

RMCF / RMCP Series

General Purpose Thick Film Standard Power and High-Power Chip Resistor

Stackpole Electronics, Inc.

Resistive Product Solutions

Features:

- RMCF – standard power ratings
- RMCP – high power ratings
- Nickel barrier terminations standard
- Power derating from 100% at 70°C to zero at +155°C
- AEC-Q200 compliant (except RMCP0201)
- RoHS compliant and halogen free



| Electrical Specifications - RMCF | | | | | | | |
|----------------------------------|-------------------------|---|---------------------------|-------------------------|--------------|--|------------|
| Type / Code | Power Rating (W) @ 70°C | Max. Working Voltage (V) ⁽¹⁾ | Max. Overload Voltage (V) | Max. Jumper Current (A) | TCR (ppm/°C) | Ohmic Range (Ω) and Tolerance ⁽²⁾ | |
| | | | | | | 1% | 5% |
| RMCF01005 | 0.03 | 15 | 30 | 0.5 | ± 300 | 10 - 97.6 | |
| | | | | | ± 200 | 100 - 1M | |
| RMCF0201 | 0.05 | 25 | 50 | 0.5 | ± 400 | 1 - 9.76 | |
| | | | | | ± 200 | 10 - 10M | |
| RMCF0402 | 0.063 | 50 | 100 | 1 | ± 200 | 1 - 9.76 ⁽⁴⁾ | |
| | | | | | ± 100 | 10 - 1M | |
| | | | | | ± 200 | 1.02M - 10M | 1.1M - 20M |
| RMCF0603 | 0.1 | 75 | 150 | 1 | ± 500 | 0.1 - 0.499 | |
| | | | | | ± 400 | 0.5 - 0.976 | |
| | | | | | ± 200 | 1 - 9.76 | 1 - 20M |
| | | | | | ± 100 | 10 - 1M | - |
| | | | | | ± 200 | 1.02M - 10M | - |
| RMCF0805 | 0.125 | 150 | 300 | 2 | ± 200 | 0.1 - 9.76 | 0.1 - 20M |
| | | | | | ± 100 | 10 - 1M | - |
| | | | | | ± 200 | 1.02M - 10M | - |
| RMCF1206 | 0.25 | 200 | 400 | 2 | ± 200 | 0.1 - 9.76 | 0.1 - 20M |
| | | | | | ± 100 | 10 - 1M | - |
| | | | | | ± 200 | 1.02M - 10M | - |
| RMCF1210 | 0.33 ⁽³⁾ | 200 | 400 | 3 | ± 200 | 0.1 - 0.976 | |
| | | | | | ± 400 | 1 - 9.76 | |
| | | | | | ± 200 | - | 10 - 20M |
| | | | | | ± 100 | 10 - 10M | - |
| RMCF2010 | 0.75 | 200 | 400 | 3 | ± 200 | 0.1 - 0.976 | |
| | | | | | ± 400 | 1 - 9.76 | |
| | | | | | ± 200 | - | 10 - 10M |
| | | | | | ± 100 | 10 - 10M | - |
| RMCF2512 | 1 | 200 | 400 | 3 | ± 200 | 0.1 - 0.976 | |
| | | | | | ± 400 | 1 - 9.76 | |
| | | | | | ± 200 | - | 10 - 10M |
| | | | | | ± 100 | 10 - 10M | - |

Notes: (1) Lesser of $\sqrt{P \cdot R}$ or maximum working voltage

(2) Contact Stackpole for extended ohmic values

(3) Power rating is 0.5W for ohmic values 1K Ω and below

(4) Contact Stackpole for lower ohmic values

RMCF / RMCP Series

General Purpose Thick Film Standard Power
and High-Power Chip Resistor

Stackpole Electronics, Inc.
Resistive Product Solutions

Electrical Specifications - RMCP

| Type / Code | Power Rating (W) @ 70°C | Max. Working Voltage (V) ⁽¹⁾ | Max. Overload Voltage (V) | Max. Jumper Current (A) | TCR (ppm/°C) | Ohmic Range (Ω) and Tolerance ⁽²⁾ |
|-------------|----------------------------|---|---------------------------|-------------------------|--------------|--|
| | | | | | | 1%, 5% |
| RMCP0201 | 0.063 | 25 | 50 | 1 | -200 / +400 | 1 - 9.76 |
| | | | | | | ± 200 |
| RMCP0402 | 0.125 | 50 | 100 | 1.5 | ± 200 | 1 - 9.76 |
| | | | | | | ± 100 |
| RMCP0603 | 0.25 | 75 | 150 | 2 | ± 200 | 1 - 9.76 |
| | | | | | | ± 100 |
| RMCP0805 | 0.33 | 150 | 300 | 2.5 | ± 200 | 1 - 9.76 |
| | | | | | | ± 100 |
| RMCP1206 | 0.5 | 200 | 400 | 3.5 | ± 400 | 1 - 9.76 |
| | | | | | | ± 100 |
| RMCP1210 | 0.66 | 200 | 400 | 5 | ± 400 | 1 - 9.76 |
| | | | | | | ± 100 |
| RMCP2010 | 1 | 200 | 400 | 6 | ± 200 | 1 - 9.76 |
| | | | | | | ± 100 |
| RMCP2512 | 2 | 250 | 500 | 7 | ± 200 | 1 - 9.76 |
| | | | | | | ± 100 |

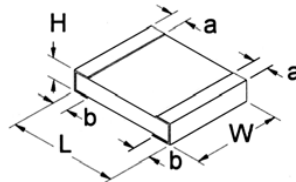
Notes: (1) Lesser of $\sqrt{P \cdot R}$ or maximum working voltage
(2) Contact Stackpole for extended ohmic values

Electrical Specifications - Jumper

| Type / Code | Jumper Rated Current (A) | Max Overload Current (A)* | Jumper Resistance Value (Ω) |
|-------------|--------------------------|---------------------------|-----------------------------|
| RMCP0201 | 0.5 | 1 | 0.025 max. |
| RMCP0402 | 1 | 3 | |
| RMCP0603 | 1 | 5 | |
| RMCP0805 | 1 | 5 | |
| RMCP1206 | 2 | 10 | |
| RMCP1210 | 2 | 12 | |
| RMCP2010 | 2 | 12 | |
| RMCP2512 | 2 | 15 | |

