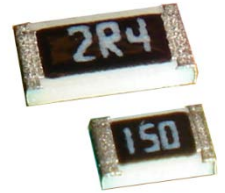


- Features:
- Excellent pulse withstanding performance
  - Broad resistance range
  - Higher anti-surge performance compared with RMCF Series
  - Lower values may be available – contact factory
  - 1% and wider tolerances are qualified to AEC-Q200
  - RoHS compliant



| Electrical Specifications |                             |                         |                          |                                    |                               |                      |                      |
|---------------------------|-----------------------------|-------------------------|--------------------------|------------------------------------|-------------------------------|----------------------|----------------------|
| Type / Code               | Power Rating (Watts) @ 70°C | Maximum Working Voltage | Maximum Overload Voltage | Resistance Temperature Coefficient | Ohmic Range (Ω) and Tolerance |                      |                      |
|                           |                             |                         |                          |                                    | 0.5%                          | 1%                   | 5%, 10%, 20%         |
| RPC0603                   | 0.1W                        | 50V                     | 100V                     | ±200 ppm/°C<br>±100 ppm/°C         | 10 - 294<br>300 - 1M          | 1 - 294<br>300 - 1M  | 1 - 270<br>300 - 1M  |
| RPC0805                   | 0.25W                       | 150V                    | 300V                     | ±200 ppm/°C<br>±100 ppm/°C         | 10 - 294<br>300 - 20M         | 1 - 294<br>300 - 20M | 1 - 270<br>300 - 20M |
| RPC1206                   | 0.33W                       | 200V                    | 400V                     | ±200 ppm/°C<br>±100 ppm/°C         | 10 - 20<br>20.5 - 20M         | 1 - 20<br>20.5 - 20M | 1 - 20<br>22 - 20M   |
| RPC1210                   | 0.5W                        | 200V                    | 400V                     | ±200 ppm/°C<br>±100 ppm/°C         | 10 - 20<br>20.5 - 20M         | 1 - 20<br>20.5 - 20M | 1 - 20<br>22 - 20M   |
| RPC2010                   | 0.75W                       | 400V                    | 800V                     | ±200 ppm/°C<br>±100 ppm/°C         | 10 - 20<br>20.5 - 20M         | 1 - 20<br>20.5 - 20M | 1 - 20<br>22 - 20M   |
| RPC2512                   | 1.5W                        | 500V                    | 1000V                    | ±200 ppm/°C<br>±100 ppm/°C         | 10 - 20<br>20.5 - 20M         | 1 - 20<br>20.5 - 20M | 1 - 20<br>22 - 20M   |

Working Voltage =  $v(P \cdot R)$  or Max. Working Voltage listed above, whichever is lower.

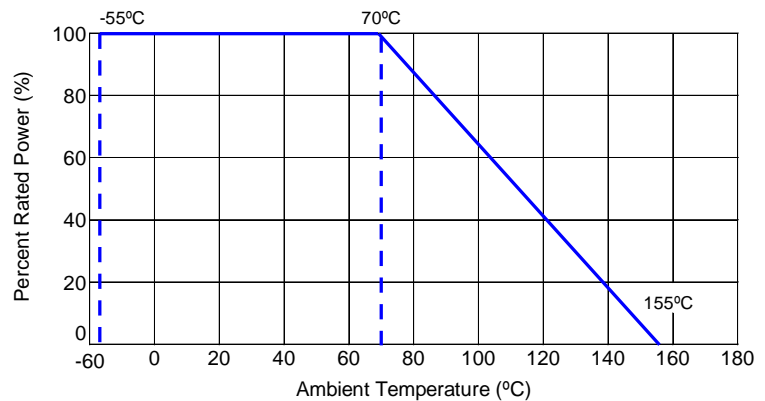
Overload Voltage =  $2.5 \cdot v(P \cdot R)$  or Max. Overload Voltage listed above, whichever is lower.

| Electrical Specifications – High Power |                             |                         |                          |                                    |                               |         |          |
|--|-----------------------------|-------------------------|--------------------------|------------------------------------|-------------------------------|---------|----------|
| Type / Code                            | Power Rating (Watts) @ 70°C | Maximum Working Voltage | Maximum Overload Voltage | Resistance Temperature Coefficient | Ohmic Range (Ω) and Tolerance |         |          |
|  |                             |                         |                          |                                    | 0.5%                          | 1%      | 5%       |
| RPC0603...-HP                          | 0.2W                        | 50V                     | 100V                     | ±200 ppm/°C                        | 10 - 294                      | 1 - 294 |          |
|  |                             |                         |                          | ±100 ppm/°C                        | 300 - 1M                      |         |          |
| RPC1206...-HP                          | 0.5W                        | 200V                    | 400V                     | ±200 ppm/°C                        | 10 - 20                       | 1 - 20  |          |
|  |                             |                         |                          | ±100 ppm/°C                        | 20.5 - 20M                    |         | 22 - 20M |
| RPC2010...-HP                          | 1W                          | 400V                    | 800V                     | ±200 ppm/°C                        | 10 - 20                       | 1 - 20  |          |
|  |                             |                         |                          | ±100 ppm/°C                        | 20.5 - 20M                    |         | 22 - 20M |

