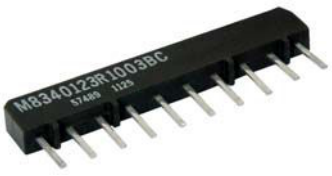
# Thin Film Resistor Network Military, MIL-PRF-83401 Qualified, Type RZ070, RZ080, RZ090, RZ210, RZ220, RZ230, Single-In-Line SIP



Qualified to meet MIL-PRF-83401 characteristic “R”, “V”, and “H”

These resistor networks are available in 6 pins, 8 pins, and 10 pins in schematic C and G styles. Custom circuits are not available. Schematic C and G only. They incorporate Vishay Dale Thin Film’s patented passivated nichrome film to give superior performance on temperature coefficient of resistance, thermal stability, noise, voltage coefficient, power handling and resistance stability. The leads are attached to the metallized alumina substrates by Thermo-Compression bonding. The body is molded thermoset plastic with gold plated copper alloy leads. This product will outperform all of the requirements of characteristic “R”, “V”, and “H” of MIL-PRF-83401.

## FEATURES

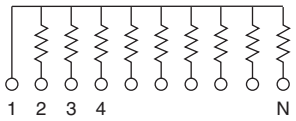
- MIL-PRF-83401 qualified (cage code 57489)
- Low Profile 0.195" (4.95 mm seated height)
- Characteristics R (± 25 ppm), H, V, K, and M
- Hot fused tin/lead 60/40 solder dipped
- Rugged molded low profile construction with standoff
- 100 % screened to groups A MIL-PRF-83410 testing
- Tolerances to 0.1 %
- Isolated and bussed (schematic C and G)

## TYPICAL PERFORMANCE

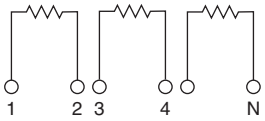
| | ABSOLUTE | TRACKING |
|---|---|---|
| TCR | 25 | 5 |
| | ABSOLUTE | RATIO |
| TOL. | 0.1 | 0.1 to 0.05 |

## SCHEMATIC

C Schematic (Pin 1 Common)




G Schematic (Isolated)




## STANDARD ELECTRICAL SPECIFICATIONS

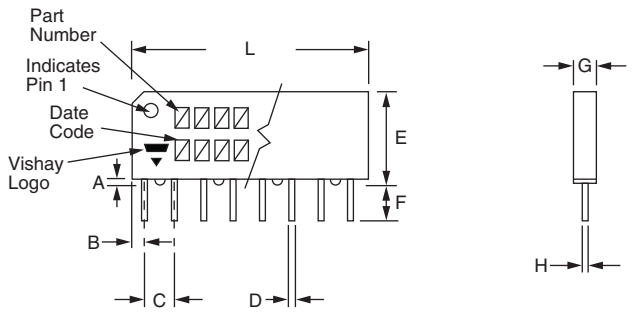
| TEST | SPECIFICATIONS | CONDITIONS |
|---|---|---|
| **Material** | Passivated nichrome | - |
| **Pin/Lead Number** | 6, 8, 10 | - |
| **Resistance Range** | 100 Ω to 200 kΩ per resistor | Tolerance dependent (2) |
| **TCR: Absolute** | ± 25 ppm/°C to 300 ppm/°C | - 55 °C to + 125 °C (1) |
| **TCR: Tracking** | ± 5 ppm/°C | - 55 °C to + 125 °C |
| **Tolerance: Absolute** | ± 0.1 % to ± 5.0 % | + 25 °C |
| **Tolerance: Ratio** | ± 0.1 % to $R_1$ | + 25 °C |
| **Power Rating: Resistor** | 0.06 mW to 0.120 mW (per element typical at + 25 °C) (1) | Maximum at + 70 °C |
| **Power Rating: Package** | 0.18 W to 1.08 W (1) | Maximum at + 70 °C |
| **Stability: Absolute** | $\Delta R$ ± 0.05 % | 2000 h at + 70 °C |
| **Stability: Ratio** | $\Delta R$ ± 0.015 % | 2000 h at + 70 °C |
| **Voltage Coefficient** | < 0.1 ppm/V | - |
| **Working Voltage** | 100 V | - |
| **Operating Temperature Range** | - 55 °C to + 125 °C | - |
| **Storage Temperature Range** | - 55 °C to + 125 °C | - |
| **Noise** | < - 30 dB | - |
| **Thermal EMF** | < 0.08 µV/°C | - |
| **Shelf Life Stability: Absolute** | $\Delta R$ ± 0.01 % | 1 year at + 25 °C |
| **Shelf Life Stability: Ratio** | $\Delta R$ ± 0.002 % | 1 year at + 25 °C |

