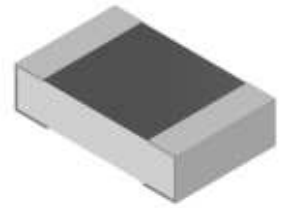


### Features:

- Excellent pulse withstanding performance
- Higher anti-surge performance compared to RMCF Series
- Standard power RPC, 5% and wider tolerances, are untrimmed
- RoHS compliant, REACH compliant, and halogen free
- 1% and wider tolerances are AEC-Q200 compliant
- Lower values may be available – contact Stackpole



| Electrical Specifications (RPC) |                            |                                   |                                    |              |                               |          |              |
|---------------------------------|----------------------------|-----------------------------------|------------------------------------|--------------|-------------------------------|----------|--------------|
| Type/Code                       | Power Rating (W)<br>@ 70°C | Maximum<br>Working<br>Voltage (V) | Maximum<br>Overload<br>Voltage (V) | TCR (ppm/°C) | Ohmic Range (Ω) and Tolerance |          |              |
|                                 |                            |                                   |                                    |              | 0.5%                          | 1%       | 5%, 10%, 20% |
| RPC0402                         | 0.2                        | 50                                | 100                                | ±300         | -                             | 1 - 19.6 | 1 - 20       |
|                                 |                            |                                   |                                    | ±100         | 100 - 1M                      | 20 - 1M  | 22 - 1M      |
| RPC0603                         | 0.1                        | 50                                | 100                                | ±200         | -                             | 1 - 9.76 | 1 - 270      |
|                                 |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 300 - 20M    |
| RPC0805                         | 0.25                       | 150                               | 300                                | ±200         | -                             | 1 - 9.76 | 1 - 270      |
|                                 |                            |                                   |                                    | ±100         | 10 - 20M                      |          | 300 - 20M    |
| RPC1206                         | 0.33                       | 200                               | 400                                | ±200         | -                             | 1 - 9.76 | 1 - 20       |
|                                 |                            |                                   |                                    | ±100         | 10 - 20M                      |          | 22 - 20M     |
| RPC1210                         | 0.5                        | 200                               | 400                                | ±200         | -                             | 1 - 9.76 | 1 - 20       |
|                                 |                            |                                   |                                    | ±100         | 10 - 20M                      |          | 22 - 20M     |
| RPC2010                         | 0.75                       | 400                               | 800                                | ±200         | -                             | 1 - 9.76 | 1 - 20       |
|                                 |                            |                                   |                                    | ±100         | 10 - 20M                      |          | 22 - 20M     |
| RPC2512                         | 1.5                        | 500                               | 1000                               | ±200         | -                             | 1 - 9.76 | 1 - 20       |
|                                 |                            |                                   |                                    | ±100         | 10 - 20M                      |          | 22 - 20M     |

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

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

| Electrical Specifications - High Power (RPC-HP) |                            |                                   |                                    |              |                               |          |           |
|-------------------------------------------------|----------------------------|-----------------------------------|------------------------------------|--------------|-------------------------------|----------|-----------|
| Type/Code                                       | Power Rating (W)<br>@ 70°C | Maximum<br>Working<br>Voltage (V) | Maximum<br>Overload<br>Voltage (V) | TCR (ppm/°C) | Ohmic Range (Ω) and Tolerance |          |           |
|                                                 |                            |                                   |                                    |              | 0.5%                          | 1%       | 5%        |
| RPC0603-HP                                      | 0.25                       | 75                                | 150                                | ±200         | -                             | 1 - 9.76 | 1 - 270   |
|                                                 |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 300 - 1M  |
| RPC0805-HP                                      | 0.4                        | 150                               | 300                                | ±200         | -                             | 1 - 9.76 | 1 - 270   |
|                                                 |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 300 - 1M  |
| RPC1206-HP                                      | 0.5                        | 200                               | 400                                | ±200         | -                             | 1 - 9.76 | 1 - 20    |
|                                                 |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 22 - 1M   |
| RPC1210-HP                                      | 0.75                       | 200                               | 400                                | ±200         | -                             | 1 - 9.76 | 1 - 20    |
|                                                 |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 22 - 1M   |
| RPC2010-HP                                      | 1                          | 400                               | 800                                | ±200         | -                             | 1 - 9.76 | 1 - 20    |
|                                                 |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 22 - 1M   |
| RPC2512-HP <sup>(*)</sup>                       | 2                          | 500                               | 1000                               | ±350         | -                             | 1 - 9.76 | 1 - 10    |
|                                                 |                            |                                   |                                    | ±100         | 10 - 200K                     |          | 11 - 200K |

(\*) Double-sided printed resistor element.

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

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

### Electrical Specifications - Ultra High Power (RPC-UP)

| Type/Code     | Power Rating (W)<br>@ 70°C | Maximum<br>Working<br>Voltage (V) | Maximum<br>Overload<br>Voltage (V) | TCR (ppm/°C) | Ohmic Range (Ω) and Tolerance |          |          |
|---------------|----------------------------|-----------------------------------|------------------------------------|--------------|-------------------------------|----------|----------|
|               |                            |                                   |                                    |              | 0.5%                          | 1%       | 5%       |
| RPC0603-UP    | 0.33                       | 75                                | 150                                | ±200         | -                             | 1 - 9.76 | 1 - 270  |
|               |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 300 - 1M |
| RPC0805-UP(*) | 0.5                        | 400                               | 600                                | ±200         | -                             | 1 - 9.76 | 1 - 270  |
|               |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 300 - 1M |
| RPC1206-UP(*) | 0.75                       | 500                               | 1000                               | ±200         | -                             | 1 - 9.76 | 1 - 20   |
|               |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 22 - 1M  |
| RPC1210-UP    | 1                          | 200                               | 400                                | ±200         | -                             | 1 - 9.76 | 1 - 20   |
|               |                            |                                   |                                    | ±100         | 10 - 1M                       |          | 22 - 1M  |

(\*)Ultra High Power: double side printed resistor element.

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

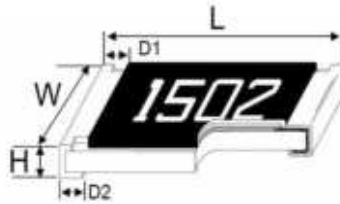
Overload Voltage =  $2.5 \cdot \sqrt{(P \cdot R)}$  or Max. Overload Voltage listed above, whichever is lower.

