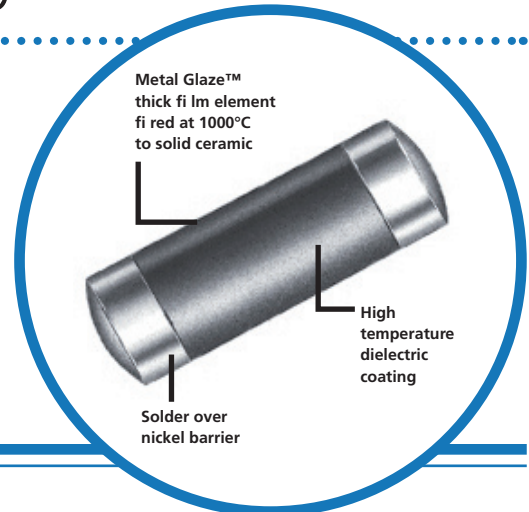


Cylindrical High Power Surface Mount Metal Glaze™

CHP Series

- Up to 2 watts
- Up to 1000 volts
- 0.2 ohm to 2.2 megohm range
- RoHS-compliant version available
- 150°C maximum operating temperature



Electrical Data

| IRC Type | Industry Footprint | Size Code ¹ | Maximum Power Rating | Working Voltage ² | Maximum Voltage | Resistance Range (ohms) ³ | Product Category | Tolerance (±%) ³ | TCR (ppm/°C) ³ |
|----------|--------------------|------------------------|---------------------------|------------------------------|-----------------|--------------------------------------|------------------|-----------------------------|---------------------------|
| CHP 1/8 | 1206 | B & C | 1/4W @ 70°C | 200 | 400 | 0.1 to 0.99 | Low Range | 1, 2, 5 | 100 |
| | | | | | | 1.0 to 1.0 M | Standard | 1, 2, 5 | 50, 100 |
| | | | | | | 20 to 348K | Tight Tolerance | 0.25, 0.5 | 50, 100 |
| CHP 1/2 | 2010 | D & E | 1/2W @ 70°C | 300 | 600 | 0.1 to 0.99 | Low Range | 1, 2, 5 | 100 |
| | | | | | | 1.0 to 348K | Standard | 1, 2, 5 | 50, 100 |
| CHP 1 | 2512 | F | 1W @ 70°C | 350 | 700 | 0.1 to 0.99 | Low Range | 1, 2, 5 | 100 |
| | | | | | | 1.0 to 2.21M | Standard | 1, 2, 5 | 50, 100 |
| | | | | | | 20 to 348K | Tight Tolerance | 0.25, 0.5 | 50, 100 |
| CHP 2 | 3610 | H | 2W @ 25°C 1.33W @ 70°C | 500 | 1000 | 0.2 to 0.99 | Low Range | 1, 2, 5 | 100 |
| | | | | | | 1.0 to 2.21M | Standard | 1, 2, 5 | 50, 100 |

¹See pages 2 & 3 for product dimensions, recommended solder pads, and standard packaging. ²Not to exceed $\sqrt{P \times R}$ ³Consult factory for tighter TCR, tolerance, or resistance values.


Environmental Data

| Characteristics | Maximum Change | Test Method |
|-----------------------------------|-----------------------------------|--|
| Thermal Shock | ±0.25% +.01 Ω | MIL-PRF-55342H, §4.8.3 (MIL-STD-202, Method 107G: +150°C / -65°C) |
| Low Temperature Operation | ±0.25% +.01 Ω | MIL-PRF-55342H, §4.8.5 (-65°C) |
| Short Time Overload | ±0.5% +.01 Ω ±1% for R>100KΩ | MIL-PRF-55342H, §4.8.6 |
| High Temperature Exposure | ±0.5% +.01 Ω | MIL-PRF-55342H, §4.8.7 (150°C x 100 Hours) |
| Resistance to Bonding Exposure | ±0.25% +.01 Ω | MIL-PRF-55342H, §4.8.8.2 |
| Moisture Resistance | ±0.5% +.01 Ω | MIL-PRF-55342H, §4.8.8.2 (MIL-STD-202, Method 106G) |
| Temperature Coefficient | As specified | MIL-PRF-55342H, §4.8.10 (MIL-STD-202, Method 304) |
| Life Test | ±1% +.01 Ω | MIL-PRF-55342H, §4.8.11 (MIL-STD-202, Method 108A: 2000 Hours @ 70°C) |
| Solderability | 95% minimum coverage | MIL-PRF-55342H, §4.8.12 (MIL-STD-202, Method 208H) |
| Terminal Adhesion Strength (push) | ±1% +.01 Ω (no mechanical damage) | IRC – defined 1200 gram push from underside of mounted device for 60 sec |
| Terminal Adhesion Strength (flex) | ±1% +.01 Ω (no mechanical damage) | IRC-defined Device mounted in center of 90mm long board, deflected 1 mm to exert pull on contacts for 5 seconds |

