

Features:

- Non-inductive design
- Molded body for package uniformity
- Ideal for pulse-load handling characteristics
- 100% RoHS compliant and lead free without exemption
- Halogen free
- REACH compliant
- **5% TOLERANCES WILL NO LONGER BE AVAILABLE AFTER 2/28/2022. SEE [PDN HERE](#).**



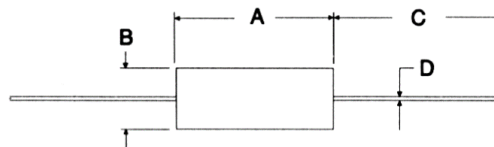
Electrical Specifications

| Type/Code | Power Rating (W) @ 70°C | Maximum Continuous Working Voltage (V) ⁽¹⁾ | Maximum Pulse Voltage (V) | Dielectric Withstanding Voltage (V) | Ohmic Range (Ω) and Tolerance | |
|-----------|-------------------------|---|---------------------------|-------------------------------------|-------------------------------|----------|
| | | | | | 5% ⁽²⁾ | 10% |
| RC14 | 0.25 | 250 | 400 | 500 | 2.2 - 91K | 1 - 5.6M |
| RC12 | 0.5 | 350 | 700 | 700 | 1 - 91K | 1 - 22M |

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

(2) EOL for 5% tolerances; last time order date 2/28/2022.

Mechanical Specifications



| Type/Code | A Body Length | B Body Diameter | C Lead Length (Bulk) | D Lead Diameter | Unit |
|-----------|------------------|--------------------|-------------------------|--------------------|--------|
| RC14 | 0.248 ± 0.028 | 0.094 ± 0.004 | 1.181 ± 0.118 | 0.024 ± 0.002 | inches |
| | 6.30 ± 0.70 | 2.40 ± 0.10 | 30.00 ± 3.00 | 0.60 ± 0.05 | mm |
| RC12 | 0.374 ± 0.031 | 0.142 ± 0.008 | 1.102 ± 0.118 | 0.028 ± 0.003 | inches |
| | 9.50 ± 0.80 | 3.60 ± 0.20 | 28.00 ± 3.00 | 0.70 ± 0.07 | mm |

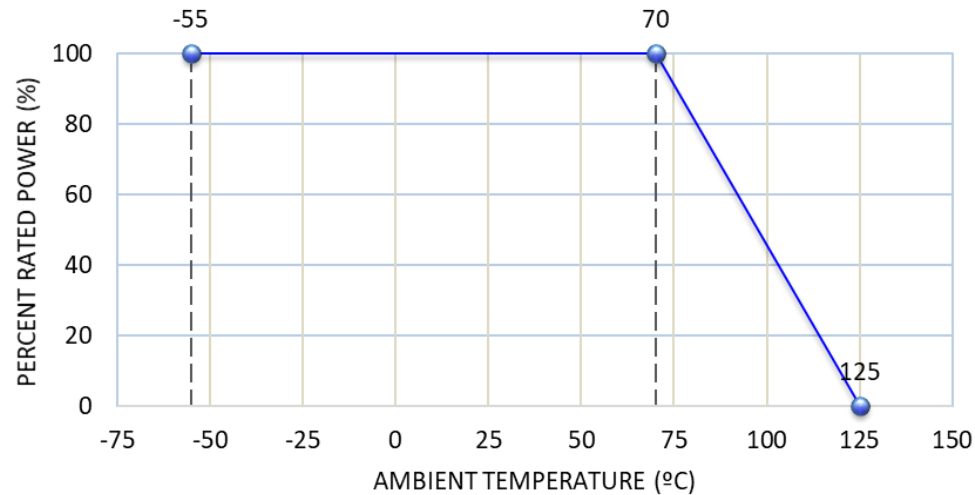
Performance Characteristics

| Test | Test Results | Test Method |
|------------------------------|--|--|
| Voltage Proof | No breakdown or flashover | V-block method RC 1/4 100 VAC, 60 seconds RC 1/2 500 VAC, 60 seconds |
| Overload | ±2% +0.05Ω No visible damage, legible markings | 2.5 times the rated voltage or twice the limiting element voltage, whichever is less. Severe, 5 seconds. |
| Termination Strength | Tensile: ±2% +0.05Ω. No visible damage Bending: ±2% +0.05Ω. No visible damage Torsion: ±2% +0.05Ω. No visible damage | 10N for 5 - 10 seconds 5N, twice 180°C, two rotations |
| Solderability | In accordance with Clause 4.17.4.5 | 235°C, 5 seconds |
| Resistance to Soldering Heat | ±3% +0.05Ω No visible damage, legible markings | After immersion into flux, the immersion into solder shall be carried out 4mm from the body at 350°C for 3.5 seconds |
| Temperature Shock | ±2% +0.05Ω No visible damage. | 5 cycles between -55°C to 125°C |
| Climatic Sequence | ±10% +0.5Ω | Dry/Damp heat: 12 +12 hour cycle, first cycle Cold/Damp heat: 12 + 12 hour cycle, remaining cycle D.C. load |
| Damp Test, Steady State | ±10% +0.5Ω Insulation resistance: R ≥100M ohm. No visible damage, legible markings | 40°C 95% relative humidity for 56 days, test a, b and c of Clause 4.24.2.1 |
| Endurance @ 70°C | ±10% +0.5Ω Insulation resistance: R ≥1G ohm. No visible damage. | Rated voltage, 1.5 hours ON, 0.5 hours OFF at 70°C, 1000 hours |

| Performance Characteristics (cont.) | | |
|-------------------------------------|---|----------------------------|
| Test | Test Results | Test Method |
| Endurance @ 125°C | ±10% +0.5Ω Insulation resistance: R ≥1G ohm. No visible damage. | 125°C, no load, 1000 hours |