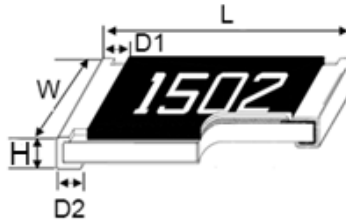
Working Voltage =  $v(P \cdot R)$  or Max. Working Voltage listed above, whichever is lower.

Overload Voltage =  $2.5 \cdot v(P \cdot R)$  or Max. Overload Voltage listed above, whichever is lower.

**Power Derating Curve:**



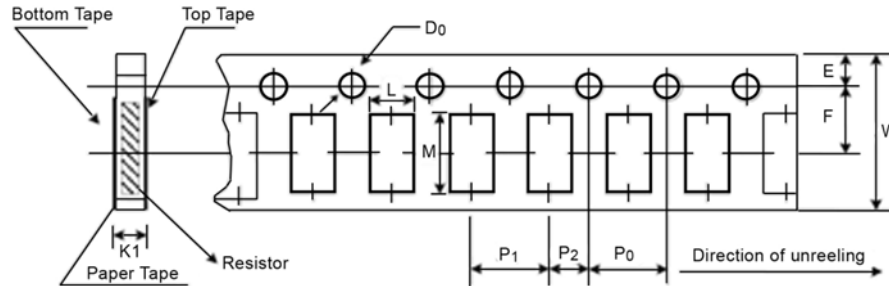
### Mechanical Specifications



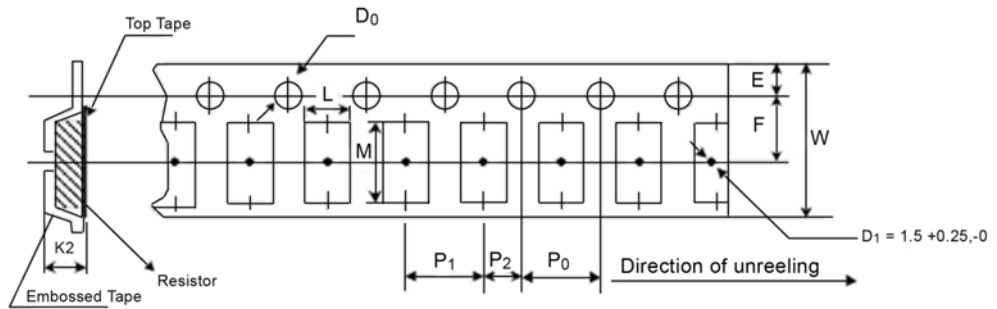
| Type / Code | Weight (g)<br>(1000 pcs) | L<br>Body Length             | W<br>Body Width              | H<br>Body Height             | D1<br>Top Termination        | D2<br>Bottom Termination     | Unit         |
|-------------|--------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| RPC0603     | 2.042                    | 0.063 ± 0.004<br>1.60 ± 0.10 | 0.031 ± 0.004<br>0.80 ± 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 |
| RPC0805     | 4.368                    | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.049 ± 0.004<br>1.25 ± 0.10 | 0.020 ± 0.004<br>0.50 ± 0.10 | 0.014 ± 0.008<br>0.35 ± 0.20 | 0.016 ± 0.008<br>0.40 ± 0.20 | inches<br>mm |
| RPC1206     | 8.947                    | 0.122 ± 0.004<br>3.10 ± 0.10 | 0.061 ± 0.004<br>1.55 ± 0.10 | 0.022 ± 0.004<br>0.55 ± 0.10 | 0.020 ± 0.010<br>0.50 ± 0.25 | 0.020 ± 0.008<br>0.50 ± 0.20 | inches<br>mm |
| RPC1210     | 15.959                   | 0.122 ± 0.004<br>3.10 ± 0.10 | 0.102 ± 0.006<br>2.60 ± 0.15 | 0.022 ± 0.004<br>0.55 ± 0.10 | 0.020 ± 0.010<br>0.50 ± 0.25 | 0.020 ± 0.008<br>0.50 ± 0.20 | inches<br>mm |
| RPC2010     | 24.241                   | 0.197 ± 0.004<br>5.00 ± 0.10 | 0.098 ± 0.006<br>2.50 ± 0.15 | 0.022 ± 0.004<br>0.55 ± 0.10 | 0.024 ± 0.010<br>0.60 ± 0.25 | 0.020 ± 0.008<br>0.50 ± 0.20 | inches<br>mm |
| RPC2512     | 39.448                   | 0.250 ± 0.004<br>6.35 ± 0.10 | 0.122 ± 0.006<br>3.10 ± 0.15 | 0.022 ± 0.004<br>0.55 ± 0.10 | 0.024 ± 0.010<br>0.60 ± 0.25 | 0.020 ± 0.008<br>0.50 ± 0.20 | inches<br>mm |