### Electrical Specifications - Ultra High Power Jumper (RPC-UP)

| Type/Code     | Jumper Rated Current<br>(A) | Max. Resistance |
|---------------|-----------------------------|-----------------|
| RPC0402-UP    | 3                           | 0 Ω (≤ 10 mΩ)   |
| RPC0603-UP    | 5                           | 0 Ω (≤ 8 mΩ)    |
| RPC0805-UP(*) | 6                           | 0 Ω (≤ 5 mΩ)    |
| RPC1206-UP(*) | 10                          | 0 Ω (≤ 5 mΩ)    |
| RPC1210-UP    | 12                          | 0 Ω (≤ 4 mΩ)    |
| RPC2010-UP    | 12                          | 0 Ω (≤ 5 mΩ)    |
| RPC2512-UP    | 16                          | 0 Ω (≤ 5 mΩ)    |

(\*)Ultra High Power: double side printed resistor element.

### Mechanical Specifications



| Type/Code           | Weight<br>(mg) | L<br>Body Length             | W<br>Body Width              | H<br>Body Height             | D1<br>Top Termination        | D2<br>Bottom                 | Unit         |
|---------------------|----------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| RPC0402 and -UP     | 0.64           | 0.039 ± 0.002<br>1.00 ± 0.05 | 0.020 ± 0.002<br>0.50 ± 0.05 | 0.014 ± 0.002<br>0.35 ± 0.05 | 0.008 ± 0.004<br>0.20 ± 0.10 | 0.010 ± 0.004<br>0.25 ± 0.10 | inches<br>mm |
| RPC0603 and -HP/-UP | 2.0            | 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 and -HP     | 4.4            | 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 |
| RPC0805-UP          | 5.0            | 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 |

### Mechanical Specifications (cont.)

| Type/Code           | Weight (mg) | L<br>Body Length             | W<br>Body Width              | H<br>Body Height             | D1<br>Top Termination        | D2<br>Bottom                 | Unit         |
|---------------------|-------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| RPC1206 and -HP     | 8.9         | 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 |
| RPC1206-UP          | 9.5         | 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 and -HP/-UP | 16.0        | 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 and -HP/-UP | 24.2        | 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             | 39.4        | 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 |
| RPC2512-HP and -UP  | 42.0        | 0.250 ± 0.008<br>6.35 ± 0.20 | 0.124 ± 0.006<br>3.15 ± 0.15 | 0.024 ± 0.004<br>0.60 ± 0.10 | 0.024 ± 0.010<br>0.60 ± 0.25 | 0.020 ± 0.008<br>0.50 ± 0.20 | inches<br>mm |

### Performance Characteristics

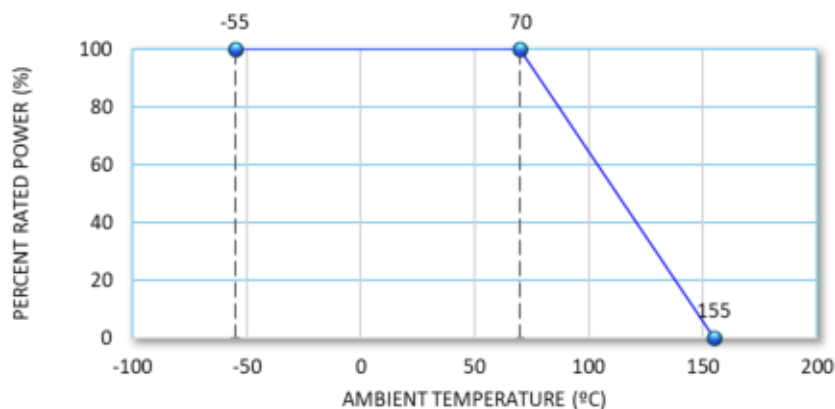
| Item                                        | Test Method                               | Test Specification                                       |                               |                                            |                      | Test Condition                                                                                                   |
|---------------------------------------------|-------------------------------------------|----------------------------------------------------------|-------------------------------|--------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------|
|                                             |                                           | Tolerances of<br>0.5% and 1%                             | Tolerances of<br>5%, 10%, 20% | Ultra High Power                           | Jumper               |                                                                                                                  |
| Temperature Coefficient of Resistance (TCR) | JIS-C-5201-1 4.8<br>IEC-60115-1 4.8       | Within the specified tolerance                           |                               |                                            |                      | At 25°C / -55°C and 25°C / + 125°C, 25°C is the reference temperature                                            |
| Short Time Overload                         | JIS-C-5201-1 4.13<br>IEC-60115-1 4.13     | ± (1% + 0.05Ω)                                           |                               |                                            | as per specification | RCWV * 2.5 or max. overload voltage whichever is lower for 5 seconds<br>Jumper: 2*I <sub>max</sub> for 5 seconds |
| Insulation Resistance                       | JIS-C-5201-1 4.6<br>IEC-60115-1 4.6       | ≥ 10G                                                    |                               |                                            |                      | Max. overload voltage for 1 minute                                                                               |
| Endurance                                   | JIS-C-5201-1 4.25<br>IEC-60115-1 4.25.1   | ± (1% + 0.05Ω)                                           | ± (3% + 0.05Ω)                | <5%: ±(1% + 0.05Ω)<br>≥5%: ±(3% + 0.05Ω)   | as per specification | 70 ± 2°C, RCWV for 1000 hours with 1.5 hours "ON" and 0.5 hour "OFF"                                             |
| Damp Heat with Load                         | JIS-C-5201-1 4.24<br>IEC-60115-1 4.24     | ± (0.5% + 0.05Ω)                                         | ± (3% + 0.05Ω)                | ± (1% + 0.05Ω)                             | as per specification | 40 ± 2°C, 90~95% R.H, RCWV for 1000 hours with 1.5 hours "ON" and 0.5 hour "OFF"                                 |
| Dry Heat                                    | JIS-C-5201-1 4.23<br>IEC-60115-1 2.23.2   | ± (0.5% + 0.05Ω)                                         | ± (3% + 0.05Ω)                | <5%: ±(0.5% + 0.05Ω)<br>≥5%: ±(3% + 0.05Ω) | as per specification | At +155°C for 1000 hours                                                                                         |
| Bending Strength                            | JIS-C-5201-1 4.33<br>IEC-60115-1 4.33     | ± (1% + 0.05Ω)                                           |                               |                                            | as per specification | Bending once for 5 seconds<br>2010, 2512 sizes: 2 mm; other sizes: 3 mm                                          |
| Solderability                               | JIS-C-5201-1 4.17<br>IEC-60115-1 4.17     | 95% min. coverage                                        |                               |                                            |                      | 245 ± 5°C for 3 seconds                                                                                          |
| Resistance to Soldering Heat                | JIS-C-5201-1 4.18<br>IEC-60115-1 4.18     | ± (0.5% + 0.05Ω)                                         | ± (1% + 0.05Ω)                | <5%: ±(0.5% + 0.05Ω)<br>≥5%: ±(1% + 0.05Ω) | as per specification | 260 ± 5°C for 10 seconds                                                                                         |
| Voltage Proof                               | JIS-C-5201-1 4.7<br>IEC-60115-1 4.7       | No Breakdown or flashover                                |                               |                                            |                      | 1.42 times max. operating voltage for 1 minute                                                                   |
| Leaching                                    | JIS-C-5201-1 4.18<br>IEC-60068-2-58-8.2.1 | Individual leaching area ≤ 5%. Total leaching area ≤ 10% |                               |                                            |                      | 260 ± 5°C for 30 seconds                                                                                         |
| Rapid Change of Temperature                 | JIS-C-5201-1 4.18<br>IEC-60115-1 4.18     | ± (0.5% + 0.05Ω)                                         | ± (1% + 0.05Ω)                | <5%: ±(0.5% + 0.05Ω)<br>≥5%: ±(1% + 0.05Ω) | as per specification | -55 to + 150°C , 5 cycles                                                                                        |