* < 1 second and 1 time

Mechanical Specifications



| Type / Code | Average Unit Weight (mg) | L Body Length | W Body Width | H Body Height | a Top Termination | b Bottom Termination | Unit |
|----------------------|--------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------|
| RMCF01005 | 0.07 | 0.016 ± 0.0008 0.40 ± 0.02 | 0.008 ± 0.0008 0.20 ± 0.02 | 0.005 ± 0.0008 0.13 ± 0.02 | 0.004 ± 0.0012 0.10 ± 0.03 | 0.004 ± 0.0012 0.10 ± 0.03 | inches mm |
| RMCF0201 RMCP0201 | 0.16 | 0.024 ± 0.0012 0.60 ± 0.03 | 0.012 ± 0.0012 0.30 ± 0.03 | 0.009 ± 0.0012 0.23 ± 0.03 | 0.006 ± 0.002 0.15 ± 0.05 | 0.006 ± 0.002 0.15 ± 0.05 | inches mm |
| RMCF0402 RMCP0402 | 0.57 0.62 | 0.039 ± 0.004 1.00 ± 0.10 | 0.020 ± 0.002 0.50 ± 0.05 | 0.012 ± 0.004 0.30 ± 0.10 | 0.008 ± 0.004 0.20 ± 0.10 | 0.010 ± 0.006 0.25 ± 0.15 | inches mm |
| RMCF0603 RMCP0603 | 1.88 2.04 | 0.061 ± 0.006 1.55 ± 0.15 | 0.031 ± 0.006 0.80 ± 0.15 | 0.018 ± 0.004 0.45 ± 0.10 | 0.012 ± 0.008 0.30 ± 0.20 | 0.012 ± 0.008 0.30 ± 0.20 | inches mm |
| RMCF0805 RMCP0805 | 5.00 4.37 | 0.079 ± 0.008 2.00 ± 0.20 | 0.049 ± 0.004 1.25 ± 0.10 | 0.020 ± 0.006 0.50 ± 0.15 | 0.014 ± 0.010 0.35 ± 0.25 | 0.014 ± 0.010 0.35 ± 0.25 | inches mm |

RMCF / RMCP Series

General Purpose Thick Film Standard Power and High-Power Chip Resistor

Stackpole Electronics, Inc.

Resistive Product Solutions

Mechanical Specifications (cont.)

| Type / Code | Average Unit Weight (mg) | L Body Length | W Body Width | H Body Height | a Top Termination | b Bottom Termination | Unit |
|-------------|--------------------------|------------------|-----------------|------------------|----------------------|-------------------------|--------|
| RMCF1206 | 8.86 | 0.126 ± 0.010 | 0.063 ± 0.006 | 0.022 ± 0.006 | 0.020 ± 0.012 | 0.020 ± 0.012 | inches |
| RMCP1206 | 8.95 | 3.20 ± 0.25 | 1.60 ± 0.15 | 0.55 ± 0.15 | 0.50 ± 0.30 | 0.50 ± 0.30 | mm |
| RMCF1210 | 15.55 | 0.126 ± 0.010 | 0.098 ± 0.010 | 0.022 ± 0.006 | 0.020 ± 0.012 | 0.020 ± 0.012 | inches |
| RMCP1210 | 15.96 | 3.20 ± 0.25 | 2.50 ± 0.25 | 0.55 ± 0.15 | 0.50 ± 0.30 | 0.50 ± 0.30 | mm |
| RMCF2010 | 23.56 | 0.197 ± 0.008 | 0.098 ± 0.008 | 0.022 ± 0.006 | 0.024 ± 0.012 | 0.024 ± 0.014 | inches |
| RMCP2010 | 24.24 | 5.00 ± 0.20 | 2.50 ± 0.20 | 0.55 ± 0.15 | 0.60 ± 0.30 | 0.60 ± 0.35 | mm |
| RMCF2512 | 40.02 | 0.248 ± 0.008 | 0.126 ± 0.010 | 0.022 ± 0.006 | 0.024 ± 0.012 | 0.024 ± 0.014 | inches |
| RMCP2512 | 39.45 | 6.30 ± 0.20 | 3.20 ± 0.25 | 0.55 ± 0.15 | 0.60 ± 0.30 | 0.60 ± 0.35 | mm |

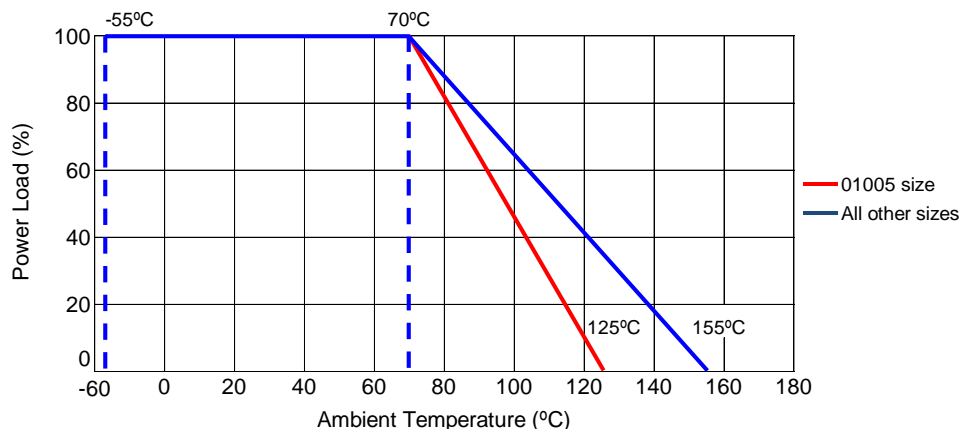
Performance Characteristics

| Test | Test Specifications | Test Conditions (JIS-C 5202) |
|---------------------------------|---|--|
| Short Time Overload | ± (2% + 0.1Ω) | 2.5 X rated voltage for 5 seconds |
| | Jumper: Max 0.05Ω after test | 0201 = 1A 0402 / 0603 / 0805 = 2.5A 1206 / 1210 / 2010 / 2512 = 5A |
| Dielectric Withstanding Voltage | No flashover or breakdown | 100 VAC, 1 minute |
| Resistance to Soldering Heat | ± 1% | 260°C ± 5°C, for 10 seconds ± 0.5 seconds (Solder Bath) |
| Solderability | 95% coverage, minimum | 235°C ± 5°C, for 2 seconds ± 0.5 seconds (Colophonium flux) |
| Temperature Cycle | ± (1% + 0.05Ω) Jumper (< 0.05Ω) | -65°C: 30 minutes 25°C: 2 to 3 minutes 155°C: 30 minutes 25°C: 2 to 3 minutes (5 Cycles) |
| Load Life (Endurance) | 1% and below: ± (1% + 0.05Ω) 2% and 5%: ± (3% + 0.1Ω) Value < 1Ω: ± (3% + 0.1Ω) Jumper: Max 0.1Ω after test. | 70 ± 2°C, RCWV or max. working voltage whichever is less for 1000 hours with 1.5 hours "ON" and 0.5 hour "OFF" |
| Voltage Coefficient | ± 100 (ppm/V) | 1/10 rated voltage for 3 seconds max. then rated voltage for 3 seconds max. |
| Robustness of Termination | ± (1% + 0.05Ω) | Bend of 3 mm for 5 ± 1 seconds |
| Resistance to Solvent | 1%: ± (0.5% + 0.05Ω) 5%: ± (0.5% + 0.05Ω) Jumper: Max. 0.05Ω after test | The tested resistor should be immersed into isopropyl alcohol of 20 ~ 25°C for 60 seconds. Then the resistor is left in the room for 48 hours. |
| Damp Heat with Load | 1%: ± (1% + 0.05Ω) 5%: ± (2% + 0.05Ω) Values < 1Ω: ± (3% + 0.1Ω) Jumper: Max. 0.1Ω after test | 40 ± 2°C, 90 ~ 95% R.H. RCWV or max. working voltage whichever is less for 1000 hours with 1.5 hours "ON" and 0.5 hours "OFF" |