Operating Temperature Range: -55°C to +125°C

Power Derating Curve:

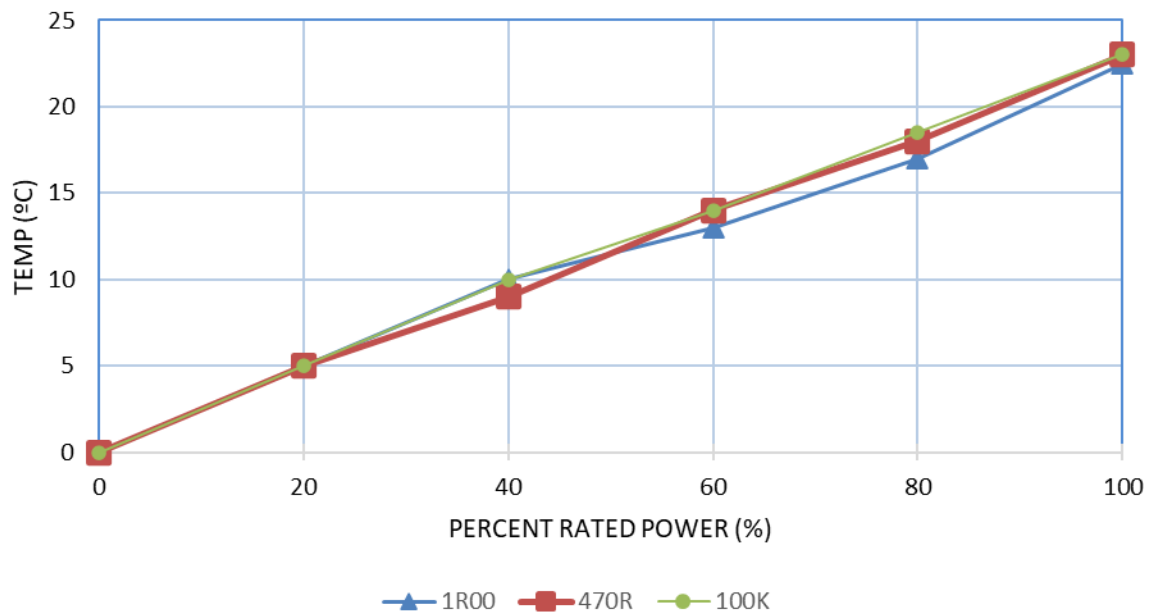


| Reliability Test – Load Life in Moisture | | | | | | | |
|--|-----|------------------------|-----------------------------|------------------------------|-----------------|----------------------------|---|
| Criteria (%) | | Load Ratio P/Pn (%) | Total Testing Time (Hrs) | Number of Fractures (pcs) | Failure Ratio | | Average Lifetime (60% reliability level) (Hrs) |
| | | | | | $\bar{\lambda}$ | $\bar{\lambda}_{CL}$ (60%) | |
| $\Delta R/R$ | ±5 | 0 | 2.984 x 10 ⁶ | 6 | 0.201 | 0.244 | 4.098 x 10 ⁵ |
| | | 20 | 2.990 x 10 ⁶ | 4 | 0.134 | 0.176 | 5.682 x 10 ⁵ |
| | | 60 | 2.997 x 10 ⁶ | 2 | 0.067 | 0.104 | 9.615 x 10 ⁵ |
| | | 100 | 2.992 x 10 ⁶ | 3 | 0.1 | 0.139 | 7.194 x 10 ⁵ |
| | | Total | 1.196 x 10 ⁷ | 15 | 0.125 | 0.138 | 7.209 x 10 ⁵ |
| | ±10 | Total | 1.2 x 10 ⁷ | 0 | 0.0055 | 0.0077 | 1.299 x 10 ⁷ |