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

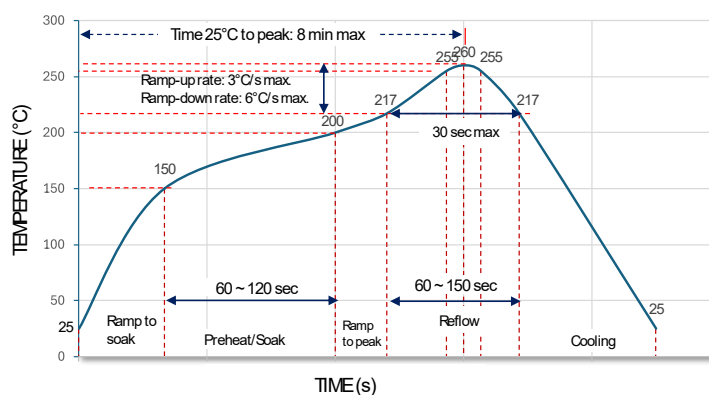
Recommended storage Temperature is 15 ~ 28°C; humidity < 80%

Operating temperature range is -55 + 155°C

Power Derating Curve:

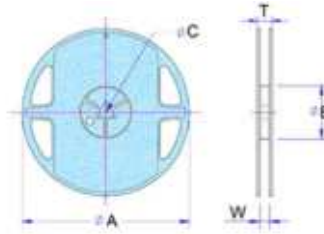


**Recommended Resistor Reflow Profile**



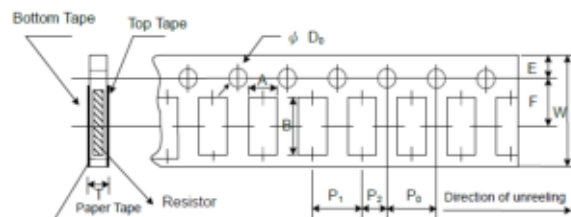
| Reflow Profiles                                                                                 |                  |
|-------------------------------------------------------------------------------------------------|------------------|
| Profile Feature                                                                                 | Pb-Free Assembly |
| Preheat                                                                                         |                  |
| Min. Temperature (T <sub>smin</sub> )                                                           | 150°C            |
| Max. Temperature (T <sub>smax</sub> )                                                           | 200°C            |
| Preheating time (t <sub>s</sub> ) from T <sub>smin</sub> to T <sub>smax</sub>                   | 60-120 seconds   |
| Ramp-up rate (T <sub>L</sub> to T <sub>p</sub> )                                                | 3°C/second max.  |
| Liquidous Temperature (T <sub>L</sub> )                                                         | 217°C            |
| Time (t <sub>L</sub> ) maintained above T <sub>L</sub>                                          | 60-150 seconds   |
| Min. Peak Temperature                                                                           | 235°C            |
| Max. Peak Temperature (T <sub>p</sub> max)                                                      | 260°C            |
| Time (t <sub>p</sub> ) within 5°C of the specified classification temperature (T <sub>c</sub> ) | 30 seconds max.  |
| Ramp-down rate (T <sub>p</sub> to T <sub>L</sub> )                                              | 6°C/second max.  |
| Time 25°C to Peak Temperature                                                                   | 8 minutes max.   |

### Reel Specifications



| Type/Code | Packaging    | Tape Width | A                              | B                                     | C                             | W                             | T                             | Unit         |
|-----------|--------------|------------|--------------------------------|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------|
| RPC0402   | Paper Tape   | 8 mm       | 7.028 ± 0.059<br>178.50 ± 1.50 | 2.362 +0.039 / -0<br>60.00 +1.00 / -0 | 0.512 ± 0.008<br>13.00 ± 0.20 | 0.354 ± 0.020<br>9.00 ± 0.50  | 0.492 ± 0.020<br>12.50 ± 0.50 | inches<br>mm |
| RPC0603   | Paper Tape   | 8 mm       | 7.028 ± 0.059<br>178.50 ± 1.50 | 2.362 +0.039 / -0<br>60.00 +1.00 / -0 | 0.512 ± 0.008<br>13.00 ± 0.20 | 0.354 ± 0.020<br>9.00 ± 0.50  | 0.492 ± 0.020<br>12.50 ± 0.50 | inches<br>mm |
| RPC0805   | Paper Tape   | 8 mm       | 7.028 ± 0.059<br>178.50 ± 1.50 | 2.362 +0.039 / -0<br>60.00 +1.00 / -0 | 0.512 ± 0.008<br>13.00 ± 0.20 | 0.354 ± 0.020<br>9.00 ± 0.50  | 0.492 ± 0.020<br>12.50 ± 0.50 | inches<br>mm |
| RPC1206   | Paper Tape   | 8 mm       | 7.028 ± 0.059<br>178.50 ± 1.50 | 2.362 +0.039 / -0<br>60.00 +1.00 / -0 | 0.512 ± 0.008<br>13.00 ± 0.20 | 0.354 ± 0.020<br>9.00 ± 0.50  | 0.492 ± 0.020<br>12.50 ± 0.50 | inches<br>mm |
| RPC1210   | Paper Tape   | 8 mm       | 7.028 ± 0.059<br>178.50 ± 1.50 | 2.362 +0.039 / -0<br>60.00 +1.00 / -0 | 0.512 ± 0.008<br>13.00 ± 0.20 | 0.354 ± 0.020<br>9.00 ± 0.50  | 0.492 ± 0.020<br>12.50 ± 0.50 | inches<br>mm |
| RPC2010   | Plastic Tape | 12 mm      | 7.028 ± 0.059<br>178.50 ± 1.50 | 2.362 +0.039 / -0<br>60.00 +1.00 / -0 | 0.512 ± 0.020<br>13.00 ± 0.50 | 0.512 ± 0.020<br>13.00 ± 0.50 | 0.610 ± 0.020<br>15.50 ± 0.50 | inches<br>mm |
| RPC2512   | Plastic Tape | 12 mm      | 7.028 ± 0.059<br>178.50 ± 1.50 | 2.362 +0.039 / -0<br>60.00 +1.00 / -0 | 0.512 ± 0.020<br>13.00 ± 0.50 | 0.512 ± 0.020<br>13.00 ± 0.50 | 0.610 ± 0.020<br>15.50 ± 0.50 | inches<br>mm |

