

# RMCF/RMCP Series

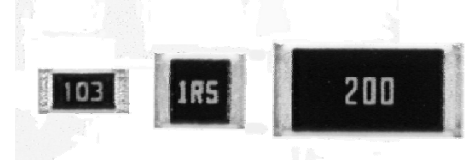
General Purpose Thick Film Standard Power  
and High Power Chip Resistor

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
- RoHS compliant



| Electrical Specifications |               |                                   |                                   |                                |                    |                                                              |                                                      |                                                   |
|---------------------------|---------------|-----------------------------------|-----------------------------------|--------------------------------|--------------------|--------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------|
| Type / Code               | Old Type Code | Power Rating<br>(Watts) @<br>70°C | Maximum<br>Working<br>Voltage (1) | Maximum<br>Overload<br>Voltage | Maximum<br>Current | Resistance<br>Temperature<br>Coefficient                     | Ohmic Range (Ω) and Tolerance (2)                    |                                                   |
|                           |               |                                   |                                   |                                |                    |                                                              | 1%                                                   | 5%                                                |
| RMCF0201                  | 1/20          | 0.05W                             | 25V                               | 50V                            | 1 Amp              | ± 400 ppm/°C<br>± 200 ppm/°C                                 | 1 - 9.76<br>10 - 10M                                 | 1 - 9.1<br>10 - 10M                               |
| RMCF0402                  | 1/16S         | 0.063W                            | 50V                               | 100V                           | 1 Amp              | ± 300 ppm/°C<br>± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C | 0.2 - 0.59<br>0.604 - 9.76<br>10 - 1M<br>1.02M - 10M | 0.2 - 0.56<br>0.62 - 9.1<br>10 - 1M<br>1.1M - 10M |
| RMCP0402                  | 1/16S         | 0.1W                              | 50V                               | 100V                           | 1 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                   | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                |
| RMCF0603                  | 1/16          | 0.1W                              | 50V                               | 100V                           | 1 Amp              | ± 600 ppm/°C<br>± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C | 0.1 - 0.976<br>1 - 9.76<br>10 - 1M<br>1.02M - 10M    | 0.1 - 0.91<br>1 - 26M<br>-<br>-                   |
| RMCP0603                  | 1/16          | 0.125W                            | 50V                               | 100V                           | 1 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                   | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                |
| RMCF0805                  | 1/10          | 0.125W                            | 150V                              | 300V                           | 2 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 0.1 - 9.76<br>10 - 1M<br>1.02M - 22.1M               | 0.1 - 26M<br>-<br>-                               |
| RMCP0805                  | 1/10          | 0.25W                             | 150V                              | 300V                           | 2 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                   | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                |
| RMCF1206                  | 1/8           | 0.25W                             | 200V                              | 400V                           | 2 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 0.1 - 9.76<br>10 - 1M<br>1.02M - 10M                 | 0.1 - 26M<br>-<br>-                               |
| RMCP1206                  | 1/8           | 0.33W                             | 200V                              | 400V                           | 2 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                   | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                |
| RMCF1210                  | 1/4           | 0.33W(3)                          | 200V                              | 400V                           | 3 Amp              | ± 200 ppm/°C<br>± 400 ppm/°C<br>± 200 ppm/°C<br>± 100 ppm/°C | 0.1 - 0.976<br>1 - 9.76<br>-<br>10 - 10M             | 0.1 - 0.91<br>1 - 9.1<br>10 - 20M<br>-            |
| RMCP1210                  | 1/4           | 0.5W                              | 200V                              | 400V                           | 3 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                   | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                |
| RMCF2010                  | 1/2           | 0.75W(3)                          | 200V                              | 400V                           | 3 Amp              | ± 200 ppm/°C<br>± 400 ppm/°C<br>± 200 ppm/°C<br>± 100 ppm/°C | 0.1 - 0.976<br>1 - 9.76<br>-<br>10 - 10M             | 0.1 - 0.91<br>1 - 9.1<br>10 - 10M<br>-            |
| RMCP2010                  | 1/2           | 1W                                | 200V                              | 400V                           | 3 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                   | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                |
| RMCF2512                  | 1             | 1W                                | 200V                              | 400V                           | 3 Amp              | ± 200 ppm/°C<br>± 400 ppm/°C<br>± 200 ppm/°C<br>± 100 ppm/°C | 0.1 - 0.976<br>1 - 9.76<br>-<br>10 - 10M             | 0.1 - 0.91<br>1 - 9.1<br>10 - 10M<br>-            |
| RMCP2512                  | 1             | 2W                                | 200V                              | 400V                           | 3 Amp              | ± 200 ppm/°C<br>± 100 ppm/°C<br>± 200 ppm/°C                 | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                   | 1 - 9.76<br>10 - 1M<br>1.02M - 10M                |