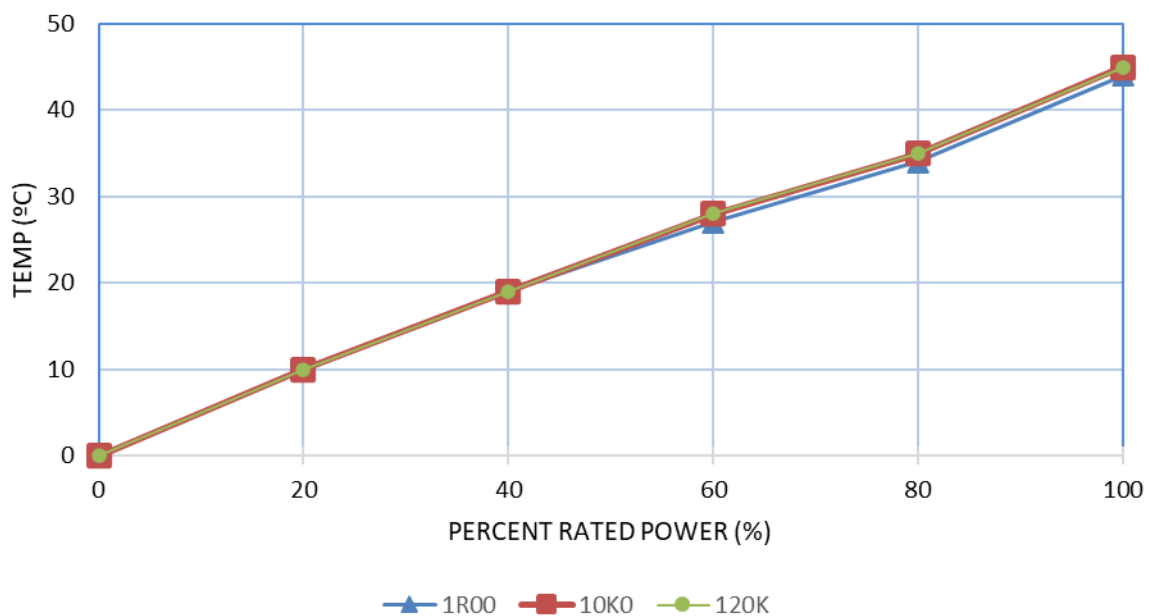
| Resistance Temperature Characteristics | | | |
|--|------------|-----------|---|
| Resistance Range | -55°C | +105°C | Maximum % resistance change from room temperature (+25°C) value |
| Under 1K | +2 to +5 | -4 to -2 | |
| 1K to 9.1K | +5 to +9 | -5 to -3 | |
| 10K to 91K | +8 to +11 | -7 to -5 | |
| 100K | +10 to +14 | -9 to -7 | |
| 100K to 910K | +10 to +14 | -9 to -7 | |
| 1M to 10M | +13 to +20 | -14 to -9 | |