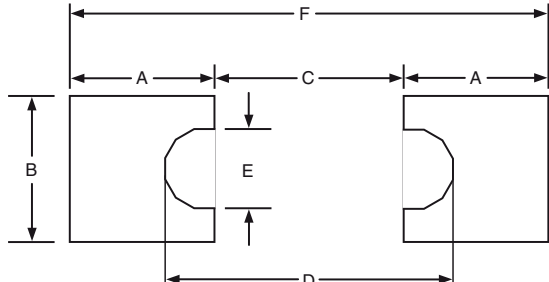
General Note

TT electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT electronics' own data and is considered accurate at time of going to print.

Physical Data

| IRC Type | Size Code | Industry Footprint | Actual Size |  | | |
|----------|-----------|--------------------|-------------|--|---|---------------------------------|
| | | | | Dimensions (Inches and (mm)) | | |
| | | | | L | W | C |
| CHP 1/8 | B | 1206 | | 0.128 ± 0.007 (3.25 ± 0.18) | 0.057 ± 0.006 (1.45 ± 0.15) | 0.020 ± 0.010 (0.51 ± 0.25) |
| MRC 1/2 | C | 1206 | | 0.128 ± 0.007 (3.25 ± 0.18) | 0.063 ± 0.010 (1.60 ± 0.25) | 0.020 ± 0.010 (0.51 ± 0.25) |
| CHP 1/2 | D | 2010 | | 0.200 ± 0.010 (5.08 ± 0.25) | 0.079 (nom.) -0.006 / +0.011 (2.01 (nom.) -0.15 / +0.28) | 0.030 ± 0.010 (0.761 ± 0.25) |
| CHP 1 | F | 2512 | | 0.251 ± 0.010 (6.38 ± 0.25) | 0.079 (nom.) -0.006 / +0.011 (2.01 (nom.) -0.15 / +0.28) | 0.040 ± 0.010 (1.02 ± 0.25) |
| CHP 2 | H | 3610 | | 0.367 ± 0.010 (9.32 ± 0.25) | 0.105 (nom.) -0.006 / +0.011 (2.67 (nom.) -0.15 / +0.28) | 0.050 ± 0.010 (1.27 ± 0.25) |

Recommended Solder Pad Dimensions (Reflow):

| Size Code | Industry Footprint |  | | | | | |
|-----------|--------------------|--|-----------------|-----------------|-----------------|-----------------|------------------|
| | | A | B | C | D | E | F |
| B & C | 1206 | 0.076 (1.93) | 0.093 (2.36) | 0.058 (1.47) | 0.098 (2.49) | 0.032 (0.81) | 0.211 (5.36) |
| D | 2010 | 0.111 (2.82) | 0.126 (3.20) | 0.096 (2.44) | 0.152 (3.86) | 0.040 (1.02) | 0.318 (8.08) |
| E | 2010 | 0.170 (4.32) | 0.160 (4.06) | 0.072 (1.83) | 0.132 (3.35) | 0.044 (1.12) | 0.412 (10.46) |
| F | 2512 | 0.121 (3.07) | 0.126 (3.20) | 0.127 (3.23) | 0.183 (4.65) | 0.040 (1.02) | 0.369 (9.37) |
| H | 3610 | 0.170 (4.32) | 0.160 (4.06) | 0.213 (5.41) | 0.273 (6.93) | 0.044 (1.12) | 0.553 (14.05) |