Operating temperature range is -55°C to +155°C for all sizes except for 01005 size

Operating temperature range for 01005 is -55°C to +125°C

Power Derating Curve:



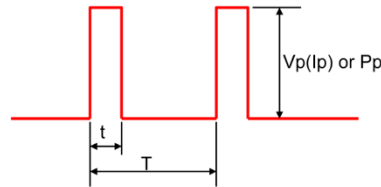
Repetitive Pulse Information

(This information is for reference only and is not guaranteed performance.)

If repetitive pulses are applied to resistors, pulse wave form must be less than “Pulse limiting voltage”, “Pulse limiting current” or “Pulse limiting wattage” calculated by the formula below.

$$\begin{aligned} V_p &= K \sqrt{P \times R \times T / t} \\ I_p &= K \sqrt{P / R \times T / t} \\ P_p &= K^2 \times P \times T / t \end{aligned}$$

Where: V_p : Pulse limiting voltage (V)
 I_p : Pulse limiting current (A)
 P_p : Pulse limiting wattage (W)
 P : Power rating (W)
 R : Nominal resistance (ohm)
 T : Repetitive period (sec)
 t : Pulse duration (sec)
 K : Coefficient by resistors type (refer to below matrix)
 $[V_r$: Rated Voltage (V), I_r : Rated Current (A)]

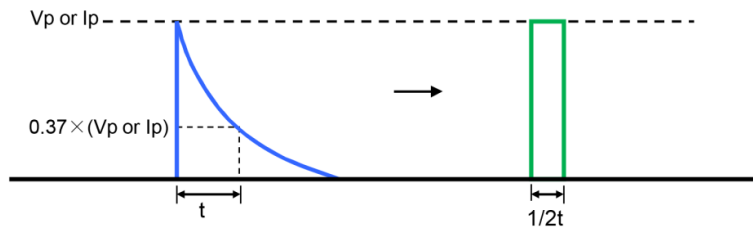


RMCF Coefficient (K) Matrix

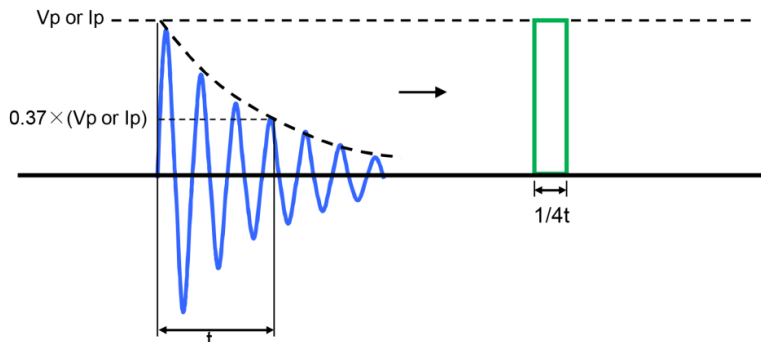
| Resistor Type | K |
|---------------------------------|------|
| $R < 10 \Omega$ | 0.50 |
| $10 \Omega \leq R < 100 \Omega$ | 0.45 |
| $100 \Omega \leq R < 1K \Omega$ | 0.35 |
| $1K \Omega \leq R < 10K \Omega$ | 0.25 |
| $10K \Omega \leq R$ | 0.20 |

Waveform Transformation to Square Wave

1. Discharge curve wave with time constant “t” → Square wave



2. Damping oscillation wave with time constant of envelope “t” → Square wave



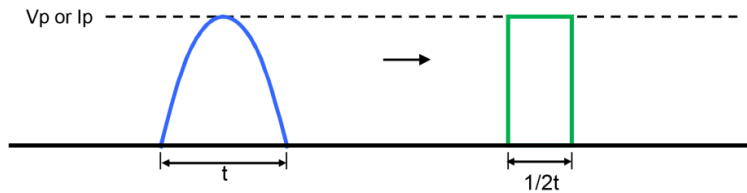
RMCF / RMCP Series

General Purpose Thick Film Standard Power and High-Power Chip Resistor

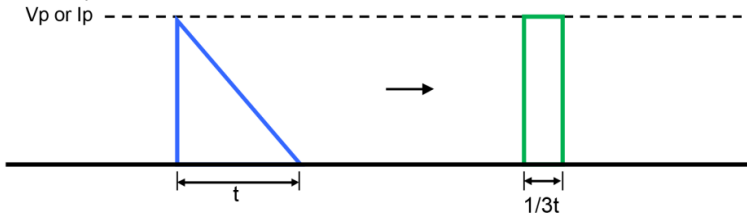
Stackpole Electronics, Inc.

Resistive Product Solutions

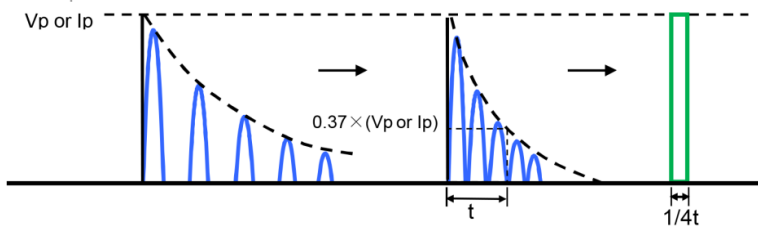
3. Half-wave rectification wave → Square wave