Temperature Rise

RC14

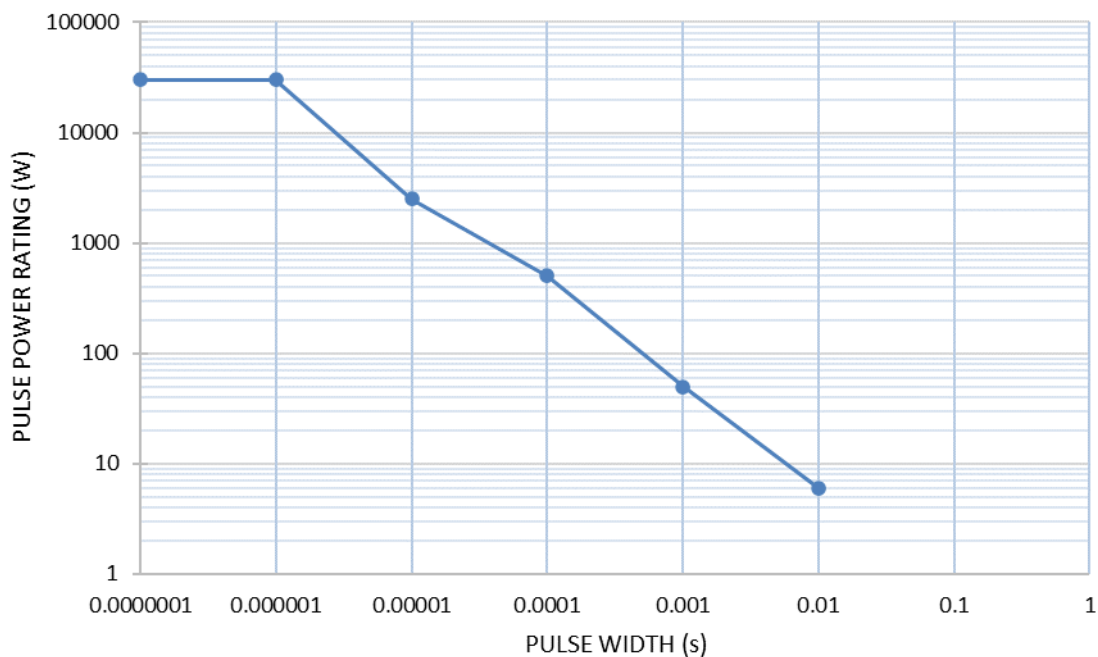


RC12

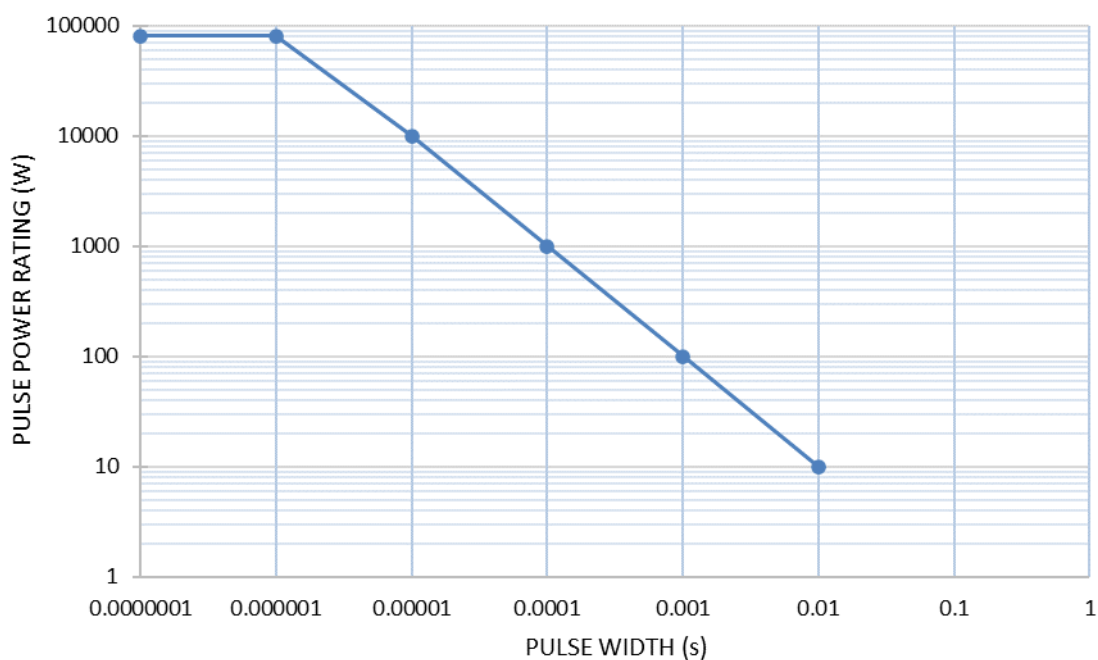


Single Pulse Power Capability

RC14



RC12

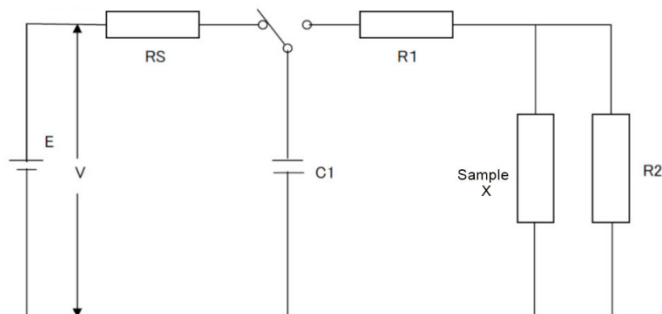


Continuous Pulse Circuit

100 Pulse Data

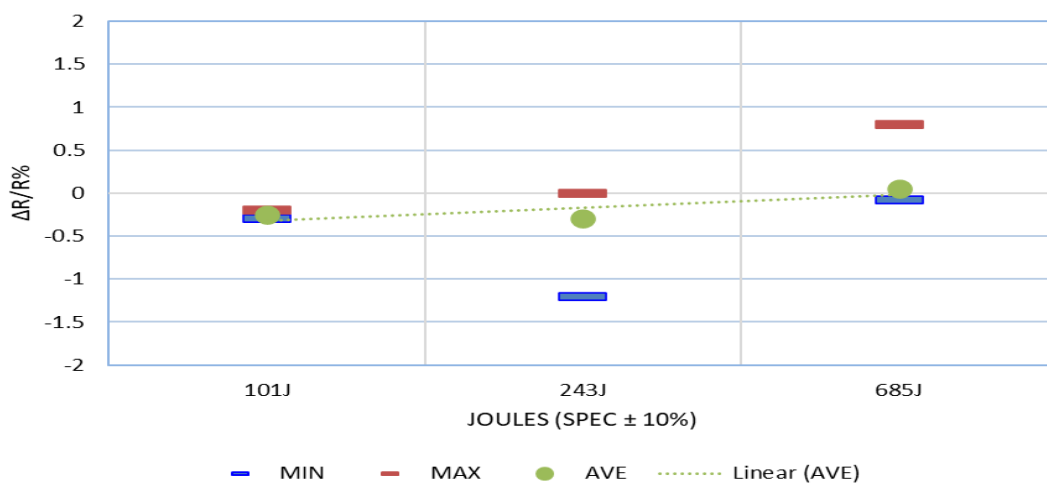
E: 10kV; C1: 1000pF; R1: 1K Ω ; R2: 4M Ω ; X: Sample; RS: 15M Ω ; 100 times pulse.