### Taping Specifications - Paper Tape

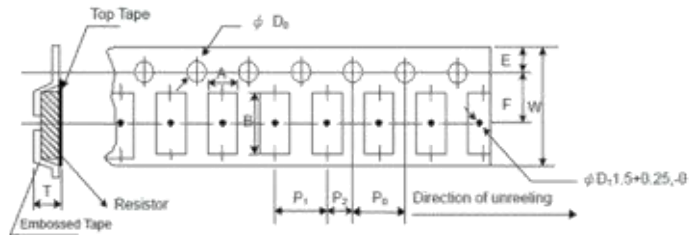


| Type/Code | A                            | B                            | W                            | E                            | F                            | Unit         |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| RPC0402   | 0.026 ± 0.004<br>0.65 ± 0.10 | 0.045 ± 0.004<br>1.15 ± 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 |
| 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   | 0.114 ± 0.004<br>2.90 ± 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 |

### Taping Specifications - Paper Tape (cont.)

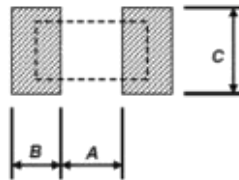
| Type/Code | P <sub>0</sub>               | P <sub>1</sub>               | P <sub>2</sub>               | ØD <sub>0</sub>                     | T                            | Unit         |
|-----------|------------------------------|------------------------------|------------------------------|-------------------------------------|------------------------------|--------------|
| RPC0402   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.002<br>2.00 ± 0.05 | 0.079 ± 0.002<br>2.00 ± 0.05 | 0.059 +0.004/-0.0<br>1.50 +0.1/-0.0 | 0.018 ± 0.004<br>0.45 ± 0.10 | inches<br>mm |
| RPC0603   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.002<br>4.00 ± 0.05 | 0.079 ± 0.002<br>2.00 ± 0.05 | 0.059 +0.004/-0.0<br>1.50 +0.1/-0.0 | 0.028 ± 0.004<br>0.70 ± 0.10 | inches<br>mm |
| RPC0805   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.002<br>4.00 ± 0.05 | 0.079 ± 0.002<br>2.00 ± 0.05 | 0.059 +0.004/-0.0<br>1.50 +0.1/-0.0 | 0.033 ± 0.004<br>0.85 ± 0.10 | inches<br>mm |
| RPC1206   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.002<br>4.00 ± 0.05 | 0.079 ± 0.002<br>2.00 ± 0.05 | 0.059 +0.004/-0.0<br>1.50 +0.1/-0.0 | 0.033 ± 0.004<br>0.85 ± 0.10 | inches<br>mm |
| RPC1210   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.002<br>4.00 ± 0.05 | 0.079 ± 0.002<br>2.00 ± 0.05 | 0.059 +0.004/-0.0<br>1.50 +0.1/-0.0 | 0.033 ± 0.004<br>0.85 ± 0.10 | inches<br>mm |

### Taping Specifications - Plastic Tape



| Type/Code | A                            | B                            | W                             | E                                   | F                            | Unit         |
|-----------|------------------------------|------------------------------|-------------------------------|-------------------------------------|------------------------------|--------------|
| RPC2010   | 0.110 ± 0.004<br>2.80 ± 0.10 | 0.217 ± 0.004<br>5.50 ± 0.10 | 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 ± 0.004<br>3.50 ± 0.10 | 0.264 ± 0.004<br>6.70 ± 0.10 | 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/Code | P <sub>0</sub>               | P <sub>1</sub>               | P <sub>2</sub>                | ØD <sub>0</sub>                     | T                            | Unit         |
| RPC2010   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.002<br>2.00 ± 0.05  | 0.059 +0.004/-0.0<br>1.50 +0.1/-0.0 | 0.047 ± 0.000<br>1.20 ± 0.00 | inches<br>mm |
| RPC2512   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.002<br>2.00 ± 0.05  | 0.059 +0.004/-0.0<br>1.50 +0.1/-0.0 | 0.047 ± 0.000<br>1.20 ± 0.00 | inches<br>mm |