**Packaging Specifications**

**Paper Tape Specifications**



**Embossed Plastic Tape Specifications**



| Type    | L                            | M                             | W                             | E                            | F                              | Unit         |
|---------|------------------------------|-------------------------------|-------------------------------|------------------------------|--------------------------------|--------------|
| RPC0603 | 0.043 ± 0.004<br>1.10 ± 0.10 | 0.075 ± 0.004<br>1.90 ± 0.10  | 0.315 ± 0.008<br>8.00 ± 0.20  | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.002<br>3.50 ± 0.05   | inches<br>mm |
| RPC0805 | 0.063 ± 0.004<br>1.60 ± 0.10 | 0.094 ± 0.008<br>2.40 ± 0.20  | 0.315 ± 0.008<br>8.00 ± 0.20  | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.002<br>3.50 ± 0.05   | inches<br>mm |
| RPC1206 | 0.075 ± 0.004<br>1.90 ± 0.10 | 0.138 ± 0.008<br>3.50 ± 0.20  | 0.315 ± 0.008<br>8.00 ± 0.20  | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.002<br>3.50 ± 0.05   | inches<br>mm |
| RPC1210 | 0.110 ± 0.004<br>2.80 ± 0.10 | 0.138 ± 0.008<br>3.50 ± 0.20  | 0.315 ± 0.008<br>8.00 ± 0.20  | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.002<br>3.50 ± 0.05   | inches<br>mm |
| RPC2010 | 0.110 ± 0.008<br>2.80 ± 0.20 | 0.217 ± 0.008<br>5.50 ± 0.20  | 0.472 ± 0.012<br>12.00 ± 0.30 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.002<br>5.50 ± 0.05   | inches<br>mm |
| RPC2512 | 0.138 ± 0.008<br>3.50 ± 0.20 | 0.264 ± 0.008<br>6.70 ± 0.20  | 0.472 ± 0.012<br>12.00 ± 0.30 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.002<br>5.50 ± 0.05   | inches<br>mm |
| Type    | P <sub>0</sub>               | P <sub>1</sub>                | P <sub>2</sub>                | ∅D <sub>0</sub>              | K <sub>1</sub> /K <sub>2</sub> | Unit         |
| RPC0603 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.394<br>4.00 ± 10.00 | 0.079 ± 0.002<br>2.00 ± 0.05  | 0.059 ± 0.004<br>1.50 ± 0.10 | 0.028 ± 0.004<br>0.70 ± 0.10   | inches<br>mm |
| RPC0805 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.394<br>4.00 ± 10.00 | 0.079 ± 0.002<br>2.00 ± 0.05  | 0.059 ± 0.004<br>1.50 ± 0.10 | 0.033 ± 0.004<br>0.85 ± 0.10   | inches<br>mm |
| RPC1206 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.394<br>4.00 ± 10.00 | 0.079 ± 0.002<br>2.00 ± 0.05  | 0.059 ± 0.004<br>1.50 ± 0.10 | 0.033 ± 0.004<br>0.85 ± 0.10   | inches<br>mm |
| RPC1210 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.394<br>4.00 ± 10.00 | 0.079 ± 0.002<br>2.00 ± 0.05  | 0.059 ± 0.004<br>1.50 ± 0.10 | 0.033 ± 0.004<br>0.85 ± 0.10   | inches<br>mm |
| RPC2010 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.394<br>4.00 ± 10.00 | 0.079 ± 0.002<br>2.00 ± 0.05  | 0.059 ± 0.004<br>1.50 ± 0.10 | 0.047 - 0.000<br>1.20 - 0.00   | inches<br>mm |
| RPC2512 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.394<br>4.00 ± 10.00 | 0.079 ± 0.002<br>2.00 ± 0.05  | 0.059 ± 0.004<br>1.50 ± 0.10 | 0.047 - 0.000<br>1.20 - 0.00   | inches<br>mm |