4

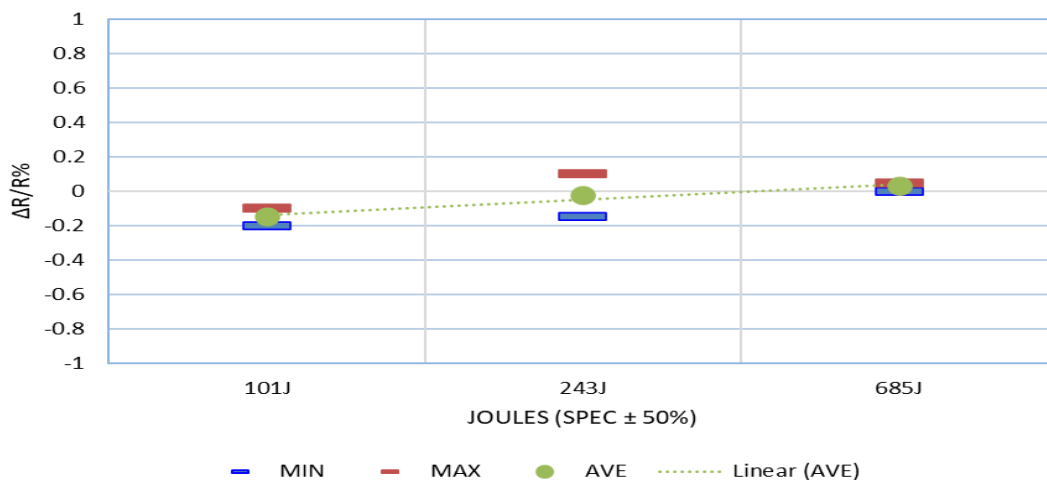


Continuous Pulse Capability

RC14

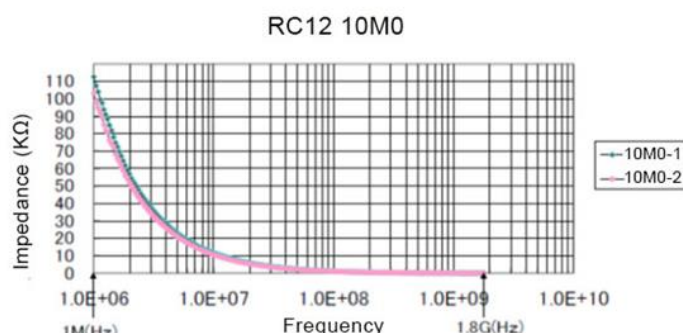
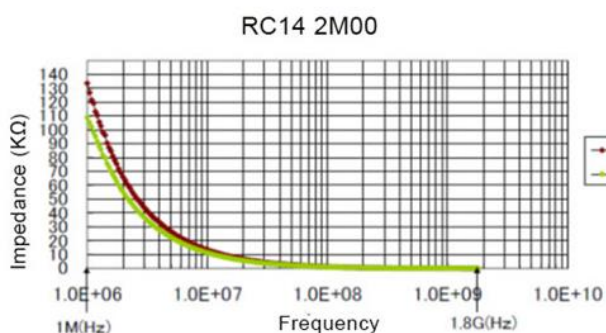
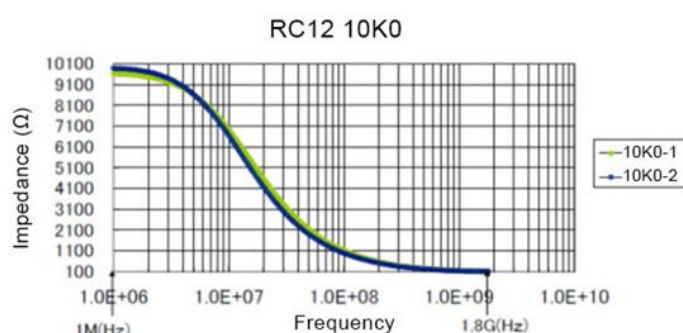
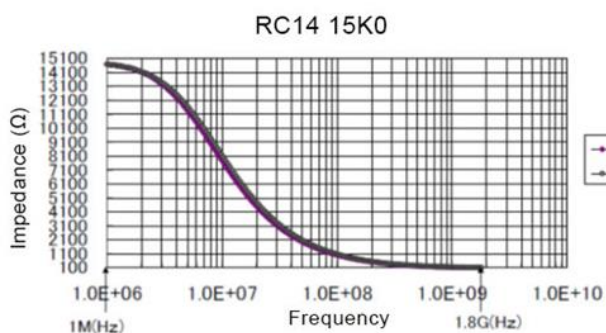
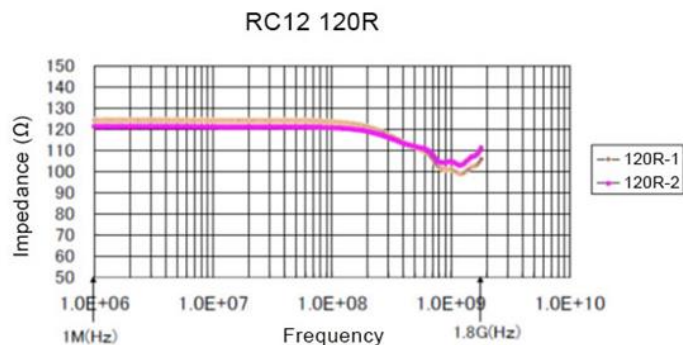
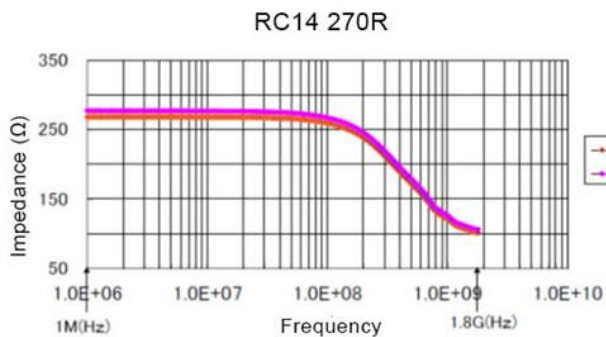