(1) Lesser of  $\sqrt{PR}$  or maximum working voltage.

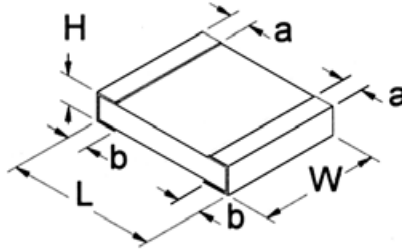
(2) Contact factory for extended ohmic values.

(3) Power rating is 0.500W for ohmic values below 1Ω

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## Mechanical Specifications

| Type / Code          | L<br>Body Length             | W<br>Body Width                               | H<br>Body Height              | a<br>Top Termination         | b<br>Bottom Termination      | Unit         |
|----------------------|------------------------------|-----------------------------------------------|-------------------------------|------------------------------|------------------------------|--------------|
| RMCF0201             | 0.024 ± 0.001<br>0.60 ± 0.03 | 0.012 ± 0.001<br>0.30 ± 0.03                  | 0.009 ± 0.0004<br>0.23 ± 0.01 | 0.006 ± 0.002<br>0.15 ± 0.05 | 0.006 ± 0.002<br>0.15 ± 0.05 | inches<br>mm |
| RMCF0402<br>RMCP0402 | 0.039 ± 0.004<br>1.00 ± 0.10 | 0.020 ± 0.002<br>0.50 ± 0.05                  | 0.012 ± 0.004<br>0.30 ± 0.10  | 0.008 ± 0.004<br>0.20 ± 0.10 | 0.010 ± 0.006<br>0.25 ± 0.15 | inches<br>mm |
| RMCF0603<br>RMCP0603 | 0.061 ± 0.006<br>1.55 ± 0.15 | 0.031 ± 0.006 / -0.004<br>0.80 ± 0.15 / -0.10 | 0.018 ± 0.004<br>0.45 ± 0.10  | 0.012 ± 0.008<br>0.30 ± 0.20 | 0.012 ± 0.008<br>0.30 ± 0.20 | inches<br>mm |
| RMCF0805<br>RMCP0805 | 0.079 ± 0.008<br>2.00 ± 0.20 | 0.049 ± 0.004<br>1.25 ± 0.10                  | 0.020 ± 0.006<br>0.50 ± 0.15  | 0.014 ± 0.010<br>0.35 ± 0.25 | 0.014 ± 0.010<br>0.35 ± 0.25 | inches<br>mm |
| RMCF1206<br>RMCP1206 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.006<br>1.60 ± 0.15                  | 0.022 ± 0.006<br>0.55 ± 0.15  | 0.020 ± 0.012<br>0.50 ± 0.30 | 0.020 ± 0.012<br>0.50 ± 0.30 | inches<br>mm |
| RMCF1210<br>RMCP1210 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.098 ± 0.010<br>2.50 ± 0.25                  | 0.022 ± 0.006<br>0.55 ± 0.15  | 0.020 ± 0.012<br>0.50 ± 0.30 | 0.020 ± 0.012<br>0.50 ± 0.30 | inches<br>mm |
| RMCF2010<br>RMCP2010 | 0.197 ± 0.008<br>5.00 ± 0.20 | 0.098 ± 0.008<br>2.50 ± 0.20                  | 0.022 ± 0.006<br>0.55 ± 0.15  | 0.024 ± 0.012<br>0.60 ± 0.30 | 0.024 ± 0.014<br>0.60 ± 0.35 | inches<br>mm |
| RMCF2512<br>RMCP2512 | 0.248 ± 0.008<br>6.30 ± 0.20 | 0.126 ± 0.010<br>3.20 ± 0.25                  | 0.022 ± 0.006<br>0.55 ± 0.15  | 0.024 ± 0.012<br>0.60 ± 0.30 | 0.024 ± 0.014<br>0.60 ± 0.35 | inches<br>mm |

