

# ALUMINUM HOUSED RESISTORS

## 600 SERIES



# RESISTOR

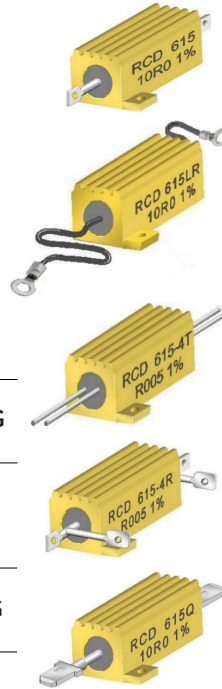
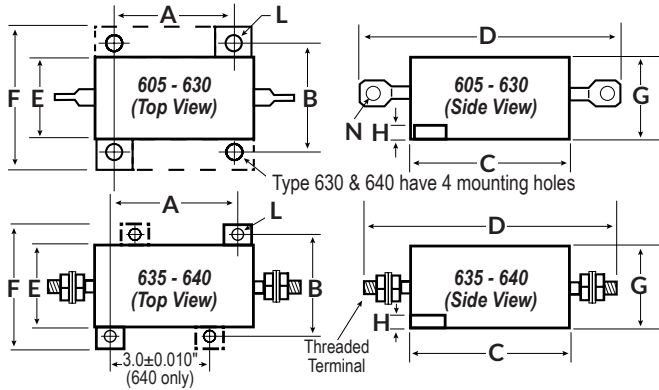


### FEATURES

- ▶ Widest selection in the industry! 0.005Ω - 1MΩ, tolerance to 0.01%, TC to 5ppm
- ▶ High power and high pulse capacity in compact size
- ▶ Welded wirewound construction, low noise

### OPTIONS

- ▶ **Opt. X:** Non-inductive
- ▶ **Opt. P:** Increased Pulse Capability
- ▶ **Opt. ER:** 100-Hour Burn-In per MIL-PRF-39009
- ▶ **Opt. B:** Increased Power
- ▶ **Opt. E:** Low Thermal EMF
- ▶ **Other:** Custom Marking, Increased Dielectric/Creepage & Working Voltage, etc.



Standard units feature lug terminals (605 - 630) or threaded terminals (635 & 640).

**Opt. L** (605-625): Insulated stranded wires embedded into the case. Black TFE 18AWG x 12"L with 1/4" strip is standard (16AWG TFE & 14AWG PVC available). Also available with 4 insulated lead wires (**Opt. 4L**), and with a wide variety of terminals.

#### TERMINAL OPTIONS

- ▶ **Opt. LM:** Quick-Connect Male 0.25x0.032"
- ▶ **Opt. LF:** Female 0.25x0.032"
- ▶ **Opt. LFS:** Female 0.187x0.020"
- ▶ **Opt. LR:** Ring Terminal 0.145" I.D.
- ▶ **Opt. LRR:** Ring Terminal 0.25" I.D.

**Opt. 2T & Opt. 4T** (605-625): Straight leadwires. Each have 18AWG x 1" MIN lead length. 16AWG x 1" and 12AWG x 0.50" also available.

#### OPTIONS

- ▶ **Opt. 2T:** 2-terminal design
- ▶ **Opt. 4T:** 4-terminal design (12AWG not available)

#### OPTIONS

- ▶ **Opt. 4R** (605-630): 4-terminal design. 16AWG lug terminals are welded to standard terminals.

#### OPTIONS

- ▶ **Opt. Q** (605-630): 0.187x0.020" male quick-connect terminal
- ▶ **Opt. Q2** (610-625): 0.250x0.032" male terminal

Note: Add 0.90±0.125" to Dim D.