RC12



Impedance x Frequency

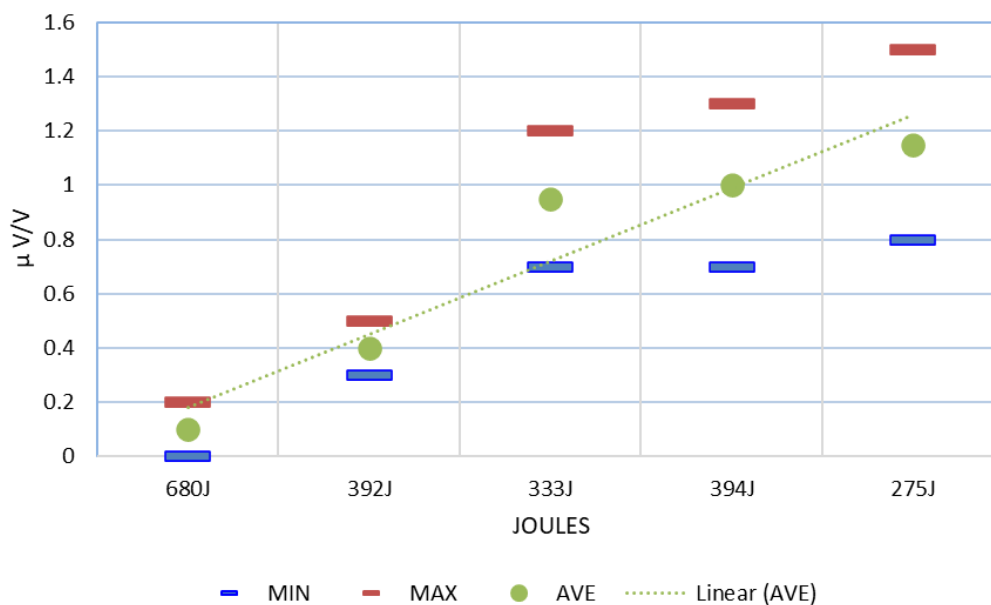
Equipment: HP4291A Impedance/Material Analyzer



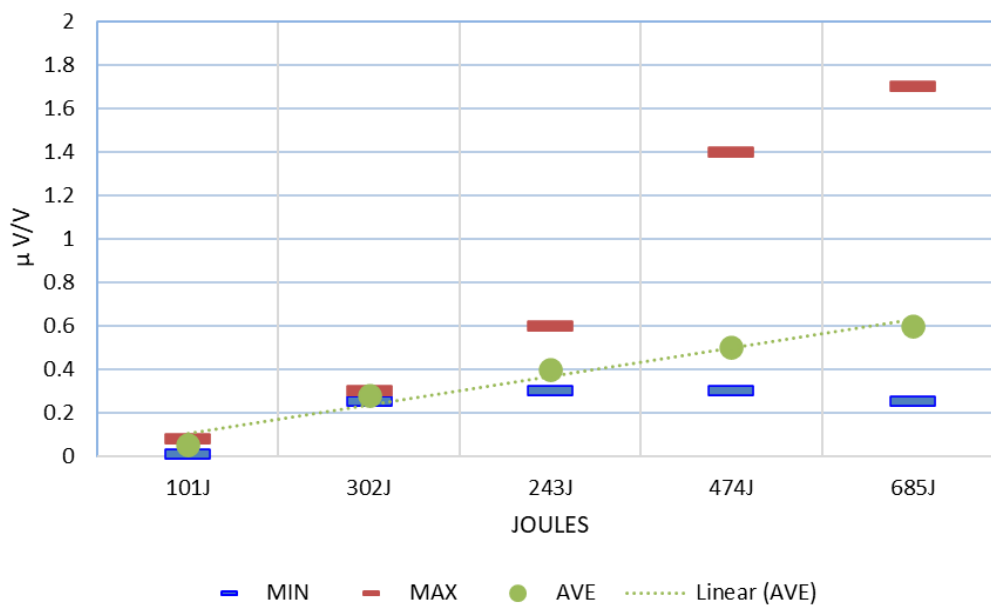
Current Noise

Current Noise Data (Q.T.L.)