| Performance Characteristics                                |  |  |
|--|--|--|
| Item   | Requirement  | Test Method  |
| Temperature Coefficient of Resistance (T.C.R.)             | As specified   | JIS-C-5201-1 4.8<br>IEC-60115-1 4.8<br>-55°C ~+ 125°C, 25°C is the reference temperature                       |
| Short Time Overload  | ±(1%+0.05Ω)  | JIS-C-5201-1 4.13<br>IEC-60115-1 4.13<br>RCWV*2.5 or max. overload voltage whichever is lower for 5 seconds    |
| Insulation Resistance                                      | ≥10G   | JIS-C-5201-1 4.6<br>IEC-60115-1 4.6<br>Max. overload voltage for 1 minute                                      |
| Endurance<br>Tolerances of 0.5% 1%                         | ±(1%+0.05Ω)  | JIS-C-5201-1 4.25<br>IEC-60115-1 4.25.1<br>70 ± 2°C, RCWV for 1000 h.<br>with 1.5 h. "ON" and 0.5 h. "OFF"     |
| Endurance<br>Tolerances of 5%, 10%, 20%                    | ±(3%+0.05Ω)  | JIS-C-5201-1 4.25<br>IEC-60115-1 4.25.1<br>70 ± 2°C, RCWV for 1000 h.<br>with 1.5 h. "ON" and 0.5 h. "OFF"     |
| Damp Heat with Load<br>Tolerances of 0.5%, 1%              | ±(0.5%+0.05Ω)  | JIS-C-5201-1 4.24<br>40 ± 2°C, 90~95% R.H., RCWV for 1000 h.<br>with 1.5 h. "ON" and 0.5 h. "OFF"              |
| Damp Heat with Load<br>Tolerances of 5%, 10%, 20%          | ±(3%+0.05Ω)  | JIS-C-5201-1 4.24<br>40 ± 2°C, 90~95% R.H., RCWV for 1000 h.<br>with 1.5 h. "ON" and 0.5 h. "OFF"              |
| Dry Heat<br>Tolerances of 0.5%, 1%                         | ±(0.5%+0.05Ω)  | JIS-C-5201-1 4.23<br>IEC-60115-1 2.23.2<br>at +155°C for 1000 h.   |
| Dry Heat<br>Tolerances of 5%, 10%, 20%                     | ±(3%+0.05Ω)  | JIS-C-5201-1 4.23<br>IEC-60115-1 2.23.2<br>at +155°C for 1000 h.   |
| Bending Strength   | ±(1%+0.05Ω)  | JIS-C-5201-1 4.33<br>IEC-60115-1 4.33<br>Bending once for 5 seconds<br>2010, 2512 sizes: 2mm, other sizes: 3mm |
| Solderability  | 95% min. coverage  | JIS-C-5201-1 4.17<br>IEC-60115-1 4.17<br>245 ± 5°C for 3 s.  |
| Resistance to Soldering Heat<br>tolerances of 0.5%, 1%     | ±(0.5%+0.05Ω)  | JIS-C-5201-1 4.18<br>IEC-60115-1 4.18<br>260 ± 5°C for 10 s.   |
| Resistance to Soldering Heat<br>tolerances of 5%, 10%, 20% | ±(1%+0.05Ω)  | JIS-C-5201-1 4.18<br>IEC-60115-1 4.18<br>260 ± 5°C for 10 s.   |
| Voltage Proof  | No breakdown or flashover                                | JIS-C-5201-1 4.7<br>IEC-60115-1 4.7<br>1.42 times max. operating voltage for 1 m.                              |
| Leaching   | Individual leaching area ≤5%<br>Total leaching area ≤10% | JIS-C-5201-1 4.18<br>IEC-60068-2-58 8.2.1<br>260 ± 5°C for 30 s.   |
| Rapid Change of Temperature<br>tolerances of 0.5%, 1%      | ±(0.5%+0.05Ω)  | JIS-C-5201-1 4.18<br>IEC-60115-1 4.18<br>-55°C to + 155°C , 5 cycles   |
| Rapid Change of Temperature<br>tolerances of 5%, 10%, 20%  | ±(1%+0.05Ω)  | JIS-C-5201-1 4.18<br>IEC-60115-1 4.18<br>-55°C to + 155°C , 5 cycles   |

RCWV (Rated Continuous Working Voltage)=  $\sqrt{P \cdot R}$  or Max. Working Voltage whichever is lower.

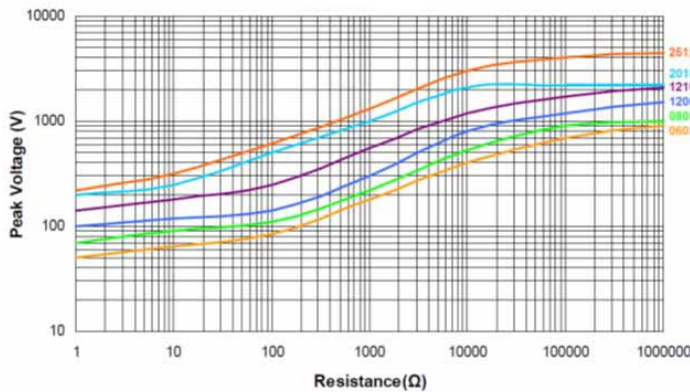
Storage Temperature: 25±3°C; humidity < 80% R.H.