## Performance Characteristics

| Test                            | Test Conditions (JIS C 5202)                                                            | Test Results                     |
|---------------------------------|-----------------------------------------------------------------------------------------|----------------------------------|
| Short Time Overload             | 2.5x rated voltage for 5 seconds                                                        | ± (2% + 0.1Ω)                    |
| Dielectric Withstanding Voltage | 100 VAC, 1 minute                                                                       | ± (1% + 0.05Ω)                   |
| Resistance to Soldering Heat    | 260°C ±5°C, for 10 sec. ±0.5 sec. (Solder Bath)                                         | ± 1%                             |
| Solderability                   | 235°C ±5°C, for 2 sec. ±0.5 sec. (Colophonium flux)                                     | 95% coverage, minimum            |
| Temperature Cycle               | -65°C: 30 min. 25°C: 2 to 3 min.<br>155°C: 30 min. 25°C: 2 to 3 min.<br>(5 Cycles)      | ±(1% + 0.05Ω)<br>Jumper (<0.05Ω) |
| Endurance (Damp load)           | 40°C ± 2°C, 90% RH, Rated Load<br>90 min. On, 30 min. Off for 1,000 hrs. -0hrs./+48hrs. | ±(3% + 0.1Ω)<br>Jumper (<0.05Ω)  |
| Endurance (Rated load)          | 70°C ± 2°C, Rated Load<br>90 min. On, 30 min. Off for 1,000 hrs. -0hrs./+48hrs.         | ±(3% + 0.1Ω)<br>Jumper (<0.05Ω)  |
| Voltage Coefficient             | 1/10 rated voltage for 3 sec. max. then rated voltage for 3 sec. max.                   | ±100 (ppm/V)                     |
| Robustness of Termination       | Bend of 3mm for 5 ± 1 sec.                                                              | ± (1% + 0.05 Ohm)                |

Operating Temperature Range: -55°C to +125°C (0201 size)  
-55°C to +155°C (all others)

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## 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 | Power  | Tolerance |        |          | Packaging |                        |                  |          | Resistance Value                                                                                 |  |  |
|----------------|------------------------------|------|--------|-----------|--------|----------|-----------|------------------------|------------------|----------|--------------------------------------------------------------------------------------------------|--|--|
| RMCF           | Thick Film<br>Chip Resistors | 0201 | 0.05W  | Code      | Tol    | Value    | Code      | Description            | Size             | Quantity | Four characters with the multiplier used as the decimal holder.                                  |  |  |
|                |                              | 0402 | 0.063W | F         | 1%     | E96, E24 | T         | 7" Reel - Paper Tape   | 0201, 0402       | 10,000   |                                                                                                  |  |  |
|                |                              | 0603 | 0.1W   | J         | 5%     | E24      |           | 7" Reel - Plastic Tape | 0603, 0805, 1206 | 5,000    | 0.1 ohm = R100<br>4.70 ohm = 4R70<br>10.0 Kohm = 10K0<br>1 Mohm = 1M00<br>Zero ohm jumper = 0R00 |  |  |
|                |                              | 0805 | 0.125W | Z         | jumper |          | G         | 10" Reel - Paper Tape  | 1210, 2010, 2512 | 4,000    |                                                                                                  |  |  |
|                |                              | 1206 | 0.25W  |           |        |          | B         | Bulk                   | 0603, 0805, 1206 | 1,000    |                                                                                                  |  |  |
|                |                              | 1210 | 0.33W  |           |        |          |           |                        |                  |          |                                                                                                  |  |  |
|                |                              | 2010 | 0.75W  |           |        |          |           |                        |                  |          |                                                                                                  |  |  |
|                |                              | 2512 | 1W     |           |        |          |           |                        |                  |          |                                                                                                  |  |  |