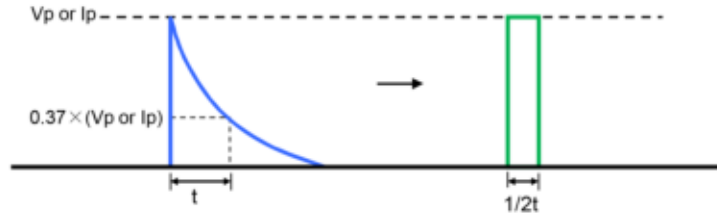
### Recommended Solder Pad



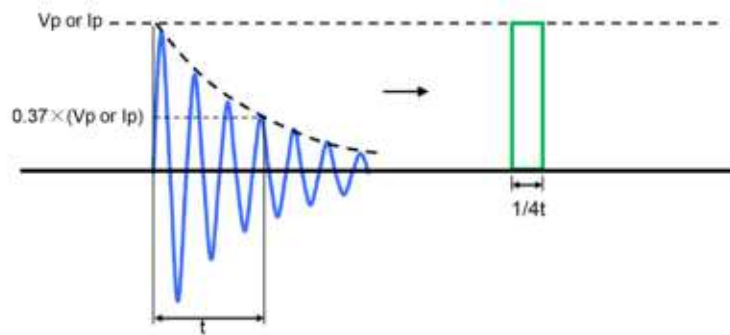
| Type/Code | a             | b             | c             | Unit         |
|-----------|---------------|---------------|---------------|--------------|
| RPC0402   | 0.020<br>0.50 | 0.018<br>0.45 | 0.024<br>0.60 | inches<br>mm |
| RPC0603   | 0.035<br>0.90 | 0.024<br>0.60 | 0.035<br>0.90 | inches<br>mm |
| RPC0805   | 0.047<br>1.20 | 0.028<br>0.70 | 0.051<br>1.30 | inches<br>mm |
| RPC1206   | 0.079<br>2.00 | 0.035<br>0.90 | 0.063<br>1.60 | inches<br>mm |
| RPC1210   | 0.079<br>2.00 | 0.035<br>0.90 | 0.110<br>2.80 | inches<br>mm |
| RPC2010   | 0.150<br>3.80 | 0.035<br>0.90 | 0.110<br>2.80 | inches<br>mm |
| RPC2512   | 0.193<br>4.90 | 0.039<br>1.00 | 0.134<br>3.40 | inches<br>mm |

### Waveform Transformation to Square Wave

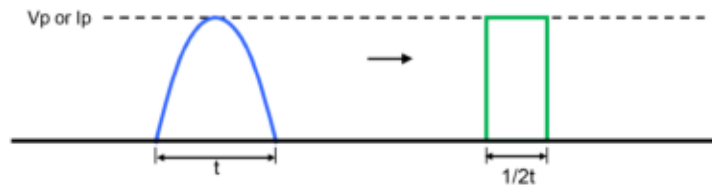
1. Discharge curve wave with time constant " $t$ " → Square wave



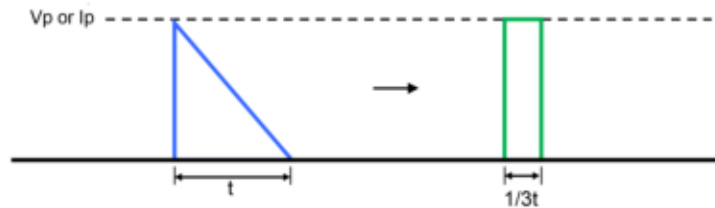
2. Damping oscillation wave with time constant of envelope " $t$ " → Square wave



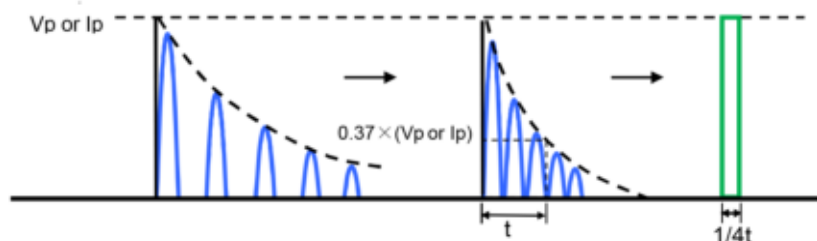
3. Half-wave rectification wave → Square wave



4. Triangular wave → Square wave



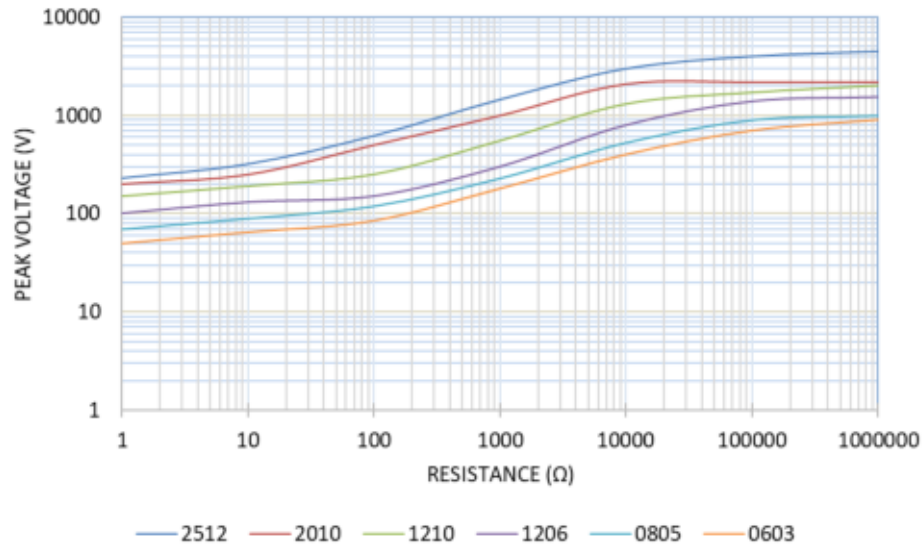
5. Special wave → Square wave



### Lightning Surge

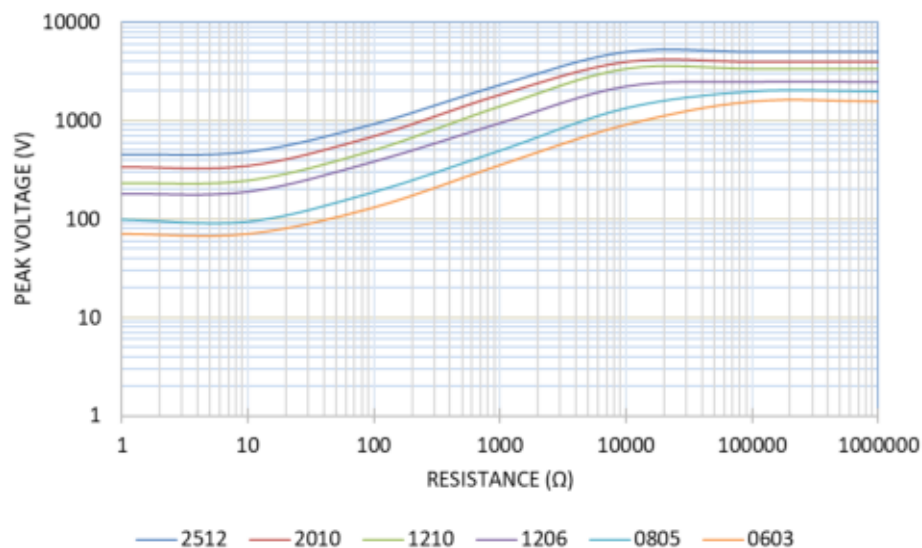
Resistors are tested in accordance with IEC 60115-1 using both 1.2 / 50 us and 10 / 700 pulse shapes. The limit of acceptance is a shift in resistance of less than 1% from the initial value.