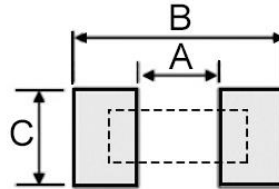
4. Triangular wave → Square wave



5. Special wave → Square wave



Recommended Pad Layout



| Size | A | B | C | Unit |
|-------|-------|-------|-------|--------|
| 01005 | 0.008 | 0.020 | 0.008 | inches |
| | 0.20 | 0.50 | 0.20 | mm |
| 0201 | 0.012 | 0.039 | 0.016 | inches |
| | 0.30 | 1.00 | 0.40 | mm |
| 0402 | 0.020 | 0.059 | 0.024 | inches |
| | 0.50 | 1.50 | 0.60 | mm |
| 0603 | 0.031 | 0.083 | 0.035 | inches |
| | 0.80 | 2.10 | 0.90 | mm |
| 0805 | 0.047 | 0.118 | 0.051 | inches |
| | 1.20 | 3.00 | 1.30 | mm |
| 1206 | 0.087 | 0.165 | 0.063 | inches |
| | 2.20 | 4.20 | 1.60 | mm |
| 1210 | 0.087 | 0.165 | 0.110 | inches |
| | 2.20 | 4.20 | 2.80 | mm |
| 2010 | 0.138 | 0.240 | 0.110 | inches |
| | 3.50 | 6.10 | 2.80 | mm |
| 2512 | 0.193 | 0.315 | 0.138 | inches |
| | 4.90 | 8.00 | 3.50 | mm |

Recommended Solder Profile

This information is intended as a reference for solder profiles for Stackpole resistive components. These profiles should be compatible with most soldering processes. These are only recommendations. Actual numbers will depend on board density, geometry, packages used, etc., especially those cells labeled with “**”.

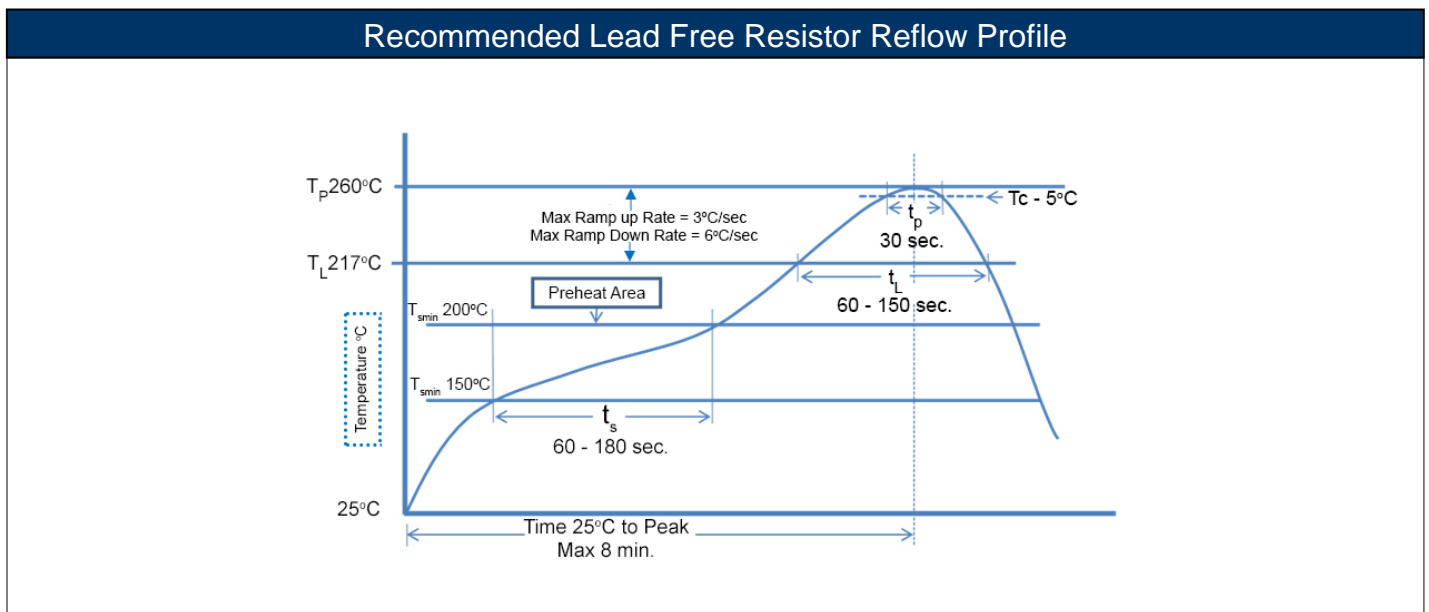
100% Matte Tin / RoHS Compliant Terminations

Soldering iron recommended temperatures: 330°C to 350°C with minimum duration.
Maximum number of reflow cycles: 3.

| Wave Soldering | | | |
|--------------------|------------|-------------|------------|
| Description | Maximum | Recommended | Minimum |
| Preheat Time | 80 seconds | 70 seconds | 60 seconds |
| Temperature Diff. | 140°C | 120°C | 100°C |
| Solder Temp. | 260°C | 250°C | 240°C |
| Dwell Time at Max. | 10 seconds | 5 seconds | * |
| Ramp DN (°C/sec) | N/A | N/A | N/A |

Temperature Diff. = Difference between final preheat stage and soldering stage.

| Convection IR Reflow | | | |
|----------------------|-------------|-------------|------------|
| Description | Maximum | Recommended | Minimum |
| Ramp Up (°C/sec) | 3°C/sec | 2°C/sec | * |
| Dwell Time > 217°C | 150 seconds | 90 seconds | 60 seconds |
| Solder Temp. | 260°C | 245°C | * |
| Dwell Time at Max. | 30 seconds | 15 seconds | 10 seconds |
| Ramp DN (°C/sec) | 6°C/sec | 3°C/sec | * |



RMCF / RMCP Series

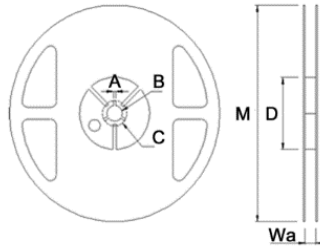
General Purpose Thick Film Standard Power
and High-Power Chip Resistor

Stackpole Electronics, Inc.

Resistive Product Solutions

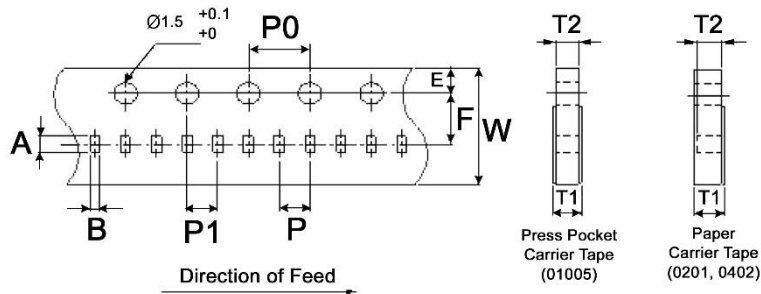
Packaging (EIA Standard RS-481)