RC14

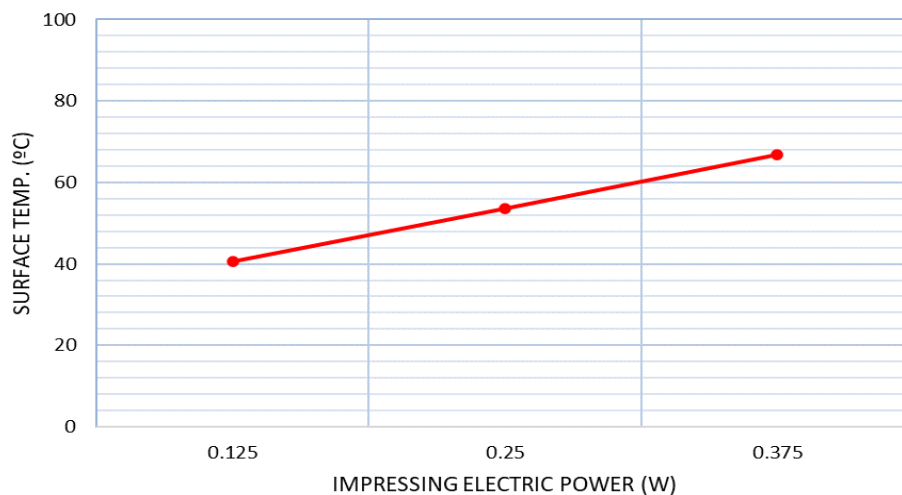


RC12



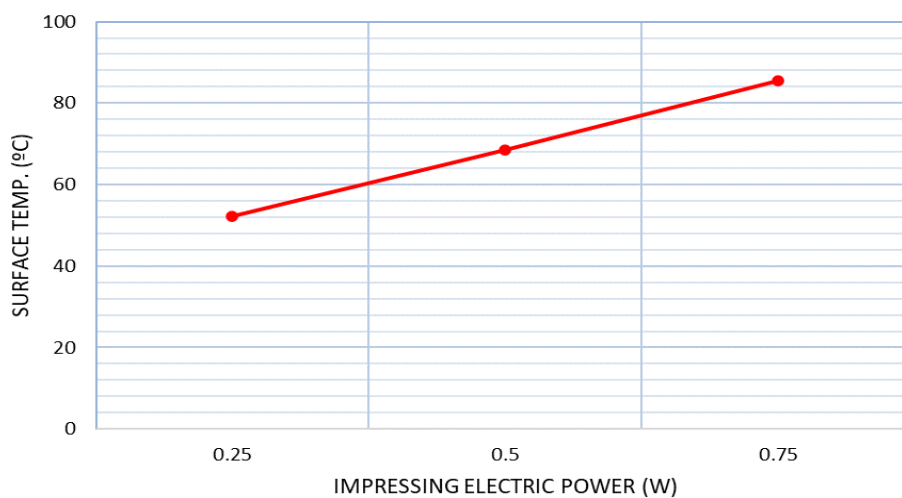
Characteristic Data

RC14



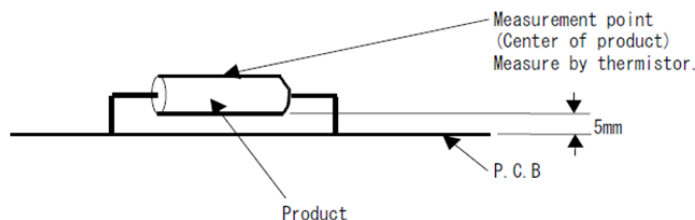
| Impressing Electric Power (W) | Surface Temperature (°C) |
|-------------------------------|--------------------------|
| 0.125 | 40.7 |
| 0.250 | 53.6 |
| 0.375 | 66.8 |

RC12



| Impressing Electric Power (W) | Surface Temperature (°C) |
|-------------------------------|--------------------------|
| 0.25 | 52.3 |
| 0.50 | 68.5 |
| 0.75 | 85.6 |

Measurement Condition:



Technical Guide:

1. Storage Conditions:

Temperature: 5 to 35°C (40 to 95°F).

Humidity: 25 – 60% relative humidity.

Term: One year in poly-bag with desiccant. If parts are removed from the poly-bag, they should be used immediately or resealed in the bag.

Environment: Clean, dry environment, free of corrosive gases.

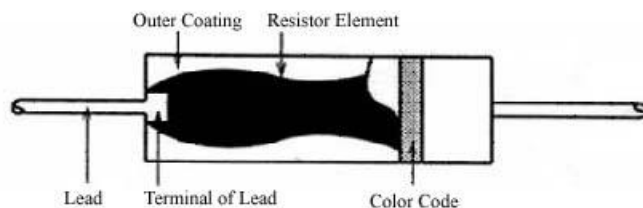
2. Application precautions:

Lead forming: Forming is recommended at least 2mm or farther from the base of the lead.

Soldering: Soldering is recommended at least 4mm or farther from the base of the lead.

3. Washing:

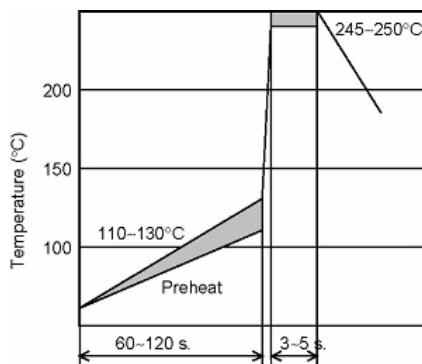
Carbon composition resistors are highly hygroscopic and changes in resistance value can occur if too much moisture is absorbed. For this reason, it is recommended not to use water or water-soluble solvents to clean these components. Alcohol or hydrocarbon solvents are recommended for rinsing.



4. Soldering Recommendations:

Note: The conditions shown below are for reference. Please perform a mounting evaluation to assure compatibility.

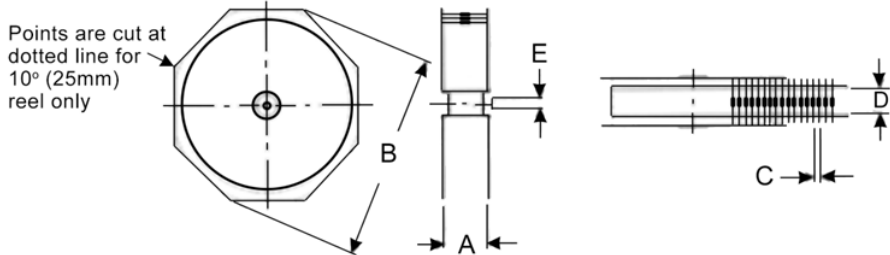
a. Flow soldering (recommended profile for Sn and Sn/Pb solders).



- b. Soldering iron (recommended for Sn and Sn/Pb solders):
 Temperature of soldering tip: 300°C, duration: 10 sec. max.
 Temperature of soldering tip: 350°C, duration: 3 sec. max.