**Notes**

(1) Consult MIL-PRF-83401

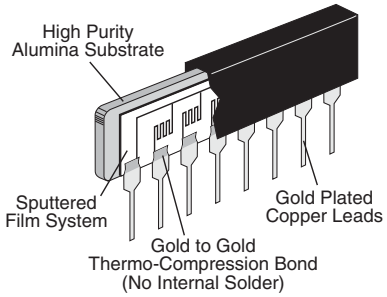
(2) “H” characteristic 100 Ω to 100 kΩ resistance range at 0.1% best
“R” characteristic 250 Ω to 100 kΩ resistance range at 0.1% best
“R” characteristic 250 Ω to 200 kΩ resistance range at 1% best

## DIMENSIONS AND IMPRINTING in inches and millimeters




| DIMENSION | INCHES | MILLIMETERS |
|---|---|---|
| A | 0.035 | 0.89 |
| B | 0.040 | 1.02 |
| C | 0.100 ± 0.005 non-accum. | 2.54 ± 0.13 |
| D | 0.019 ± 0.006 typical | 0.48 ± 0.15 |
| E | 0.187 ± 0.010 | 4.75 ± 0.25 |
| F | 0.135 | 3.43 |
| G | 0.095 | 2.41 |
| H | 0.012 ± 0.004 | 0.31 ± 0.10 |
| L (6 Pins) | 0.583 - 0.023/+ 0.01 | 14.81 - 0.584/+ 0.254 |
| L (8 Pins) | 0.783 - 0.023/+ 0.01 | 19.89 - 0.584/+ 0.254 |
| L (10 Pins) | 0.983 - 0.023/+ 0.01 | 24.97 - 0.584/+ 0.254 |