Packaging Specifications



| Reel Type | Wa | M | A | B | C | D | Unit |
|---------------------------|-------------------------------|---------------------------------|------------------------------|-------------------------------|-------------------------------|--------------------------------|--------------|
| 7" reel for 8 mm tape | 0.354 ± 0.020 9.00 ± 0.50 | 7.008 ± 0.079 178.00 ± 2.00 | 0.079 ± 0.020 2.00 ± 0.50 | 0.531 ± 0.020 13.50 ± 0.50 | 0.827 ± 0.020 21.00 ± 0.50 | 2.362 ± 0.039 60.00 ± 1.00 | inches mm |
| 10" reel for 8 mm tape | 0.394 ± 0.020 10.00 ± 0.50 | 10.000 ± 0.079 254.00 ± 2.00 | 0.079 ± 0.020 2.00 ± 0.50 | 0.531 ± 0.020 13.50 ± 0.50 | 0.827 ± 0.020 21.00 ± 0.50 | 3.937 ± 0.039 100.00 ± 1.00 | inches mm |

Taping Specifications (01005, 0201, 0402)



| Size | 7" Reel Quantity | Typical Full Reel Weight (g) | Tape Width | A | B | W | E | F | Unit |
|-------|------------------|------------------------------|---------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| 01005 | 10000 | 127.3 ± 12.0 | 0.315 8.00 | 0.018 ± 0.001 0.45 ± 0.02 | 0.010 ± 0.001 0.25 ± 0.02 | 0.315 ± 0.012 8.00 ± 0.30 | 0.069 ± 0.004 1.75 ± 0.10 | 0.138 ± 0.002 3.50 ± 0.05 | inches mm |
| 0201 | 10000 | 97.2 ± 9.0 | 0.315 8.00 | 0.028 ± 0.006 0.70 ± 0.15 | 0.016 ± 0.006 0.40 ± 0.15 | 0.315 ± 0.008 8.00 ± 0.20 | 0.069 ± 0.004 1.75 ± 0.10 | 0.138 ± 0.002 3.50 ± 0.05 | inches mm |
| 0402 | 10000 | 94.5 ± 9.0 | 0.315 8.00 | 0.047 ± 0.006 1.20 ± 0.15 | 0.028 ± 0.006 0.70 ± 0.15 | 0.315 ± 0.008 8.00 ± 0.20 | 0.069 ± 0.004 1.75 ± 0.10 | 0.138 ± 0.002 3.50 ± 0.05 | inches mm |

| Size | T1 | T2 | P | P0 | P1 | Unit |
|-------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| 01005 | 0.012 ± 0.001 0.31 ± 0.03 | 0.007 ± 0.001 0.17 ± 0.03 | 0.079 ± 0.002 2.00 ± 0.05 | 0.157 ± 0.002 4.00 ± 0.05 | 0.079 ± 0.002 2.00 ± 0.05 | inches mm |
| 0201 | 0.015 ± 0.006 0.38 ± 0.15 | 0.011 ± 0.001 0.28 ± 0.02 | 0.079 ± 0.004 2.00 ± 0.10 | 0.157 ± 0.004 4.00 ± 0.10 | 0.079 ± 0.002 2.00 ± 0.05 | inches mm |
| 0402 | 0.016 ± 0.008 0.40 ± 0.20 | 0.016 ± 0.002 0.40 ± 0.05 | 0.079 ± 0.004 2.00 ± 0.10 | 0.157 ± 0.004 4.00 ± 0.10 | 0.079 ± 0.002 2.00 ± 0.05 | inches mm |

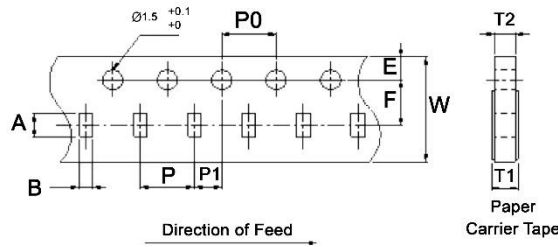
RMCF / RMCP Series

General Purpose Thick Film Standard Power
and High-Power Chip Resistor

Stackpole Electronics, Inc.

Resistive Product Solutions

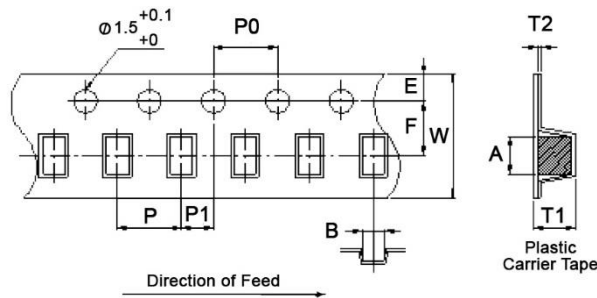
Taping Specifications (0603, 0805, 1206, 1210)



| Size | 7" Reel Quantity ⁽¹⁾ | Typical Full Reel Weight (g) | Tape Width | A | B | W | E | Unit |
|------|---------------------------------|------------------------------|------------|---------------|---------------|---------------|---------------|--------|
| 0603 | 5000 | 118.3 ± 11.0 | 0.315 | 0.071 ± 0.008 | 0.041 ± 0.008 | 0.315 ± 0.008 | 0.069 ± 0.004 | inches |
| | | | 8.00 | 1.80 ± 0.20 | 1.05 ± 0.20 | 8.00 ± 0.20 | 1.75 ± 0.10 | mm |
| 0805 | 5000 | 139.2 ± 13.0 | 0.315 | 0.093 ± 0.010 | 0.063 ± 0.010 | 0.315 ± 0.008 | 0.069 ± 0.004 | inches |
| | | | 8.00 | 2.35 ± 0.25 | 1.60 ± 0.25 | 8.00 ± 0.20 | 1.75 ± 0.10 | mm |
| 1206 | 5000 | 151.4 ± 15.0 | 0.315 | 0.140 ± 0.010 | 0.077 ± 0.010 | 0.315 ± 0.008 | 0.069 ± 0.004 | inches |
| | | | 8.00 | 3.55 ± 0.25 | 1.95 ± 0.25 | 8.00 ± 0.20 | 1.75 ± 0.10 | mm |
| 1210 | 4000 | 175.7 ± 17.0 | 0.315 | 0.138 ± 0.008 | 0.110 ± 0.010 | 0.315 ± 0.008 | 0.069 ± 0.004 | inches |
| | | | 8.00 | 3.50 ± 0.20 | 2.80 ± 0.25 | 8.00 ± 0.20 | 1.75 ± 0.10 | mm |

| Size | F | T1 | T2 | P | P0 | P1 | Unit |
|------|---------------|---------------|---------------|---------------|---------------|---------------|--------|
| 0603 | 0.138 ± 0.002 | 0.024 ± 0.008 | 0.024 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | inches |
| | 3.50 ± 0.05 | 0.60 ± 0.20 | 0.60 ± 0.10 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | mm |
| 0805 | 0.138 ± 0.002 | 0.030 ± 0.008 | 0.030 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | inches |
| | 3.50 ± 0.05 | 0.75 ± 0.20 | 0.75 ± 0.10 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | mm |
| 1206 | 0.138 ± 0.002 | 0.030 ± 0.008 | 0.030 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | inches |
| | 3.50 ± 0.05 | 0.75 ± 0.20 | 0.75 ± 0.10 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | mm |
| 1210 | 0.138 ± 0.002 | 0.030 ± 0.008 | 0.030 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | inches |
| | 3.50 ± 0.05 | 0.75 ± 0.20 | 0.75 ± 0.10 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | mm |