1.2/50us Lightning Surge (\*)  
 RPC (Standard Power) tolerances of 0.5% and 1%  
 RPC-HP (High Power) all tolerances  
 RPC-UP (Ultra High Power) all tolerances

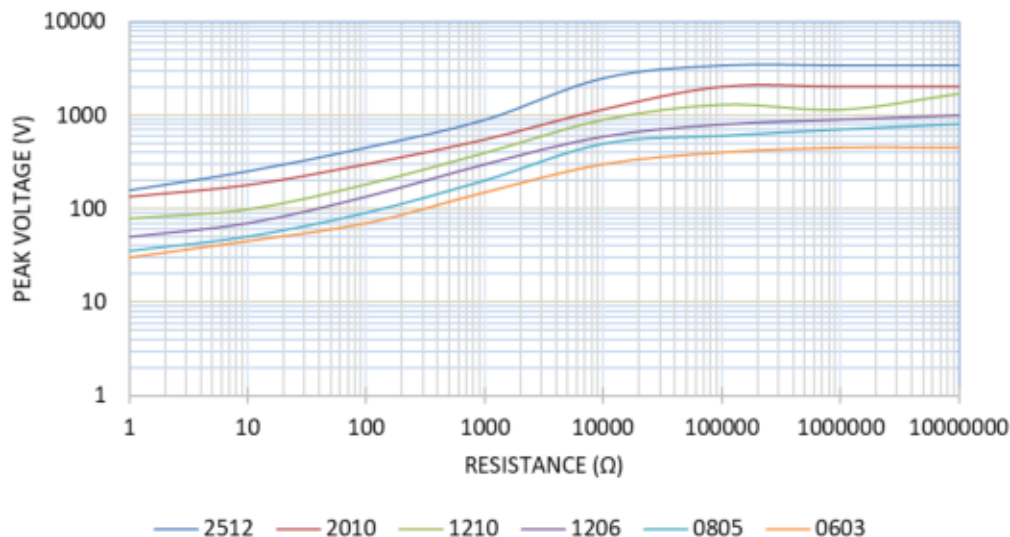


(\*) Note: Data provided shows typical performance and is for reference only.

1.2/50us Lightning Surge (\*)  
 RPC (Standard Power)  
 Tolerances of 5%, 10% and 20%

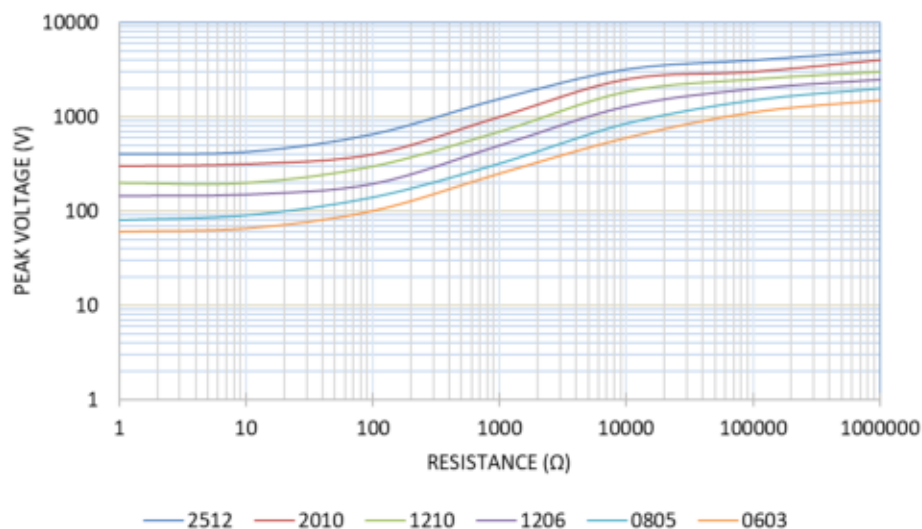


10/700us Lightning Surge (\*)  
 RPC (Standard Power) tolerances of 0.5% and 1%  
 RPC-HP (High Power) all tolerances  
 RPC-UP (Ultra High Power) all tolerances



(\*) Note: Data provided shows typical performance and is for reference only.

10/700us Lightning Surge (\*)  
 RPC (Standard Power)  
 Tolerances of 5%, 10% and 20%

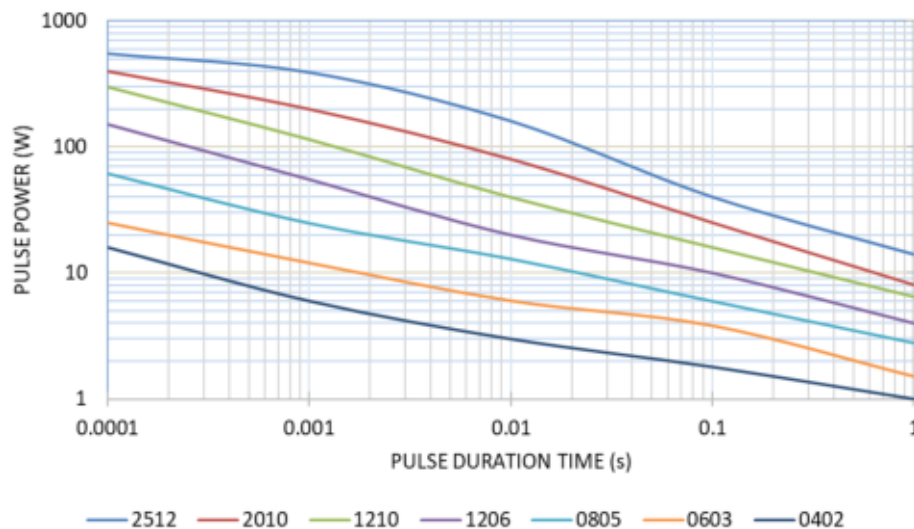


(\*) Note: Data provided shows typical performance and is for reference only.

