 to 50 Ohms   |
| Power Rating                                  | Free air 70°C | 3W   |
|   | With heatsink | 40W  |
| Tolerances                                    |               |  |
| from 0R001                                    |               | 1% / 2% / 5%   |
| from 0R005                                    |               | 0.5% / 1% / 2% / 5%  |
| from 0R01                                     |               | 0.1% / 0.25% / 0.5% / 1% / 2% / 5%                                     |
| Thermal Resistance                            |               | 2.0 K/W  |
| Stability (1000h)                             |               | 0.1% / 0.2% / 0.5%<br>(depends on stress)                              |
| Temperature Coefficient                       |               |  |
| 0.001 to 100 Ohms (Q)                         |               | $\pm 25\text{ppm/K}$ (20 to 60°C)                                      |
| Option 1 (P) upon request for selected values |               | $\pm 15\text{ppm/K}$ (20 to 60°C)<br>other specifications upon request |
| Voltage Proof                                 |               |  |
| < 0R005                                       |               | 300 VDC  |
| $\geq$ 0R005                                  |               | 500 VAC  |
| Maximum Current                               |               | 150 A  |
| Thermal EMF                                   |               | < 1 $\mu$ V/K  |
| Operating Temperature Range                   |               | -40 to 130 °C  |
| Resistor Material                             |               | CuNiMn-Foil  |
| Substrate                                     |               | Anodized aluminium   |
| Housing                                       |               | Epoxy  |
| Connector Material                            |               | Cu / tinned  |
| Terminals                                     |               | 4 (standard contact S)   |
| Max. Torque                                   |               | 0.8 Nm   |

| ORDERING INFORMATION                                 |
|--|
| Part Number - Resistance - Contact - Tolerance - TCR |
| FHR 4-2321 0R002 S 1% Q                              |

**FIGURE 1 – TEMPERATURE COEFFICIENT**



**FIGURE 2 – DERATING**



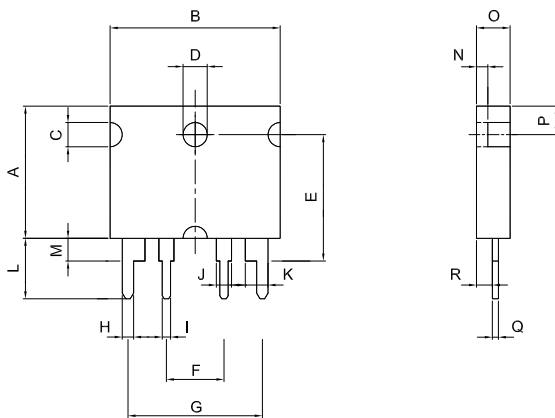
**Power Rating Notes -**

The FHR Series Resistors must be attached to a suitable heat-sink. The maximum internal resistor temperature is 130°C. To specify an appropriate heatsink use the following formula :

$$R_{\theta H} = \frac{T_{MAX} - (P \times R_{\theta R}) - T_A}{P}$$

Where:  $R_{\theta H}$  = Thermal Resistance of Heatsink ( K/W )  
 $R_{\theta R}$  = Thermal Resistance of Resistor ( K/W )  
 $T_{MAX}$  = Maximum Temperature of Resistor  
 $T_A$  = Ambient Temperature of Heatsink ( °C )  
 $P$  = Power Through Resistor ( W )

**FIGURE 3 – DIMENSIONS** in mm (inches)



| Dimension       |               |
|-----------------|---------------|
| A ±0.2 (±0.008) | 17.25 (0.68)  |
| B ±0.2 (±0.008) | 22.30 (0.88)  |
| C ±0.1 (±0.004) | 3.20 (0.13)   |
| D ±0.1 (±0.004) | ∅3.20 (∅0.13) |
| E ±0.2 (±0.008) | 16.75 (0.66)  |
| F ±0.2 (±0.008) | 7.62 (0.30)   |
| G ±0.2 (±0.008) | 17.78 (0.70)  |
| H ±0.2 (±0.008) | 1.50 (0.06)   |
| I ±0.2 (±0.008) | 1.10 (0.04)   |
| J ±0.1 (±0.004) | 2.00 (0.08)   |
| K ±0.1 (±0.004) | 3.00 (0.12)   |
| L ±0.2 (±0.008) | 8.00 (0.31)   |
| M ±0.2 (±0.008) | 3.00 (0.12)   |
| N ±0.1 (±0.004) | 1.50 (0.06)   |
| O ±0.1 (±0.004) | 4.50 (0.18)   |
| P ±0.2 (±0.008) | 3.75 (0.15)   |
| Q ±0.1 (±0.004) | 0.80 (0.03)   |
| R ±0.2 (±0.008) | 2.10 (0.08)   |



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