Taping Specifications (2010, 2512)



| Size | 7" Reel Quantity | Typical Full Reel Weight (g) | Tape Width | A | B | W | E | F | Unit |
|------|------------------|------------------------------|------------|---------------|---------------|---------------|---------------|---------------|--------|
| 2010 | 4000 | 183.1 ± 18.0 | 0.472 | 0.217 ± 0.012 | 0.110 ± 0.008 | 0.472 ± 0.008 | 0.069 ± 0.004 | 0.217 ± 0.002 | inches |
| | | | 12.00 | 5.50 ± 0.30 | 2.80 ± 0.20 | 12.00 ± 0.20 | 1.75 ± 0.10 | 5.50 ± 0.05 | mm |
| 2512 | 4000 | 255.3 ± 25.0 | 0.472 | 0.264 ± 0.008 | 0.134 ± 0.008 | 0.472 ± 0.008 | 0.069 ± 0.004 | 0.217 ± 0.002 | inches |
| | | | 12.00 | 6.70 ± 0.20 | 3.40 ± 0.20 | 12.00 ± 0.20 | 1.75 ± 0.10 | 5.50 ± 0.05 | mm |

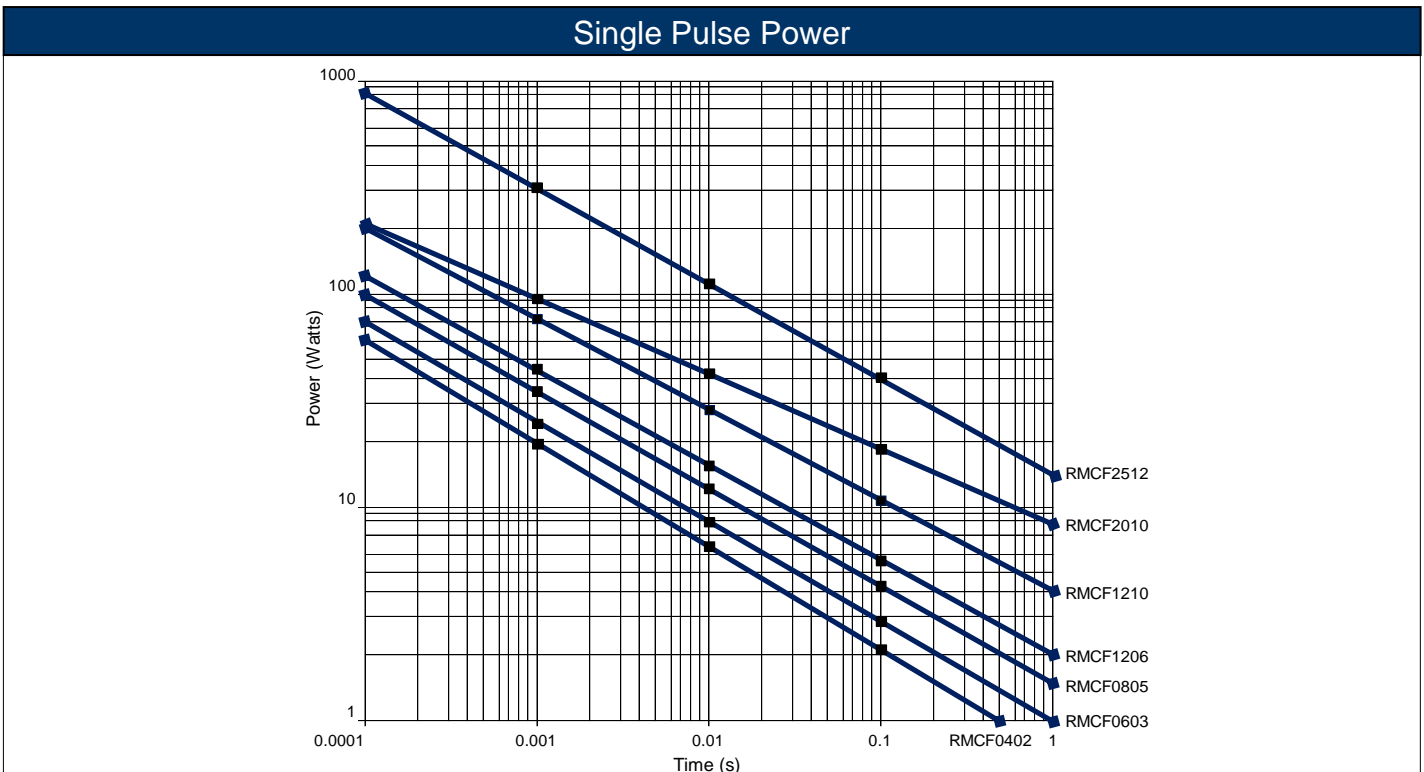
| Size | T1 | T2 | P | P0 | P1 | Unit |
|------|---------------|---------------|---------------|---------------|---------------|--------|
| 2010 | 0.041 ± 0.008 | 0.009 ± 0.006 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | inches |
| | 1.05 ± 0.20 | 0.23 ± 0.15 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | mm |
| 2512 | 0.041 ± 0.008 | 0.009 ± 0.006 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | inches |
| | 1.05 ± 0.20 | 0.23 ± 0.15 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | mm |

Note: Plastic carrier tape used for 2010 and 2512 sizes.

RMCF / RMCP Series

General Purpose Thick Film Standard Power and High-Power Chip Resistor

Stackpole Electronics, Inc.
Resistive Product Solutions



| Size | Time (s) | | | | | Unit |
|------|----------|-------|------|-----|-----|------|
| | 0.0001 | 0.001 | 0.01 | 0.1 | 1 | |
| 0402 | 60 | 18 | 6.3 | 2.2 | 0.7 | W |

| Single Pulse Power (cont.) | | | | | | |
|----------------------------|----------|-------|------|-----|-----|------|
| Size | Time (s) | | | | | Unit |
| | 0.0001 | 0.001 | 0.01 | 0.1 | 1 | |
| 0603 | 70 | 21.5 | 7.6 | 2.8 | 1 | W |
| 0805 | 94 | 34 | 12 | 4.4 | 1.6 | W |
| 1206 | 120 | 43 | 15 | 5.6 | 2 | W |
| 1210 | 240 | 86 | 31 | 11 | 4 | W |
| 2010 | 210 | 96 | 41 | 18 | 8 | W |
| 2512 | 800 | 300 | 110 | 42 | 16 | W |

The data provided are for reference only. They are typical performance for this product but are not guaranteed. The actual pulse handling of each individual resistor may vary depending on a variety of factors including resistance tolerance and resistance value. Stackpole Electronics, Inc. assumes no liability for the use of this information. Customers should validate the performance of these products in their applications. Contact Stackpole marketing to discuss specific pulse application requirements.