Lightning Surge

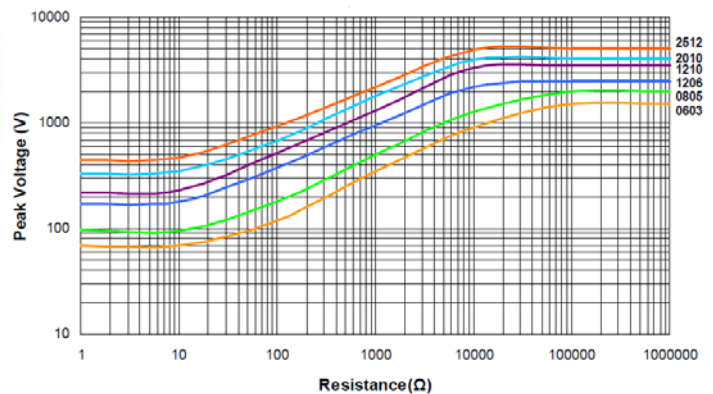
Resistors are tested in accordance with IEC 60115-1 using both 1.2/50us and 10/700 pulse shapes. The limit of acceptance is a shift in resistance of less than 1% from the initial value.

1. 1.2/50us Lightning Surge

RPC-HP (High Power)  
Tolerances of 0.5% and 1%

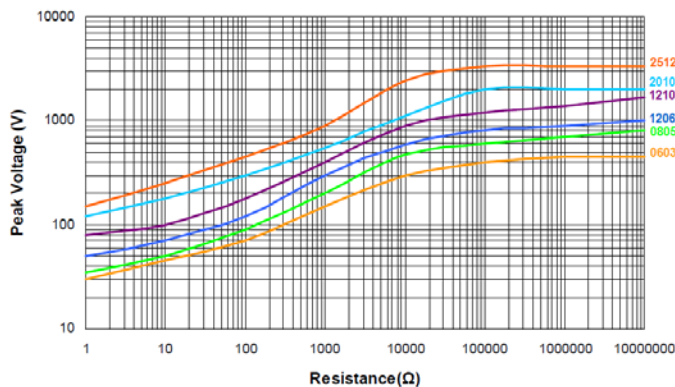


RPC  
Tolerances of 5%, 10% and 20%

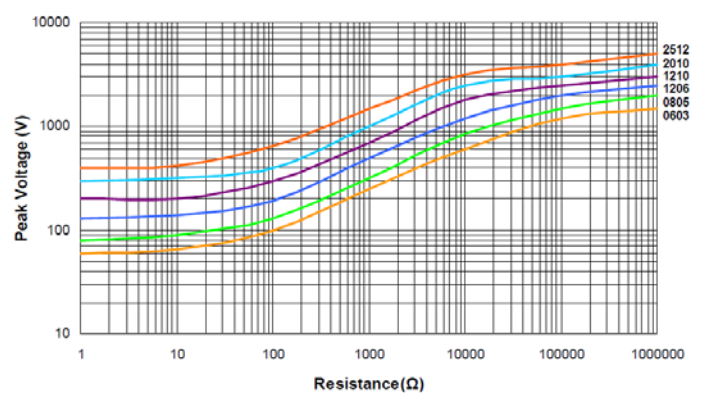


2. 10/700us Lightning Surge

RPC-HP (High Power)  
Tolerances of 0.5% and 1%



RPC  