General Note

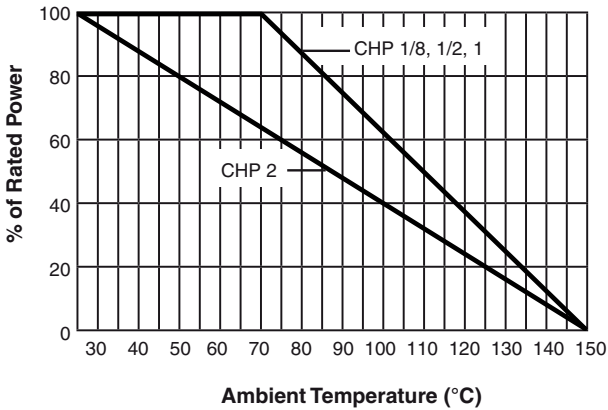
TT electronics reserves the right to make changes in product specification without notice or liability.
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Standard Reel Packaging per EIA-481:

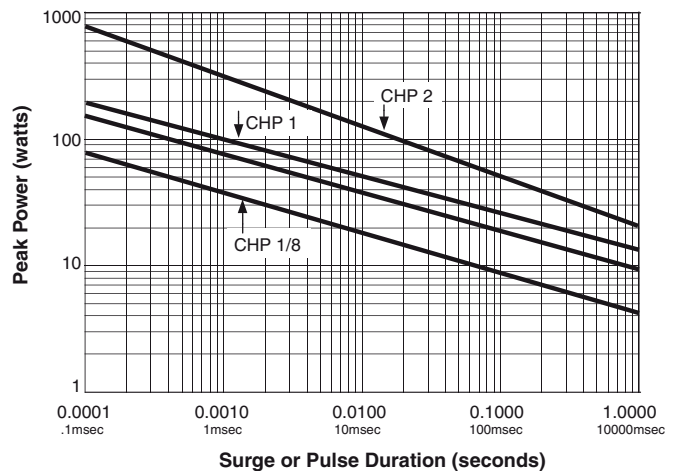
| IRC Type | Size Code | Industry Footprint | Reel Diameter* | Quantity Per Reel | Carrier Tape Width | Component Pitch |
|--------------------|-----------|--------------------|----------------|-------------------|--------------------|-----------------|
| CHP 1/8 MRC 1/2 | B | 1206 | 7" | 2,500 max. | 8mm | 4mm |
| | C | | 13" | 10,000 max. | | |
| CHP 1/2 MRC 1 | D | 2010 | 7" | 1,500 max. | 12mm | 4mm |
| | E | | 13" | 5,000 max. | | |
| CHP 1 | F | 2512 | 7" | 1,500 max. | 12mm | 4mm |
| | | | 13" | 5,000 max. | | |
| CHP 2 | H | 3610 | 13" | 1,500 max. | 24mm | 4mm |

*The 13" reel is considered standard and will be supplied unless otherwise specified.

Power Derating Curve



Repetitive Surge Curve



Note: Use for repetitive pulses where the average power dissipation is not to exceed the component rating at 70°C. Surge handling capacity for low-repetitive surges may be significantly greater than shown above. Contact factory for recommendations.

Ordering Data

Sample Part No. **CHP 1** - **100** **2203** **F** **13** **LF**

IRC Type
(CHP 1/8, CHP 1/2, CHP 1, or CHP 2)

Temperature Coefficient
(50 ppm, 100 ppm)

Resistance Value
(100 ohms and greater - First 3 significant digits plus 4th digit multiplier)
Example: 100 ohms = 1000, 1000 ohms = 1001, 150,000 ohms = 1503
(Less than 100 ohms - "R" is used to designate decimal)
Example: 51 ohms = 51R0, 1 ohm = 1R00, 0.25 ohms = R250

Tolerance
(C = 0.25%, D = 0.5%, F = 1.0%; G = 2.0%; J = 5.0%)

Packaging Code*
(BLK = Bulk, 7 = 7" Reel, 13 = 13" Reel)

Lead Free Construction

General Note

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