Temperature Measurement of Resistor Surface

Description: The resistor surface generated temperature variation after applied rated voltage.
Products and power:

| Size | 0201 | 0402 | 0603 | 0805 | 1206 | 1210 | 2010 | 2512 |
|-----------------------|------|-------|-------|------|------|------|------|------|
| R-V | 15K | 40.2K | 57.6K | 180K | 182K | 100K | 100K | 75K |
| Rated Power (W) | 1/20 | 1/16 | 1/10 | 1/8 | 1/4 | 1/2 | 3.4 | 1 |
| Max Rated Voltage (V) | 25 | 50 | 75 | 150 | 200 | 200 | 200 | 200 |

Test method: Measure component surface temperature directly after the temperature stabilizes.

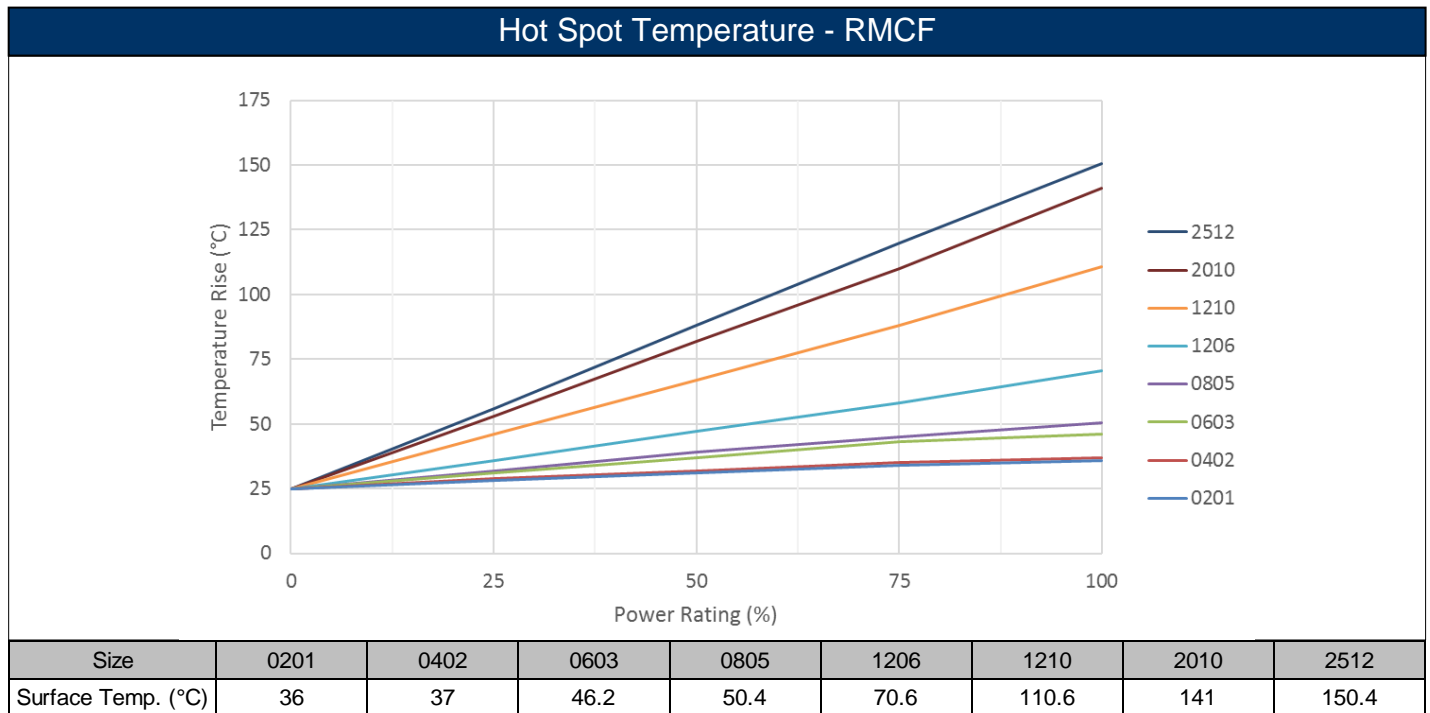
RMCF / RMCP Series

General Purpose Thick Film Standard Power and High-Power Chip Resistor

Stackpole Electronics, Inc.

Resistive Product Solutions

Test result: As per table below:



The thermal resistance of the RMCP will be similar to the RMCF. For example, the RMCF2512 and the RMCP2512 will have similar surface temperatures at 1W; the RMCP is designed to withstand higher temperatures associated with high power levels.

Part Marking Specifications



1% Marking
The nominal resistance is marked on the surface of the overcoating with the use of 4 digit markings. 0201 and 0402 are not marked.



5% Marking
The nominal resistance is marked on the surface of the overcoating with the use of 3 digit markings. 0201 and 0402 are not marked.

For shared E24/E96 values, 1% tolerance product may be marked with three digit marking instead of the standard four digit marking for all other E96 values. All E24 values available in 1% tolerance are also marked with three digit marking.

Mark Instructions for 0603 1% Chip Resistors (per EIA-J)

A two-digit number is assigned to each standard R-Value (E96) as shown in the chart below. This is followed by one alpha character which is used as a multiplier. Each letter "Y" – "F" represents a specific multiplier as follows:

| | | | |
|----------|--------------|------------|-------------|
| Y = 0.1 | X = 1 | A = 10 | B = 100 |
| C = 1000 | D(d) = 10000 | E = 100000 | F = 1000000 |

RMCF / RMCP Series

General Purpose Thick Film Standard Power
and High-Power Chip Resistor

Stackpole Electronics, Inc.

