# Type HOLCO Series

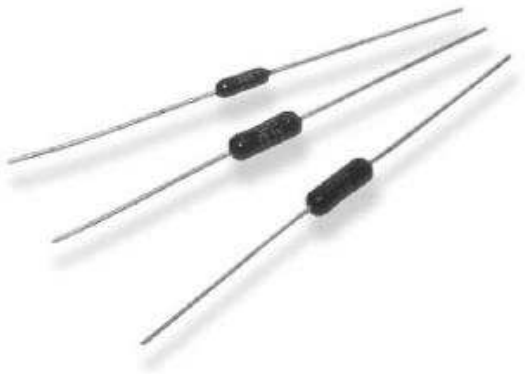
**Key Features**

**Ultra-Precision - Down To 0.05%**

**Low TCR – Down To 5ppm/°C**

**Long Term Stability**

**Up To 1 Watt At 70°C**



The Holco range of Precision Metal Film Resistors meets the requirement for economically priced components for industrial and military applications. The manufacturing facility utilises closely controlled production processes including the sputter coating of metal alloy films to ceramic substrates, and laser spirallin to achieve close tolerance and high stability resistors. An epoxy coating is applied for environmental and mechanical protection. Commercially the Series i available in two case sizes, from 1 ohm to 4M ohms, tolerances from 0.05% to 1% and TCR's from 5ppm/°C to 100ppm/°C.

## Characteristics – Electrical

| | H4P | H4 | H8 |
|---|---|---|---|
| Power rating @70°C | 1W | 0.5W | 0.25W |
| Temperature Rise | 70°C | 55°C | 40°C |
| Limiting Element Voltage | 500v | 350v | 350v |

### General Data

| | |
|---|---|
| Lead Material | Solderability to BS CECC 40101 004 Para 4.15.1 |
| Encapsulation | Conformal Epoxy Coating |
| Resistor Marking | Legend printed in accordance with CECC 40000 Para 2.4 |
| Solvent Resistance | The epoxy coating and print will withstand the action of all commonly used industrial cleansing solvents |

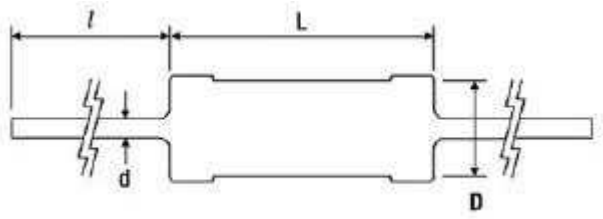
## Resistance Range by TCR and Tolerance

| TCR | H4P | | | H4 | | | H8 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Ppm/°C** | **0.05%** | **0.1% - 0.25%** | **0.5% - 1.0%** | **0.05%** | **0.1% - 0.25%** | **0.5% - 1.0%** | **0.05%** | **0.1% - 0.25%** | **0.5% - 1.0%** |
| **5** | 10R-500K | 10R-500K | 10R-500K | 10R-500K | 10R-500K | 10R-500K | 10R-500K | 10R-500K | 10R-500K |
| **10** | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 |
| **15** | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 | 10R – 1M0 |
| **25** | 10R – 1M0 | 10R – 2M0 | 10R – 2M0 | 10R – 1M0 | 10R – 2M0 | 10R – 2M0 | 10R – 1M0 | 10R – 2M0 | 10R – 2M0 |
| **50** | 10R – 1M0 | 10R – 2M0 | 10R – 4M0 | 10R – 1M0 | 10R – 2M0 | 10R – 4M0 | 10R – 1M0 | 10R – 2M0 | 10R – 4M0 |
| **100** | 10R – 1M0 | 10R – 2M0 | 10R – 4M0 | 10R – 1M0 | 10R – 2M0 | 10R – 4M0 | 10R – 1M0 | 10R – 2M0 | 10R – 4M0 |

## Performance Characteristics

| | **Typical Data** | **Reference** |
|---|---|---|
| Voltage Coefficient of Resistance (Between 10% and Full Rated Voltage) | Less Than 5ppm/Volt Applied | N/A |
| Insulation Resistance at 500 Volts | Greater Than $10^{12}$ Ohms | N/A |
| Resistance to Soldering Heat (260°C for 10 Secs.) | Less Than 0.05% | BS CECC 40101 004 Para 4.15.2 |
| Short Term Overload (6.25 Times Rated Wattage for 5 Seconds) | Less Than 0.06% | BS CECC 40101 004 Para 4.11 |
| Ambient Temperature Range | -55°C to +155°C | BS CECC 40101 004 |
| Rapid Change of Temperature (-55°C to +155°C, 5 cycles) | Less Than 0.04% | BS CECC 40101 004 Para 4.16 |
| Shelf Life (at Normal Room Temp.) | Less Than 0.05% Per Annum | N/A |
| Vibration (10-500 HZ Amplitude 0.75mm, or Acceleration 98m/s2 whichever is less severe, sweep duration 6 hours) | Less Than 0.04% | BS CECC 40101 004 Para 4.19 |
| Vibration (55-2000 Hz Simple Harmonic Motion, Max. Acceleration 98m/s2, Duration 35±5 Minutes) | Less Than 0.04% | MIL STD 202 METHOD 204-C |
| Bump (390m/s2, 4000 Bumps) | Less Than 0.03% | BS 2011 Part 2.1 Eb 1977 (1984) |
| Load Stability | See graph | N/A |
| Damp Heat Steady State | See Graph | BS CECC 40101 004 Para 4.21 |

