

Thick Film Chip Resistors, High Resistance Value



FEATURES

- High resistance values up to 3 GΩ
- Automatic placement capability
- Termination style: 3-sided wraparound termination or single termination flip chip available
- Tape and reel packaging available
- Internationally standardized sizes, custom sizes available
- Suitable for solderable, epoxy bondable, or wire bondable applications
- Termination material: solder-coated nickel barrier or solder coated non-magnetic terminations standard; gold terminations available
- Multiple styles, termination materials and configurations, allow wide design flexibility
- Epoxy bondable or wire bondable non-magnetic terminations available
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS*
Available
HALOGEN FREE

Note

* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | CASE SIZE | POWER RATING ⁽¹⁾ $P_{70^{\circ}\text{C}}$ W | MAX. WORKING VOLTAGE ⁽²⁾ V | RESISTANCE RANGE ⁽³⁾ Ω | TOLERANCE ± % | TEMPERATURE COEFFICIENT ± ppm/°C |
|--------------|-----------|--|--|--------------------------------------|------------------|-------------------------------------|
| RCHR0805 | 0805 | Contact factory | 175 | 500K to 1G | 5, 10, 25 | 500 |
| RCHR1005 | 1005 | Contact factory | 200 | 500K to 2G | 5, 10, 25 | 500 |
| RCHR1206 | 1206 | Contact factory | 300 | 1M to 3G | 5, 10, 25 | 500 |

Notes

- For non-standard sizes, lower values or higher power rating requirement, contact factory.
- (1) Not specified as voltage is always limiting. Due to the high resistance values, the power dissipation is always small.
- (2) Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less.
- (3) Resistance values calibrated at 10 V_{DC}. Calibration at other voltages available upon request.

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | RCHR0805 | RCHR1005 | RCHR1206 |
|----------------------------|----------------|--------------------|--------------------|--------------------|
| Rated dissipation at 70 °C | W | Contact factory | Contact factory | Contact factory |
| Limiting element voltage | V _≡ | 175 | 200 | 300 |
| Insulation resistance | Ω | ≥ 10 ¹¹ | ≥ 10 ¹¹ | ≥ 10 ¹¹ |
| Category temperature range | °C | -55 to +155 | -55 to +155 | -55 to +155 |
| Weight/1000 (typical) | g | 6.4 | 8.3 | 12.3 |

VOLTAGE COEFFICIENT OF RESISTANCE

| MODEL | VALUE (Ω) | VCR (ppm/V) | FURTHER INSTRUCTIONS |
|----------|------------|-------------|---------------------------------|
| RCHR0805 | 500K to 1G | 5 | |
| RCHR1005 | 500K to 1G | 10 | Values over 1G, consult factory |
| RCHR1206 | 1M to 1G | 15 | Values over 1G, consult factory |

GLOBAL PART NUMBER INFORMATION

Global Part Numbering: RCHR1206AF750MJP EW (preferred part number format)

| GLOBAL MODEL | SIZE | TERM STYLE | TERM MATERIAL | RESISTANCE VALUE | TOLERANCE | TCR | SOLDER TERMINATION | PACKAGING |
|--------------|----------------------|-----------------------------|--|--|---------------------------------------|-------------|--|---|
| RCHR | 0805 1005 1206 | A = 3-sided B = Top only | F = Nickel barrier G = Non-magnetic C = Gold | K = kΩ M = MΩ G = GΩ 110K = 110 kΩ 49M9 = 49.9 MΩ 3G00 = 3 GΩ | J = ± 5 % K = ± 10 % V = ± 25 % | P = 500 ppm | E = Sn100 F = Sn95/Ag5, HSD N = No solder S = Sn62/Pb36/Ag2, HSD T = Sn90/Pb10 | B = Bulk F = T/R (full reel) 1 = T/R (1000 pcs) 5 = T/R (500 pcs) T = T/R (250 pcs min.) W = Waffle tray |

Note

- For additional information on packaging, refer to the Surface Mount Resistor Packaging document (www.vishay.com/doc?31543).