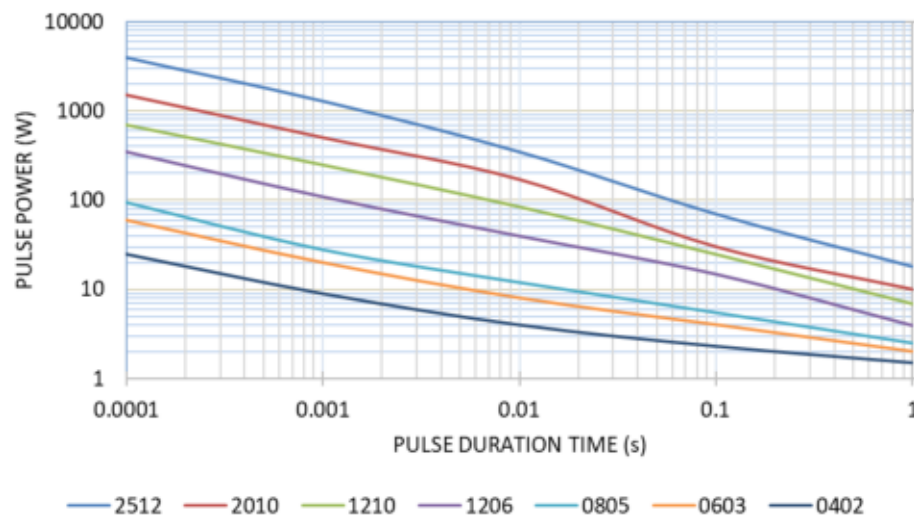
### Pulse Withstand Capacity

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 ohms)  
 RPC (Standard Power) tolerances of 0.5% and 1%  
 RPC-HP (High Power) all tolerances  
 RPC-UP (Ultra High Power) all tolerances



Single Pulse Power (100 ohms)  
 RPC (Standard Power)  
 Tolerances of 5%, 10% and 20%

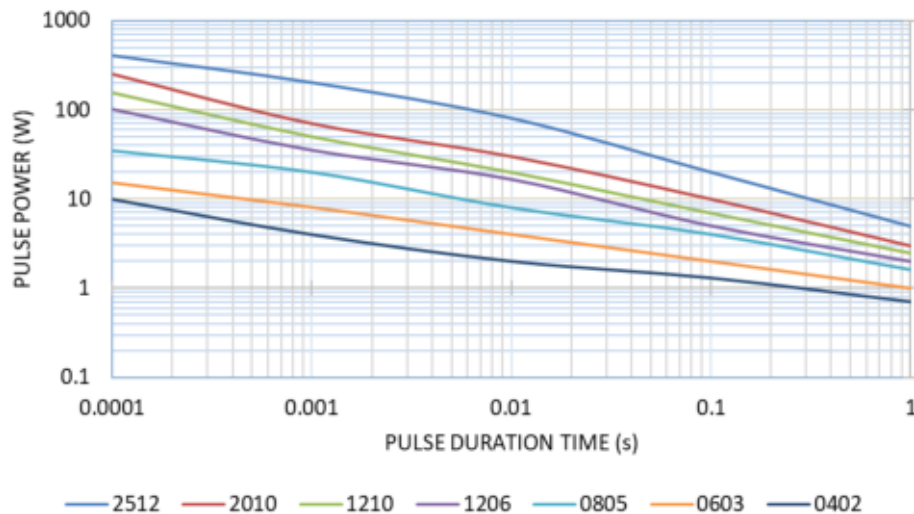


This data is for the 100  $\Omega$  resistance value for each size. Pulse power handling is dependent on the resistance value. For resistance values higher or lower than 100  $\Omega$ , contact Stackpole for advice on pulse handling characteristics of your particular resistance value of interest.

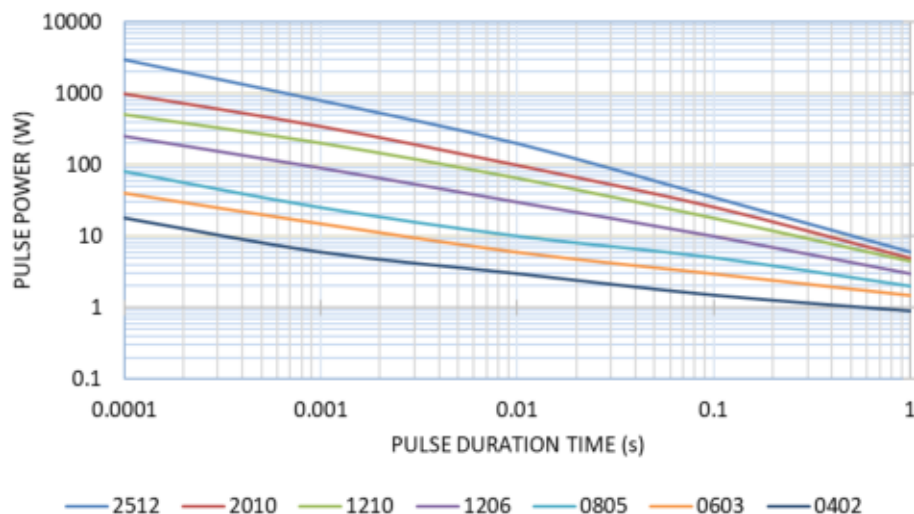
### Continuous Pulse

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.

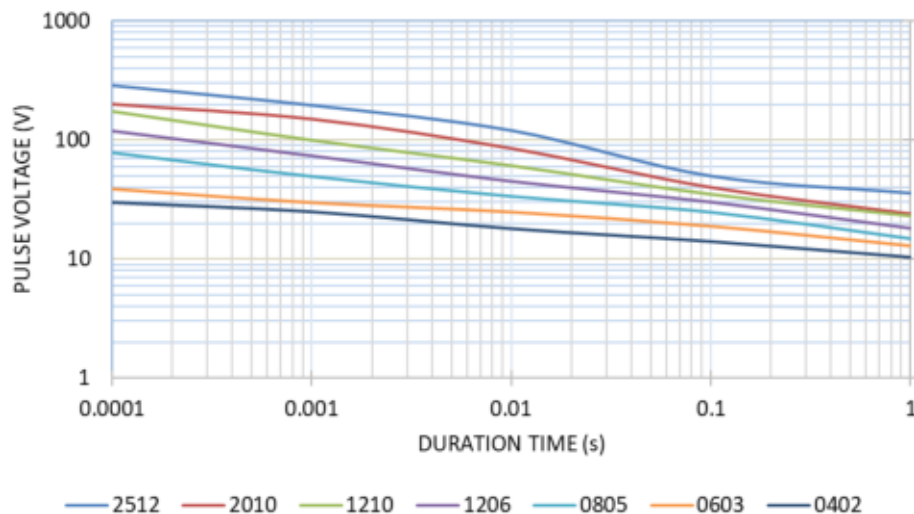
Continuous Pulse Power (100 ohms)  
 RPC (Standard Power) tolerances of 0.5% and 1%  
 RPC-HP (High Power) all tolerances  
 RPC-UP (Ultra High Power) all tolerances