| RCD TYPE | MIL TYPE <sup>1</sup> | WATTAGE, MOUNTED (W) |        |     | RESIS. RANGE   | VOLTAGE RATING <sup>2</sup> | DIMENSIONS In [mm]    |                      |                 |                       |                  |                  |                      |                      |                      |                    |              |
|----------|-----------------------|----------------------|--------|-----|----------------|-----------------------------|-----------------------|----------------------|-----------------|-----------------------|------------------|------------------|----------------------|----------------------|----------------------|--------------------|--------------|
|          |                       | STD                  | OPT. B | MIL |                |                             | A ±0.005              | B ±0.005             | C ±0.062        | D ±0.062              | E ±0.031         | F ±0.031         | G ±0.031             | H ±0.010             | L ±0.005             | N ±0.005           | MTG SCREW    |
| 605      | RE60<br>RER60         | 7.5                  | 15     | 5   | 0.005Ω - 20KΩ  | 210                         | 0.444<br>[11.3]       | 0.490<br>[12.5]      | 0.600<br>[15.2] | 1.125<br>[28.6]       | 0.334<br>[8.5]   | 0.646<br>[16.4]  | 0.320<br>[8.2]       | 0.065<br>[1.6]       | 0.093<br>[2.4]       | 0.050<br>[1.3]     | #2<br>[M2]   |
| 610      | RE65<br>RER65         | 12.5                 | 20     | 10  | 0.005Ω - 100KΩ | 320                         | 0.562<br>[14.3]       | 0.625<br>[15.9]      | 0.750<br>[19.0] | 1.375<br>[35.0]       | 0.420<br>[10.8]  | 0.800<br>[20.3]  | 0.405<br>[10.3]      | 0.075<br>[1.9]       | 0.093<br>[2.4]       | 0.086<br>[2.2]     | #2<br>[M2]   |
| 615      | RE70<br>RER70         | 25                   | 35     | 20  | 0.005Ω - 200KΩ | 550                         | 0.719<br>[18.3]       | 0.781<br>[19.8]      | 1.062<br>[27.0] | 1.938<br>[49.3]       | 0.531<br>[13.5]  | 1.080<br>[27.4]  | 0.546<br>[13.9]      | 0.088<br>[2.2]       | 0.125<br>[3.2]       | 0.086<br>[2.2]     | #4<br>[M2.5] |
| 620      | RE75<br>RER75         | 50                   | 60     | 30  | 0.005Ω - 400KΩ | 1250                        | 1.563<br>[39.7]       | 0.844<br>[21.5]      | 1.968<br>[50.0] | 2.781<br>[70.6]       | 0.609<br>[15.6]  | 1.140<br>[28.8]  | 0.610<br>[15.5]      | 0.088<br>[2.2]       | 0.125<br>[3.2]       | 0.086<br>[2.2]     | #4<br>[M2.5] |
| 625      | -                     | 75                   | 85     | -   | 0.010Ω - 500KΩ | 1900                        | 1.563<br>[39.7]       | 0.844<br>[21.5]      | 2.850<br>[72.4] | 3.663<br>[93.0]       | 0.609<br>[15.6]  | 1.140<br>[28.8]  | 0.610<br>[15.5]      | 0.088<br>[2.2]       | 0.125<br>[3.2]       | 0.086<br>[2.2]     | #4<br>[M2.5] |
| 630      | -                     | 100                  | -      | -   | 0.10Ω - 100KΩ  | 1900                        | 1.377±0.01<br>[35.0]  | 1.457±0.01<br>[37.0] | 2.579<br>[65.5] | 3.38±0.09<br>[85.9]   | 1.053<br>[26.7]  | 1.839<br>[46.7]  | 0.960±0.05<br>[24.4] | 0.138±0.03<br>[3.5]  | 0.173±0.01<br>[4.4]  | 0.086<br>[2.2] MIN | #8<br>[M4]   |
| 635      | RE77                  | 100                  | 150    | 75  | 0.10Ω - 600KΩ  | 1900                        | 2.75±0.01<br>[69.85]  | 2.25±0.01<br>[57.15] | 3.50<br>[88.9]  | 5.48±0.09<br>[139.14] | 1.812<br>[46.0]  | 2.812<br>[71.42] | 1.75<br>[44.45]      | 0.188±0.03<br>[4.78] | 0.188±0.01<br>[4.78] | N/A                | #8<br>[M4]   |
| 640      | RE80                  | 250                  | 300    | 120 | 0.10Ω - 1MΩ    | 2300                        | 3.875±0.01<br>[98.42] | 2.50±0.01<br>[63.5]  | 4.50<br>[114.3] | 7.00±0.15<br>[177.8]  | 2.125<br>[53.98] | 3.00<br>[76.2]   | 2.188<br>[55.58]     | 0.250±0.03<br>[6.35] | 0.188±0.01<br>[4.78] | N/A                | #8<br>[M4]   |