| DIMENSIONS in inches (millimeters) | | | | | |
|---|---|----------|--------------------------------|--------------------------------|---------------------------------|
| Termination style A (3-sided wraparound) | Termination style B (top conductor only) | MODEL | LENGTH ⁽¹⁾ (L) | WIDTH ⁽¹⁾ (W) | THICKNESS ⁽¹⁾ (T) |
| | | RCHR0805 | 0.075 ± 0.006 (1.90 ± 0.15) | 0.050 ± 0.006 (1.27 ± 0.15) | 0.025 ± 0.002 (0.64 ± 0.05) |
| | | RCHR1005 | 0.100 ± 0.006 (2.54 ± 0.15) | 0.050 ± 0.006 (1.27 ± 0.15) | 0.025 ± 0.002 (0.64 ± 0.05) |
| | | RCHR1206 | 0.125 ± 0.006 (3.18 ± 0.15) | 0.063 ± 0.006 (1.60 ± 0.15) | 0.025 ± 0.002 (0.64 ± 0.05) |

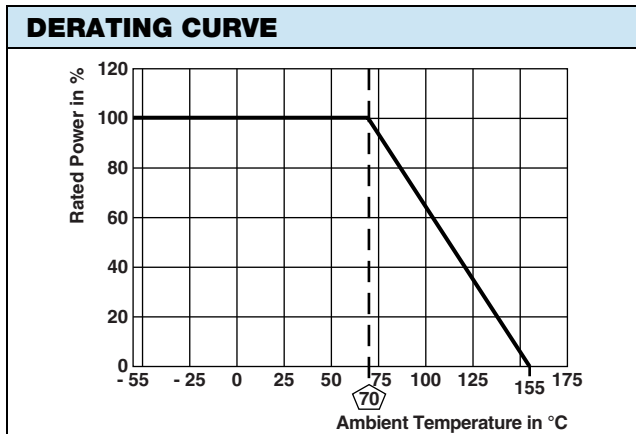
Note

⁽¹⁾ All dimensions are before solder coating.

| TYPE | TERMINATION MATERIAL | TERMINATION STYLE | TERMINATION STYLE/ MATERIAL CODE | SOLDER TERMINATION CODE |
|----------------------------------|----------------------|----------------------|-------------------------------------|--|
| Solderable | Nickel barrier | 3-sided (wraparound) | AF | E or T (standard); F or S (optional) ⁽²⁾ |
| Solderable | Non-magnetic | 3-sided (wraparound) | AG | E or T (standard); F or S (optional) ⁽²⁾ |
| Wire bondable/ Epoxy bondable | Gold | Top only (flip chip) | BC | N |

Note

⁽²⁾ Standard solder plating for the nickel barrier and non-magnetic parts is solder terminations E or T. Hot solder dipped terminations F or S are also available.



| MATERIAL SPECIFICATIONS | |
|-------------------------|--|
| Resistive element | Ruthenium oxide |
| Encapsulation | Epoxy |
| Substrate | 96 % alumina |
| Termination | Solder-coated nickel barrier or solder coated non-magnetic terminations standard. Gold terminations available. |
| Solder finish | Pure tin or tin/lead solder alloys standard. Tin/silver or tin/lead/silver solder alloys available. |

| PERFORMANCE | | | |
|--------------------------------|--|----------------------------------|----------------------------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS | TEST RESULTS (TYPICAL TEST LOTS) |
| Life | MIL-STD-202, method 108 1000 h rated power at + 70 °C | ± 2 % | ≤ ± 0.50 % |
| Short time overload | MIL-PRF-55342, paragraph 4.8.6 | ± 0.5 % | ≤ ± 0.02 % |
| High temperature exposure | MIL-PRF-55342, paragraph 4.8.7 | ± 1 % | ≤ ± 0.50 % |
| Low temperature operation | MIL-PRF-55342, paragraph 4.8.5 | ± 0.5 % | ≤ ± 0.02 % |
| Resistance to bonding exposure | MIL-PRF-55342, paragraph 4.8.8.2 | ± 0.5 % | ≤ ± 0.05 % |
| Moisture resistance | MIL-STD-202, method 106 | ± 1 % | ≤ ± 0.06 % |
| Solder mounting integrity | MIL-PRF-55342, paragraph 4.8.13.1 | No evidence of mechanical damage | |
| Solderability | MIL-STD-202, method 208 | 95 % coverage | |



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