## CONSTRUCTION

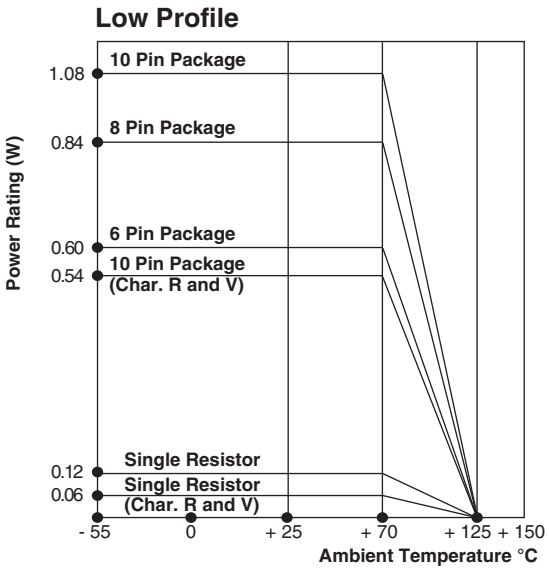



## MECHANICAL SPECIFICATIONS

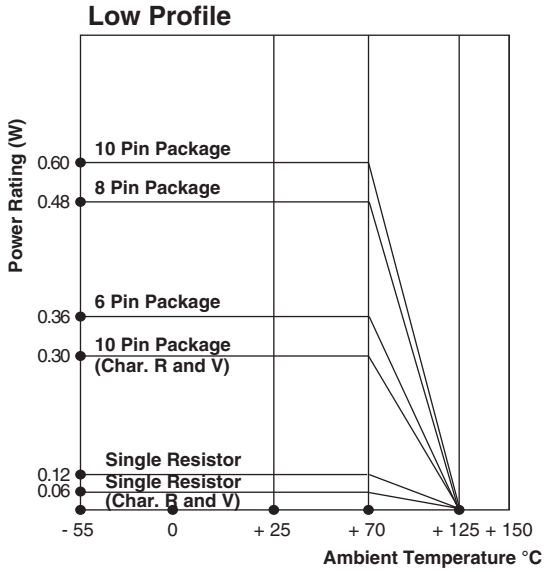
| | |
|---|---|
| **Resistive Element** | TAMELOX passivated nichrome |
| **Substrate Material** | Alumina |
| **Body Molded** | Epoxy |
| **Terminals** | Copper alloy |
| **Plating/Solder** | Nickel/gold/Sn63 fussed |

## POWER DERATING

**C Schematic (Pin 1 Common Characteristic H)**




**G Schematic (Isolated Characteristic H)**



## GLOBAL PART NUMBER INFORMATION

**New Global Part Numbering: M8340107H1000BCUF**

| M | 8 | 3 | 4 | 0 | 1 | 0 | 7 | H | 1 | 0 | 0 | 0 | B | C | U | F | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MODEL (5 digits) | SCHEMATIC (2 digits) | CHARACTERISTIC (1 digits) | RESISTANCE (4 digits) | TOLERANCE (1 digits) | SCHEMATIC (1 digits) | PACKAGING (2 digits) | VENDOR (1 digits) |
|---|---|---|---|---|---|---|---|
| **M83401** Single in-line resistor network low profile<br>**C83401** Non burn in screened network | **07** = 6 pin<br>**08** = 8 pin<br>**09** = 10 pin<br>**21** = 6 pin (1)<br>**22** = 8 pin (1)<br>**23** = 10 pin (1) | **H** = 50 ppm/°C<br>**V** = 50 ppm/°C 5 ppm/°C track<br>**R** = 25 ppm/°C 5 ppm/°C track<br>**K** = 100 ppm/°C<br>**M** = 300 ppm/°C | First 3 digits are significant figures and the last digit specifies the number of zeros to follow. (100 Ω to 100 kΩ)<br>Examples:<br>**1000** = 100 Ω<br>**1001** = 1000 Ω | **B** = 0.1 % (3)<br>**D** = 0.5 % (3)<br>**F** = 1 %<br>**G** = 2 %<br>**J** = 5 % | **C** = Pin 1 common<br>**G** = Isolated resistors | **UF** = Tubed<br>**UI** = 100 min, 1 mult (item single lot date code)<br>**UP** = 100 min.,1 mult (package unit single lot date) | **V** (2) = Vishay Dale Thin Film |

**Notes**

(1) No internal solder

(2) "V" is not required for characteristics R, H, and V, it is only required for K and M. Characteristics tolerance equal to or greater than 1 %."

(3) "H" characteristic 100 Ω to 100 kΩ resistance range at 0.1% best
"R" characteristic 250 Ω to 100 kΩ resistance range at 0.1% best
"R" characteristic 250 Ω to 200 kΩ resistance range at 1% best

| MODEL | SCHEMATIC | CHARACTERISTIC | RESISTANCE RANGE | TOLERANCE | SCHEMATIC |
|---|---|---|---|---|---|
| M83401<br>C83401 | 07 = 6 pin (RZ070)<br>08 = 8 pin (RZ080)<br>09 = 10 pin (RZ090)<br>21 = 6 pin (RZ210)<br>22 = 8 pin (RZ220)<br>23 = 10 pin (RZ230) | H = 50 ppm/°C | 100 to 100K | B, D, F, G, J | C, G |
| | | V = 50 ppm/°C/ 5 ppm/°C track | 250 to 100K | B, D, F, G, J | |
| | | | 250 to 200K | F, G, J | |
| | | R = 25 ppm/°C 5 ppm/°C track | 250 to 100K | B, D, F, G, J | |
| | | | 250 to 200K | F, G, J | |
| | | K = 100 ppm/°C | 100 to 100K | B, D, F, G, J | |
| | | M = 300 ppm/°C | | | |

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