<sup>1</sup> Military part numbers are for reference only and do not imply qualification. <sup>2</sup> Max voltage = (PR)<sup>1/2</sup>, not to exceed the value listed (increased ratings available). Multiply by 0.7 for **Opt. X**.

### TYPICAL PERFORMANCE

|   |  |  |  |
|---|--|--|--|
| Temperature Coefficient TYP<br>(Consult factory for TC on <b>Opt. P</b> ) | 0.0050Ω - 0.0099Ω                            | 600ppm (standard)<br>200ppm, 300ppm (Opt.)     |  |
|   | 0.010Ω - 0.049Ω                              | 300ppm (standard)<br>100ppm, 200ppm (Opt.)     |  |
|   | 0.050Ω - 0.099Ω                              | 200ppm (standard)<br>50ppm, 100ppm (Opt.)      |  |
|   | 0.10Ω - 0.99Ω                                | 90ppm (standard)<br>20ppm, 30ppm, 50ppm (Opt.) |  |
|   | 1.0Ω - 9.9Ω                                  | 50ppm (standard)<br>10ppm, 20ppm, 30ppm (Opt.) |  |
|   | 10Ω & above                                  | 20ppm (standard)<br>5ppm, 10ppm (Opt.)         |  |
| Inductance, <b>Opt. X</b> <sup>4</sup>                                    | ≤50Ω   | >50Ω   |  |
|   | 605  | 0.20μH MAX                                     | 0.37μH MAX                                       |
|   | 610, 615                                     | 0.30μH MAX                                     | 0.60μH MAX                                       |
|   | 620, 625                                     | 0.65μH MAX                                     | 1.2μH MAX  |
|   | 630, 635, 640                                | 1.50μH MAX                                     | 3.0μH MAX  |
| Dielectric Strength (DWV)   | 605, 610                                     | 1KV  | 2KV ( <b>Opt. 36</b> ), 2.5KV ( <b>Opt. 34</b> ) |
|   | 615, 620, 625                                | 2KV  | 2.5KV ( <b>Opt. 34</b> ), 3KV ( <b>Opt. 41</b> ) |
|   | 630, 635, 640                                | 2.5KV  | 3KV ( <b>Opt. 41</b> ), 4KV ( <b>Opt. 65</b> )   |
|   |  | Standard <sup>3</sup>                          | Optional   |
| Load Life (1,000 hrs)   | ±1% (±2% for 625-640 and ±3% <b>Opt. B</b> ) |  |  |
| Moisture Resistance   | ±0.50%                                       |  |  |
| Overload  | 5X rated W, 5 Sec (V not to exceed DWV)      |  |  |
| Terminal Strength   | 10-lb pull test                              |  |  |
| Operating Temperature   | -55°C to +250°C                              |  |  |

<sup>3</sup> The dielectric strength on **Opt. L** resistors is 50% of standard (available up to 3KV).

<sup>4</sup> For reduced inductance, specify **Opt. 75** for 50% of **Opt. X** inductance, and **Opt. 76** for 33% of **Opt. X**.

### DERATING

Power rating is based on the use of a suitable heat sink and thermal compound to limit case temperature to 200°C. Derate wattage 0.44%/°C above 25°C. Recommended aluminum chassis area is 64in<sup>2</sup> x 0.040" thick for type 605 and 610, 83in<sup>2</sup> x 0.040" thick for type 615, 144in<sup>2</sup> x 0.060" thick for type 620, and 144in<sup>2</sup> x 0.125" for types 625 through 640. Without a heat sink, derate wattage rating by 60%.

### PART NUMBER DERIVATION