## 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 | Power Rating | Tolerance |     |          | Packaging |                        |                          |          | Resistance Value                                                |  |  |
|----------------|------------|------|--------------|-----------|-----|----------|-----------|------------------------|--------------------------|----------|-----------------------------------------------------------------|--|--|
| RMCP           | High Power | 0402 | 0.1W         | Code      | Tol | Value    | Code      | Description            | Size                     | Quantity | Four characters with the multiplier used as the decimal holder. |  |  |
|                |            | 0603 | 0.125W       | F         | 1%  | E96, E24 | T         | 7" Reel<br>Paper Tape  | 0402                     | 10,000   |                                                                 |  |  |
|                |            | 0805 | 0.25W        | J         | 5%  | E24      |           |                        | 0603, 0805<br>1206, 1210 | 5,000    | 1 ohm = 1R00<br>10 Kohm = 10K0<br>1 Mohm = 1M00                 |  |  |
|                |            | 1206 | 0.33W        |           |     |          |           |                        | 2010, 2512               | 4,000    |                                                                 |  |  |
|                |            | 1210 | 0.5W         |           |     |          | G         | 10" Reel<br>Paper Tape | 0603, 0805<br>1206, 1210 | 10,000   |                                                                 |  |  |
|                |            | 2010 | 1W           |           |     |          |           |                        |                          |          |                                                                 |  |  |
|                |            | 2512 | 2W           |           |     |          |           |                        |                          |          |                                                                 |  |  |

Legacy Part Number (before January 3, 2011):

| SEI Type |             | Code  |         |      | Nominal Resistance | Tolerance |         | Packaging        |         |                        |      |
|----------|-------------|-------|---------|------|--------------------|-----------|---------|------------------|---------|------------------------|------|
| RMCF     |             | 1/16  |         |      | 4.7K               | 5%        |         | R                |         |                        |      |
| Type     | Description | Code  | Wattage | Size |                    | Tolerance | Values  | SEI Types        | Pkg Qty | Description            | Code |
| RMC      | Standard    | 1/20  | 0.05W   | 0201 |                    | 1%        | E96,E24 | 0603, 0805, 1206 | 10,000  | 7" reel - paper tape   | R    |
| RMCF     | RoHS        | 1/16S | 0.063W  | 0402 |                    | 5%        | E24     |                  | 10,000  | 10" reel - paper tape  | G    |
|          |             | 1/16  | 0.1W    | 0603 |                    |           |         |                  | 5,000   | 7" reel - paper tape   | R    |
|          |             | 1/10  | 0.125W  | 0805 |                    |           |         |                  | 1,000   | bulk                   | A    |
|          |             | 1/8   | 0.25W   | 1206 |                    |           |         | 1210, 2010, 2512 | 4,000   | 7" reel - plastic tape | R    |
|          |             | 1/4   | 0.33W   | 1210 |                    |           |         |                  |         |                        |      |
|          |             | 1/2   | 0.75W   | 2010 |                    |           |         |                  |         |                        |      |
|          |             | 1     | 1W      | 2512 |                    |           |         |                  |         |                        |      |

| SEI Type |             | Code |         |      | Nominal Resistance | Tolerance |         | Packaging              |         |                       |      |
|----------|-------------|------|---------|------|--------------------|-----------|---------|------------------------|---------|-----------------------|------|
| RMCP     |             | 0603 |         |      | 4.7K               | 5%        |         | R                      |         |                       |      |
| Type     | Description | Code | Wattage | Size | Tolerance          |           | Values  | SEI Types              | Pkg Qty | Description           | Code |
| RMCP     | High Power  | 0402 | 0.1W    | 0402 | 1%                 |           | E96,E24 | 0402                   | 10,000  | 7" reel - paper tape  | R    |
|          |             | 0603 | 0.125W  | 0603 | 5%                 |           | E24     | 0603, 0805, 1206, 1210 | 10,000  | 10" reel - paper tape | G    |
|          |             | 0805 | 0.25W   | 0805 |                    |           |         | 0603, 0805, 1206, 1210 | 5,000   | 7" reel - paper tape  | R    |
|          |             | 1206 | 0.33W   | 1206 |                    |           |         | 2010, 2512             | 4,000   |                       |      |
|          |             | 1210 | 0.5W    | 1210 |                    |           |         |                        |         |                       |      |
|          |             | 2010 | 1W      | 2010 |                    |           |         |                        |         |                       |      |
|          |             | 2512 | 2W      | 2512 |                    |           |         |                        |         |                       |      |