Tolerances of 5%, 10% and 20%



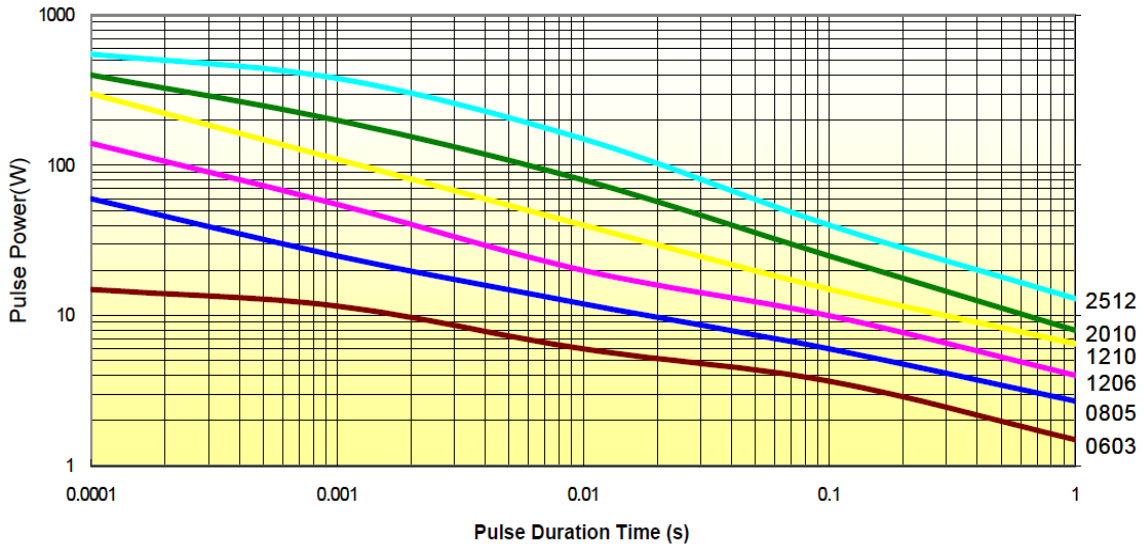
### Pulse Withstand Capacity

The single impulse graph is the result of 50 impulses of rectangular shape applied at one minute intervals. The limit of acceptance was a shift in resistance of less than 1% from the initial value. The power applied was subject to the restrictions of the maximum permissible impulse voltage graph shown.

### Single Pulse Power (100 Ohm)

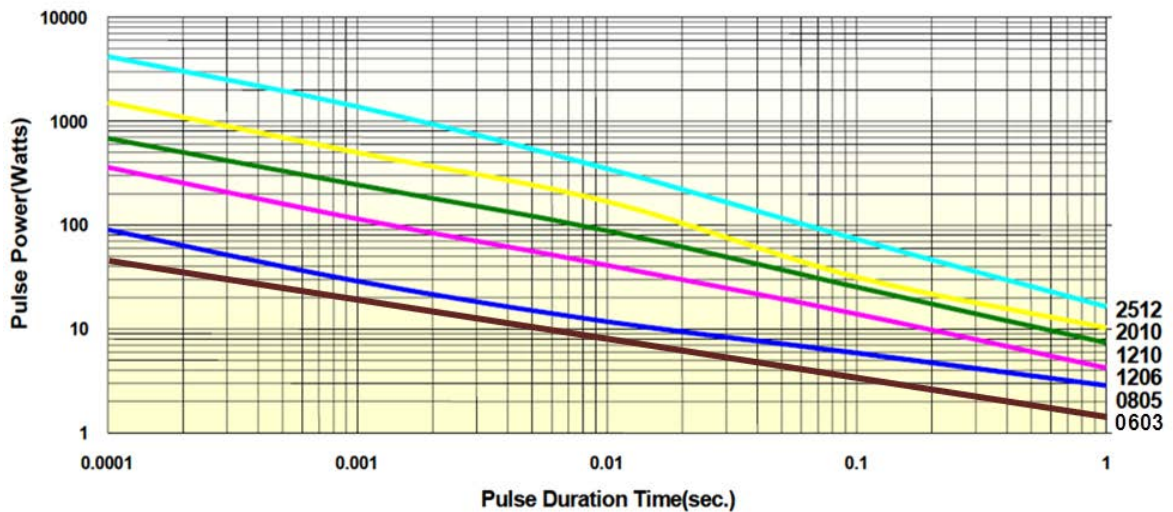
RPC-HP (High Power):

Tolerances of 0.5% and 1%



RPC:

Tolerances of 5%, 10% and 20%

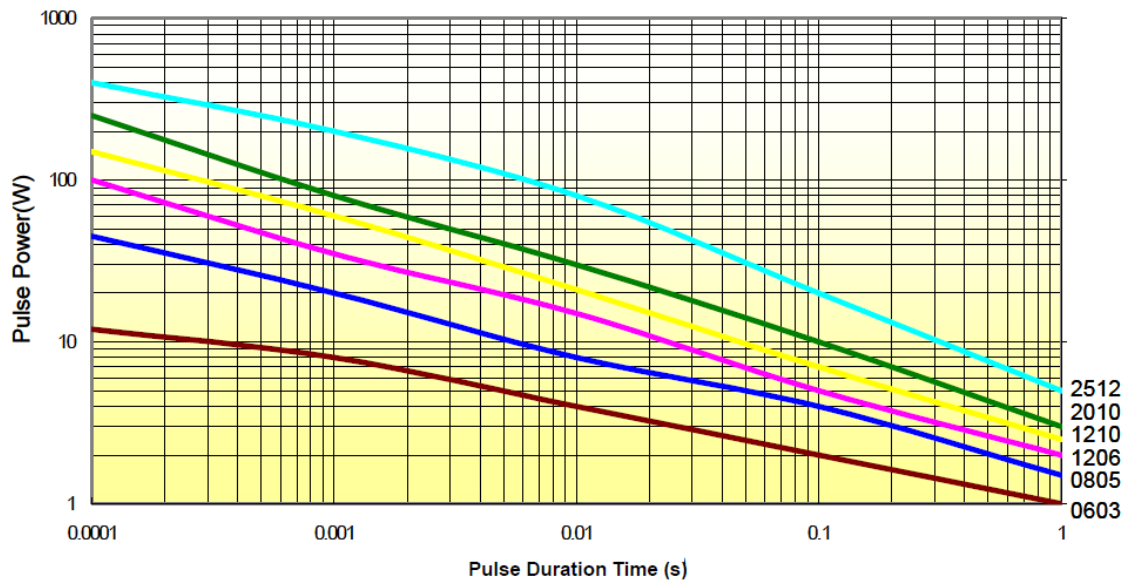


Continuous Pulse

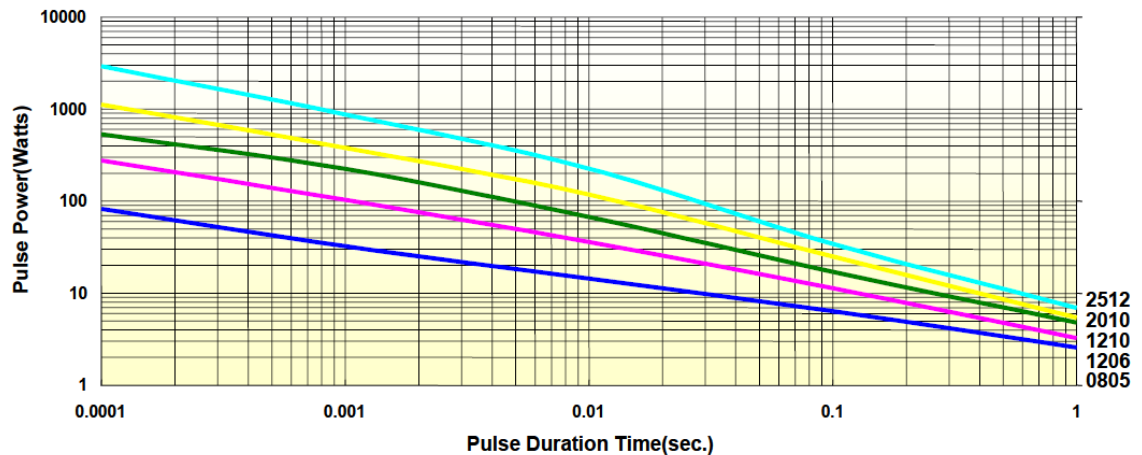
The continuous load graph was obtained by applying repetitive rectangular pulses where the pulse period was adjusted so that the average power dissipated in the resistor was equal to its rated power at 70°C. Again the limit of acceptance was a shift in resistance of less than 1% from the initial value.

Continuous Pulse Power (100 Ohm)

RPC-HP (High Power):  
Tolerances of 0.5% and 1%



RPC:  
Tolerances 5%, 10% and 20%



# RPC Series

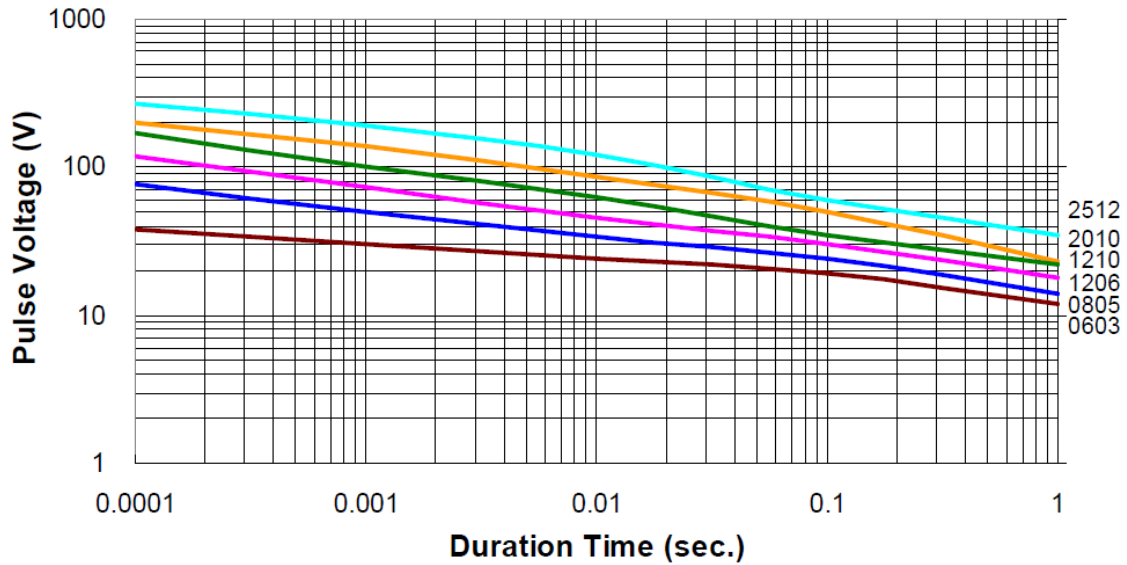
Pulse Withstanding Thick Film Chip Resistor

Stackpole Electronics, Inc.