Resistive Product Solutions

EXAMPLE:

| Chip Marking | Explanation | Value |
|--------------|------------------------------|---------------------------|
| 01B | 01 means 10.0 and B = 100 | 10.0 x 100 = 1 K ohm |
| 25C | 25 means 17.8 and C = 1,000 | 17.8 x 1,000 = 17.8 K ohm |
| 93D | 93 means 90.9 and D = 10,000 | 90.9 x 10,000 = 909 K ohm |

| E96 | | | | | | | | | | | |
|------|----|------|----|------|----|------|----|------|----|------|----|
| 1% | # | 1% | # | 1% | # | 1% | # | 1% | # | 1% | # |
| 10.0 | 01 | 14.7 | 17 | 21.5 | 33 | 31.6 | 49 | 46.4 | 65 | 68.1 | 81 |
| 10.2 | 02 | 15.0 | 18 | 22.1 | 34 | 32.4 | 50 | 47.5 | 66 | 69.8 | 82 |
| 10.5 | 03 | 15.4 | 19 | 22.6 | 35 | 33.2 | 51 | 48.7 | 67 | 71.5 | 83 |
| 10.7 | 04 | 15.8 | 20 | 23.2 | 36 | 34.0 | 52 | 49.9 | 68 | 73.2 | 84 |
| 11.0 | 05 | 16.2 | 21 | 23.7 | 37 | 34.8 | 53 | 51.1 | 69 | 75.0 | 85 |
| 11.3 | 06 | 16.5 | 22 | 24.3 | 38 | 35.7 | 54 | 52.3 | 70 | 76.8 | 86 |
| 11.5 | 07 | 16.9 | 23 | 24.9 | 39 | 36.5 | 55 | 53.6 | 71 | 78.7 | 87 |
| 11.8 | 08 | 17.4 | 24 | 25.5 | 40 | 37.4 | 56 | 54.9 | 72 | 80.6 | 88 |
| 12.1 | 09 | 17.8 | 25 | 26.1 | 41 | 38.3 | 57 | 56.2 | 73 | 82.5 | 89 |
| 12.4 | 10 | 18.2 | 26 | 26.7 | 42 | 39.2 | 58 | 57.6 | 74 | 84.5 | 90 |
| 12.7 | 11 | 18.7 | 27 | 27.4 | 43 | 40.2 | 59 | 59.0 | 75 | 86.6 | 91 |
| 13.0 | 12 | 19.1 | 28 | 28.0 | 44 | 41.2 | 60 | 60.4 | 76 | 88.7 | 92 |
| 13.3 | 13 | 19.6 | 29 | 28.7 | 45 | 42.2 | 61 | 61.9 | 77 | 90.9 | 93 |
| 13.7 | 14 | 20.0 | 30 | 29.4 | 46 | 43.2 | 62 | 63.4 | 78 | 93.1 | 94 |
| 14.0 | 15 | 20.5 | 31 | 30.1 | 47 | 44.2 | 63 | 64.9 | 79 | 95.3 | 95 |
| 14.3 | 16 | 21.0 | 32 | 30.9 | 48 | 45.3 | 64 | 66.5 | 80 | 97.6 | 96 |

RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

| RoHS Compliance Status | | | | | | |
|-------------------------|--|----------------------------|--------------------------------|-----------------------------------|--|---------------------------------------|
| Standard Product Series | Description | Package / Termination Type | Standard Series RoHS Compliant | Lead-Free Termination Composition | Lead-Free Mfg. Effective Date (Std Product Series) | Lead-Free Effective Date Code (YY/WW) |
| RMCF | General Purpose Thick Film Surface Mount Chip Resistor | SMD | YES ⁽¹⁾ | 100% Matte Sn over Ni | Jan-04 (Japan) Jan-05 (Taiwan, China) | 04/01 05/01 |
| RMCP | General Purpose High Power Thick Film Chip Resistor | SMD | YES ⁽¹⁾ | 100% Matte Sn over Ni | Always | Always |

Note (1): RoHS Compliant by means of exemption 7c-1.

"Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

RMCF / RMCP Series

General Purpose Thick Film Standard Power and High-Power Chip Resistor

Stackpole Electronics, Inc.

Resistive Product Solutions

Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

How to Order - RMCF

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| R | M | C | F | 0 | 6 | 0 | 3 | J | T | 4 | K | 7 | 0 |

| Product Series | | Size | | Tolerance | | | Packaging | | | | Resistance Value |
|----------------|-----------------|-------|-----------------------|------------------|--------|----------|-----------|----------------------|------------------|----------|---|
| Code | Description | Size | W | Code | Tol | Value | Code | Description | Size | Quantity | |
| RMCF | Thick Film Chip | 01005 | 0.03 | F | 1% | E96, E24 | T | 7" Reel - Paper Tape | 01005 | 10000 | Four characters with the multiplier used as the decimal holder. 0.1 ohm = R100 4.70 ohm = 4R70 10.0 Kohm = 10K0 1 Mohm = 1M00 Zero ohm jumper = 0R00 |
| | | 0201 | 0.05 | J | 5% | E24 | | | 0201, 0402 | 10000 | |
| | | 0402 | 0.063 | Z | Jumper | | | | 0603, 0805, 1206 | 5000 | |
| | | 0603 | 0.1 | | | | | | 1210 | 4000 | |
| | | 0805 | 0.125 | | | | | | 2010, 2512 | 4000 | |
| | | 1206 | 0.25 | | | | | | | | |
| | | 1210 | 0.33(*) | | | | | | | | |
| | | 2010 | 0.75 | | | | | | | | |
| | | 2512 | 1 | | | | | | | | |
| | | G | 10" Reel - Paper Tape | 0603, 0805, 1206 | 10000 | | | | | | |

(*) Power rating is 0.5 W for ohmic values below 1 K Ω

How to Order - RMCP

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| R | M | C | P | 0 | 6 | 0 | 3 | J | T | 4 | K | 7 | 0 |

| Product Series | | Size | | Tolerance | | | Packaging | | | | Resistance Value |
|----------------|-------------|------|---------------------|----------------------------------|---------------|----------|-----------|--------------------|------------|----------|--|
| Code | Description | Size | W | Code | Tol | Value | Code | Description | Size | Quantity | |
| RMCP | High Power | 0201 | 0.063 | F | 1% | E96, E24 | T | 7" Reel Paper Tape | 0201, 0402 | 10000 | Four characters with the multiplier used as the decimal holder. 1 ohm = 1R00 10 Kohm = 10K0 1 Mohm = 1M00 |
| | | 0402 | 0.125 | J | 5% | E24 | | | 0603, 0805 | 5000 | |
| | | 0603 | 0.25 | Z | Jumper | | | | 1206, 1210 | 4000 | |
| | | 0805 | 0.33 | | | | | | 2010, 2512 | 4000 | |
| | | 1206 | 0.5 | | | | | | | | |
| | | 1210 | 0.66 | | | | | | | | |
| | | 2010 | 1 | | | | | | | | |
| | | 2512 | 2 | | | | | | | | |
| | | G | 10" Reel Paper Tape | 0603, 0805 1206, 1210 2010 | 10000 8000 | | | | | | |