Other:

1. Evaluate and confirm the compatibility of your assembly process with this product.
2. Refer to the catalog, the product news, and the specifications for details on the RC series resistors.
3. If you have any questions, please contact our sales staff.

| Packaging Specifications | | | | | | |
|--|----------------|------------------|-------------------------------|-------------------------------|---------------|--------------|
|  | | | | | | |
| Type / Code | A max | B max | C | D | Tape | Unit |
| RC14 | 2.787 70.80 | 13.504 343.00 | 0.394 ± 0.020 10.00 ± 0.50 | 2.063 ± 0.079 52.40 ± 2.00 | 0.250 6.35 | inches mm |
| RC12 | 2.756 70.00 | 13.504 343.00 | 0.394 ± 0.020 10.00 ± 0.50 | 2.063 ± 0.079 52.40 ± 2.00 | 0.250 6.35 | inches mm |

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) |
| RC | Carbon Composition Ledged Resistor | Axial | YES | 100% Matte Sn | Jan-86 | 86/01 |

"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.

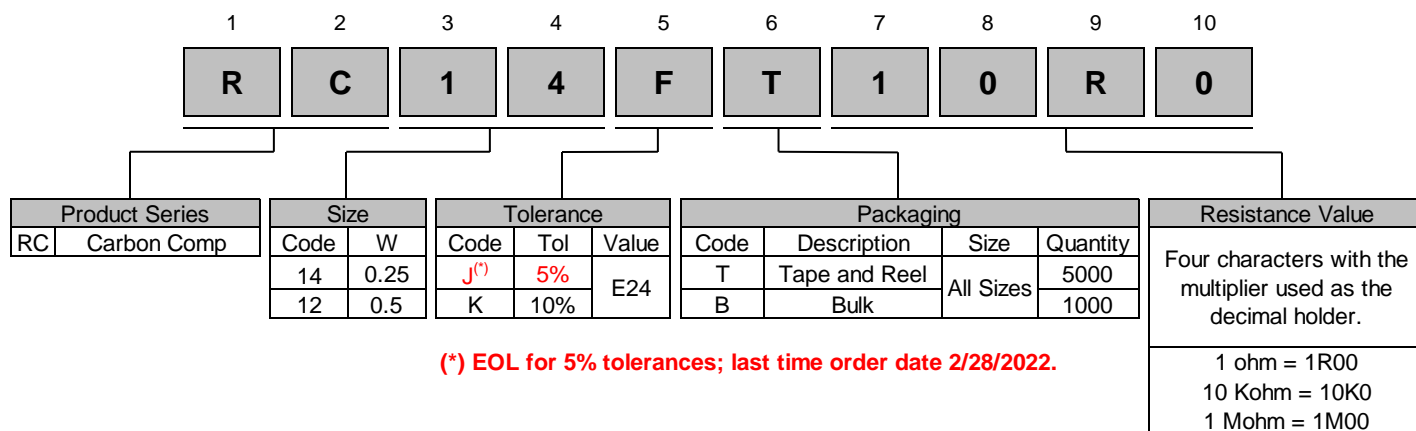
Compliance to "REACH"

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



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

SEI Stackpole:

| | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| RC14KT360R | RC12KB15M0 | RC12KB1R20 | RC12KB680R | RC12KT18R0 | RC12KT220R | RC12KT22R0 |
| RC12KT47R0 | RC12KT6K80 | RC12KT820K | RC14KB5R60 | RC14KT120K | RC14KT1M00 | RC14KT6R80 |
| RC12KB100R | RC12KB1K00 | RC12KB1M80 | RC12KB56R0 | RC12KT2R70 | RC12KT390K | RC12KT560R |
| RC12KT68K0 | RC12KT82K0 | RC14KB180R | RC14KB1K80 | RC14KB1R60 | RC14KB2M70 | RC14KB560K |
| RC14KB6K80 | RC14KT2K70 | RC14KT47K0 | RC12KB390R | RC12KB82R0 | RC12KT12R0 | RC12KT1M50 |
| RC12KT56R0 | RC14KB1R80 | RC14KB33K0 | RC14KB4M70 | RC14KB82K0 | RC12KB150R | RC12KB20M0 |
| RC12KB2R70 | RC12KB300R | RC12KT10R0 | RC12KT18K0 | RC12KT330K | RC12KT4M70 | RC12KT6R80 |
| RC14KB27R0 | RC14KB5K60 | RC14KB680K | RC14KT1M80 | RC14KT33K0 | RC14KT4M70 | RC14KT4R70 |
| RC14KT82R0 | RC12KB15K0 | RC12KB200K | RC12KB3R30 | RC12KB5R60 | RC12KT10M0 | RC12KT18M0 |
| RC12KT1K20 | RC12KT22M0 | RC12KT330R | RC12KT47K0 | RC14KB1R10 | RC14KB3M30 | RC14KT1M50 |
| RC14KT8K20 | RC12KB2K70 | RC12KB330K | RC12KB47R0 | RC12KB8M20 | RC12KT11R0 | RC12KT180R |
| RC12KT27R0 | RC14KB120K | RC14KB15R0 | RC14KB1M20 | RC14KB1R30 | RC14KB390R | RC14KB3R30 |
| RC14KT150R | RC14KT1K20 | RC14KT390K | RC14KT5K60 | RC12KB18K0 | RC12KB22R0 | RC12KB3M30 |
| RC12KB560R | RC12KB6M80 | RC12KT1K80 | RC12KT33K0 | RC12KT5R60 | RC14KB2R20 | RC14KT1R00 |
| RC14KT2M70 | RC12KB10K0 | | | | | |