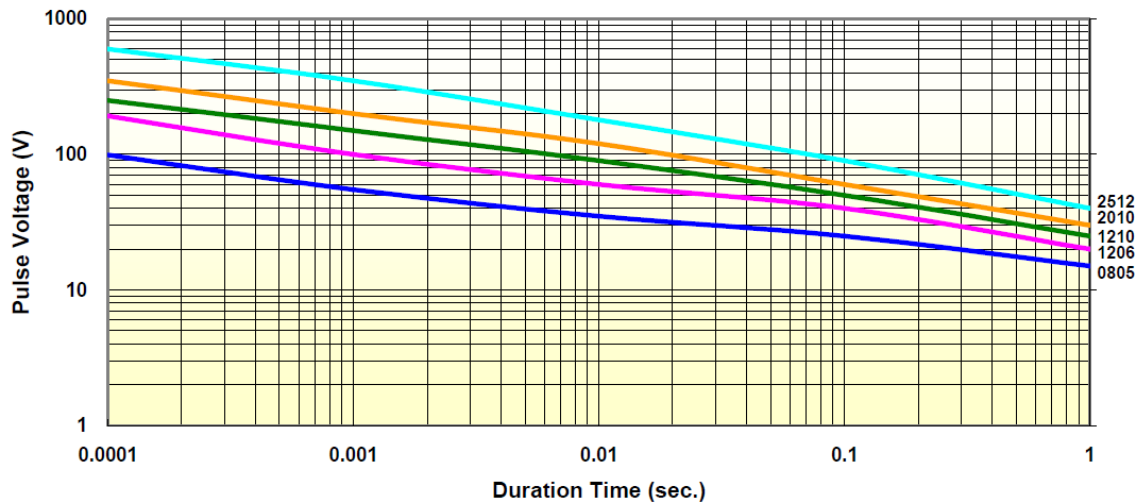
Resistive Product Solutions

Pulse Voltage (100 Ohm)

RPC-HP (High Power):  
Tolerances of 0.5% and 1%

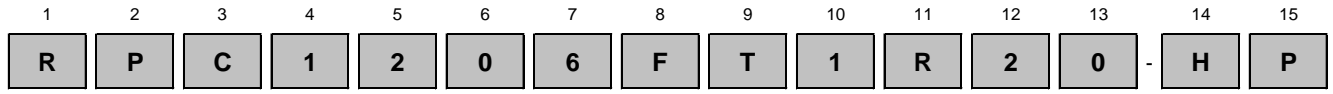


RPC:  
Tolerances of 5%, 10% and 20%





**How to Order**



| Product Series |                    | Size     | Power | Tolerance |      |       | Packaging |                         |      |          | Resistance Value  |                  | Special |             |
|----------------|--------------------|----------|-------|-----------|------|-------|-----------|-------------------------|------|----------|---|------------------|---------|-------------|
| Code           | Description        |          |       | Code      | Tol  | Value | Code      | Description             | Size | Quantity | Four characters with the multiplier used as the decimal holder. |                  | Code    | Description |
| RPC            | Pulse Withstanding | 0603     | 0.1W  | D         | 0.5% | E96   | T         | 7" Reel<br>Paper Tape   | 0603 | 5,000    | 300 ohm = 300R  |                  | HP      | High Power  |
|                |                    | 0603(HP) | 0.2W  | F         | 1%   | E24   |           |                         | 0805 |          | 0805  | 10.2 Kohm = 10K2 |         |             |
|                |                    | 1206     | 0.33W | J         | 5%   | E24   |           |                         | 1206 |          | 1206  | 1 Mohm = 1M00    |         |             |
|                |                    | 1206(HP) | 0.5W  | K         | 10%  |       | G         | 7" Reel<br>Plastic Tape | 2010 | 4,000    |   |                  |         |             |
|                |                    | 1210     | 0.5W  | M         | 20%  | 2512  |           |                         | 2512 |          |   |                  |         |             |
|                |                    | 2010     | 0.75W |           |      |       |           |                         | 0805 |          | 0805  |                  |         |             |
|                |                    | 2010(HP) | 1W    |           |      |       | 1206      | 1206                    |      |          |   |                  |         |             |
|                |                    | 2512     | 1.5W  |           |      |       |           |                         |      |          |   |                  |         |             |