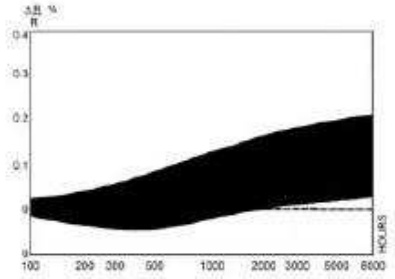
## Dimensions



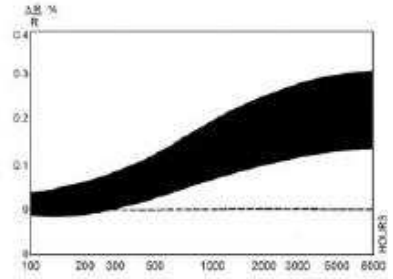

| | H4P | H4 | H8 |
|---|---|---|---|
| Body Length (L) maximum: | 10.50mm | 10.50mm | 7.20mm |
| Body Diameter (D) maximum: | 3.70mm | 3.70mm | 2.70mm |
| Lead Diameter (d) maximum: | 0.60mm | 0.60mm | 0.60mm |
| Lead Length (l) nominal: | 30.0mm | 30.0mm | 30.0mm |
| Recommended Mounting Pitch: | 12.70mm | 12.70mm | 10.2mm |
| Weight (g/100 resistors) | 40 | 40 | 24 |

N.B. To prevent damage to the components conformal coating, the leads should be adequately supported during the forming process

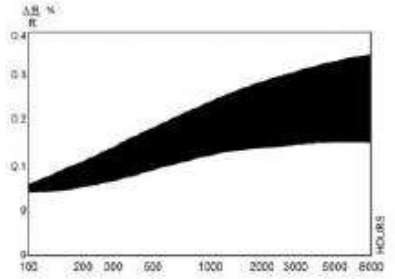
## Long Term Stability



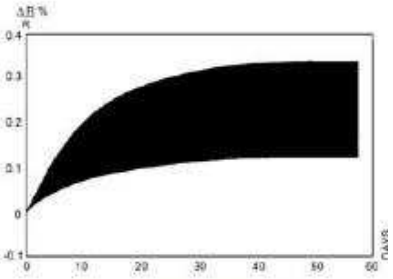
**Long Term Stability**
BS CECC 40101 004
Ratings at 70°C
H4 - 0.25 W
H8 - 0.125 W



**Long Term Stability**
BS CECC 40101 030
Ratings at 125°C
H4 - 0.125 W
H8 - 0.1 W

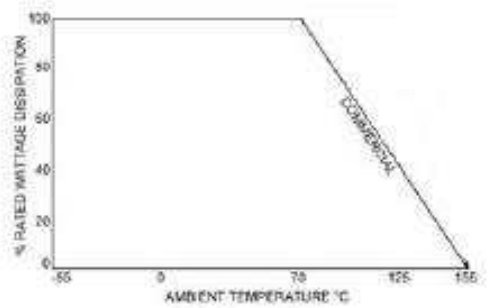


**Long Term Stability**
Commercial
Ratings at 125°C
H4P - 1W
H4 - 0.5 W
H8 - 0.25 W



**Damp Heat Steady State**
93% RH at 40°C

## Derating




## How To Order

| H8 | 100R | B | Y | A |
|---|---|---|---|---|
| **Common Part** | **Resistance Value** | **Tolerance** | **TCR Code** | **Release** |
| H4P<br>H4<br>H8 | 1.0Ω- 1R0<br>10Ω - 10R<br>1KΩ (1000 Ohms)- 1K0<br>10KΩ (10,000 ohms) – 10K | A – 0.05%<br>B – 0.1%<br>C – 0.25%<br>D – 0.5%<br>F – 1.0% | A – 5ppm<br>B – 10ppm<br>Y – 15ppm<br>D – 25ppm<br>C – 50ppm<br>Z – 100ppm | A – Part can only be sold with commercial or C of C release |

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