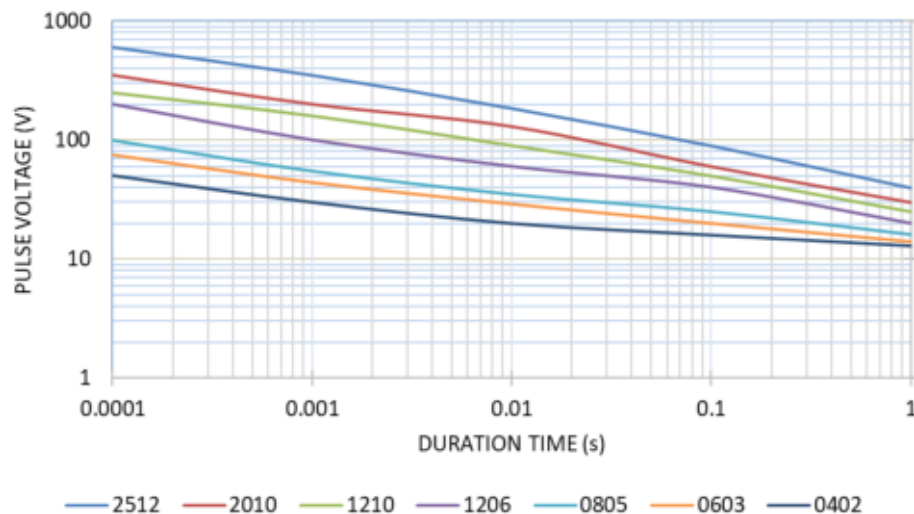
Continuous Pulse Power (100 ohms)  
 RPC (Standard Power)  
 Tolerances of 5%, 10% and 20%



Pulse Voltage (100 ohms)  
 RPC (Standard Power) tolerances of 0.5% and 1%  
 RPC-HP (High Power) all tolerances  
 RPC-UP (Ultra High Power) all tolerances



Pulse Voltage (100 ohms)  
 RPC (Standard Power)  
 Tolerances of 5%, 10% and 20%



### Part Marking Specifications

1. 0402 is unmarked.

2. 3-digit marking for 0603 in E24

First and second digits are E24 code; third digit is the multiplier

| 3-digit marking for 0603 in E24 |     |      |     |
|---------------------------------|-----|------|-----|
| Resistance                      | 18Ω | 100Ω | 1KΩ |
| Marking                         | 180 | 101  | 102 |

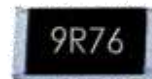


| E24 Code | 10 | 11 | 12 | 13 | 15 | 16 | 18 | 20 | 22 | 24 | 27 | 30 | 33 | 36 | 39 | 43 | 47 | 51 | 56 | 62 | 68 | 75 | 82 | 91 |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

3. 4-digit marking for 0805-2512 in E96 and E24

Values below 100Ω will use "R" as the decimal holder

| 4-digit marking for 0805-2512 |       |      |       |      |       |      |
|-------------------------------|-------|------|-------|------|-------|------|
| Resistance                    | 9.76Ω | 100Ω | 2.2KΩ | 10KΩ | 100KΩ | 1MΩ  |
| Marking                       | 9R76  | 1000 | 2201  | 1002 | 1003  | 1004 |



4. Jumpers

All jumpers will be marked "0".



### E96 Values for 0603 (1% Marking)

A two character 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 from "Y" to "F" represents a specific multiplier.



10.5Ω

| Alpha Character = Multiplier |             |
|------------------------------|-------------|
| Y = 0.1                      | C = 1000    |
| X = 1                        | D = 10000   |
| A = 10                       | E = 100000  |
| B = 100                      | F = 1000000 |

| Chip Marking | Value                |
|--------------|----------------------|
| 01B          | 10.0 x 100 = 1KΩ     |
| 25C          | 17.8 x 1000 = 17.8KΩ |
| 93D          | 90.9 x 10000 = 909KΩ |

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

## 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 |
| RPC                     | Pulse Withstanding Thick Film Chip Resistor | SMD                        | YES <sup>(1)</sup>             | 100% Matte Sn over Ni             |

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

## "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.

## 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

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | P | C | 1 | 2 | 0 | 6 | F | T | 1 | R | 2 | 0 | - | H | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Product Series | Power Rating |      | Tolerance |        |       | Packaging |                         |      |          | Resistance Value                                                                                                                                     |  | Special |                  |
|----------------|--------------|------|-----------|--------|-------|-----------|-------------------------|------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|------------------|
| Code           | Size         | W    | Code      | Tol    | Value | Code      | Description             | Size | Quantity | Four characters with the multiplier used as the decimal holder.<br><br>300 ohm = 300R<br>10.2 Kohm = 10K2<br>1 Mohm = 1M00<br>Zero ohm jumper = 0R00 |  | Code    | Description      |
| RPC            | 0402         | 0.2  | D         | 0.5%   | E96   | T         | 7" Reel<br>Paper Tape   | 0402 | 10000    |                                                                                                                                                      |  | blank   | Standard         |
|                | 0603         | 0.1  | F         | 1%     | E24   |           |                         | 0603 | 5000     |                                                                                                                                                      |  | -HP     | High Power       |
|                | 0603-HP      | 0.25 | J         | 5%     | E24   |           |                         | 0805 |          |                                                                                                                                                      |  | -UP     | Ultra High Power |
|                | 0603-UP      | 0.33 | K         | 10%    |       |           |                         | 1206 |          |                                                                                                                                                      |  |         |                  |
|                | 0805         | 0.25 | M         | 20%    |       |           |                         | 1210 | 4000     |                                                                                                                                                      |  |         |                  |
|                | 0805-HP      | 0.4  | Z         | Jumper |       |           | 7" Reel<br>Plastic Tape | 2010 |          |                                                                                                                                                      |  |         |                  |
|                | 0805-UP      | 0.5  |           |        |       |           |                         | 2512 |          |                                                                                                                                                      |  |         |                  |
|                | 1206         | 0.33 |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 1206-HP      | 0.5  |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 1206-UP      | 0.75 |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 1210         | 0.5  |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 1210-HP      | 0.75 |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 1210-UP      | 1    |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 2010         | 0.75 |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 2010-HP      | 1    |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 2010-UP      | 1.25 |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 2512         | 1.5  |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 2512-HP      | 2    |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |
|                | 2512-UP      | 2    |           |        |       |           |                         |      |          |                                                                                                                                                      |  |         |                  |