

# MINIATURE WIREWOUND RESISTORS

## 1 WATT to 10 WATT

# 200 SERIES



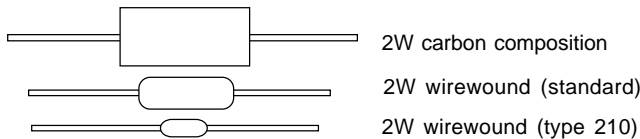
RESISTORS • CAPACITORS • COILS • DELAY LINES

- Significant space savings!
- Tolerance to  $\pm 0.01\%$ , TCR to 5ppm/°C
- Wide resistance range: 0.005Ω to 250K
- Available on exclusive **SWIFT™** delivery program
- All sizes available on Tape & Reel

### OPTIONS

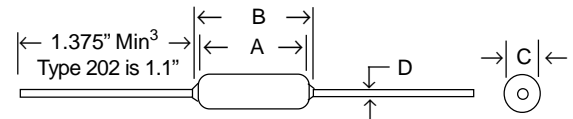
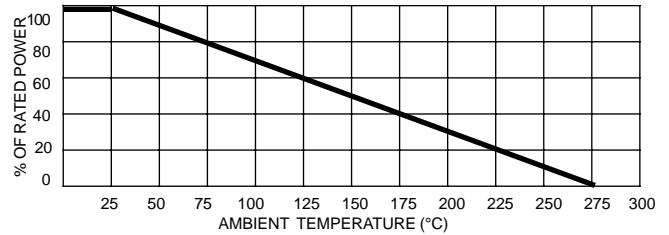
- Option X: Low Inductance
- Option P: Increased Pulse Capability
- Option F: Flameproof Coating
- Option ER: 100-Hour Burn-In
- Also available: low thermal emf (opt.E), matched sets, cut & formed leads, special marking, 4-terminal, hi-rel screening, hermetic seal, non-standard values, increased voltage, etc. Customized components are an RCD speciality!

### TYPICAL SIZE COMPARISON



**Typically half the size of conventional resistors! Type 202 is world's smallest wirewound resistor!** Series 200 resistors offer the same MIL-grade construction as Series 100 resistors except utilize proprietary materials and processing, enabling significant size reductions. Series 200 resistors are ideal when PCB real estate is at a premium! Highest grade materials enable excellent stability and environmental performance.

**DERATING:** Power resistors reach elevated temperatures when operated near full wattage, and therefore should be mounted off the PCB and derated according to required stability levels.



| RCD Type | Wattage Rating | Maximum Voltage <sup>1</sup> | Resistance Range | DIMENSIONS Inch [mm]        |                 |                           |                      |                          |
|----------|----------------|------------------------------|------------------|-----------------------------|-----------------|---------------------------|----------------------|--------------------------|
|          |                |                              |                  | A                           | B (Max)         | C <sup>2</sup>            | D (Nominal Diameter) |                          |
|          |                |                              |                  |                             |                 |                           | Standard             | Optional                 |
| 202      | 1.0W           | 30V                          | .01Ω to 2K       | .150 ±.032<br>[ 3.81 ± .8]  | .200<br>[5.08]  | .064 ±.02<br>[1.63 ± .5]  | .020<br>[0.5]        | N/A                      |
| 210      | 2.0W           | 40V                          | .01Ω to 10K      | .250 ±.040<br>[6.35 ± 1]    | .300<br>[7.62]  | .093 ±.025<br>[2.36 ± .6] | .020<br>[0.5]        | .024 (Opt."22")<br>[0.6] |
| 232      | 3.0W           | 60V                          | .005Ω to 20K     | .350 ±.040<br>[8.9 ± 1]     | .480<br>[12.2]  | .140 ±.032<br>[3.56 ± .8] | .031<br>[0.8]        | N/A                      |
| 235      | 5.0W           | 157V                         | .005Ω to 40K     | .500 ±.040<br>[ 12.7 ± 1]   | .595<br>[15.1]  | .188 ±.032<br>[4.78 ± .8] | .031<br>[0.8]        | .040 (Opt."18")<br>[1.0] |
| 255      | 7.0W           | 210V                         | .005Ω to 80K     | .625 ±.040<br>[15.9 ± 1]    | .765<br>[19.4]  | .232 ±.032<br>[5.89 ± .8] | .040<br>[1.0]        | N/A                      |
| 272      | 10W            | 600V                         | .005Ω to 250K    | 1.040 ±.048<br>[26.4 ± 1.2] | 1.125<br>[28.6] | .350 ±.032<br>[8.89 ± .8] | .040<br>[1.0]        | N/A                      |

<sup>1</sup> Volt rating determined by  $E = \sqrt{PR}$ , E not to exceed max. rating. Increased ratings available. Multiply by 0.7 for Opt. X

<sup>2</sup> Allow .032" additional for Option X and values below 1.0Ω

<sup>3</sup> Lead length applies to bulk packaged parts units, parts supplied on tape may be shorter (refer to taping specification)

### SPECIFICATIONS:

|                                                                 |                                                                                                                                                                                                                                                                                |       |       |                           |            |                      |           |                      |           |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---------------------------|------------|----------------------|-----------|----------------------|-----------|
| Temperature Coefficient typ. (Consult factory for TC on opt. P) | .005 - .0099Ω: 600ppm std (200, 300ppm opt.)<br>.01 - .049Ω: 300ppm std (100, 200ppm opt.)<br>.05 - .099Ω: 200ppm std (50, 100ppm opt.)<br>.1 - .99Ω: 90ppm std (10, 20, 30, 50ppm opt.)<br>1 - 9.9Ω: 50ppm std (10, 20, 30ppm opt.)<br>10Ω & above: 20ppm std (5, 10ppm opt.) |       |       |                           |            |                      |           |                      |           |
| Inductance, Standard                                            | 1 to 50μH typical, depends on size & resistance value. Specify Opt. X for non-inductive performance (see below).                                                                                                                                                               |       |       |                           |            |                      |           |                      |           |
| Inductance, Opt.X (levels as low as 20nH avail.)                | <table border="0"> <tr> <td>≤ 50Ω</td> <td>&gt; 50Ω</td> </tr> <tr> <td>Type 202X-235X: 0.2μH Max</td> <td>0.37μH Max</td> </tr> <tr> <td>Type 255X: 0.3μH Max</td> <td>0.6μH Max</td> </tr> <tr> <td>Type 272X: 0.6μH Max</td> <td>1.0μH Max</td> </tr> </table>              | ≤ 50Ω | > 50Ω | Type 202X-235X: 0.2μH Max | 0.37μH Max | Type 255X: 0.3μH Max | 0.6μH Max | Type 272X: 0.6μH Max | 1.0μH Max |
| ≤ 50Ω                                                           | > 50Ω                                                                                                                                                                                                                                                                          |       |       |                           |            |                      |           |                      |           |
| Type 202X-235X: 0.2μH Max                                       | 0.37μH Max                                                                                                                                                                                                                                                                     |       |       |                           |            |                      |           |                      |           |
| Type 255X: 0.3μH Max                                            | 0.6μH Max                                                                                                                                                                                                                                                                      |       |       |                           |            |                      |           |                      |           |
| Type 272X: 0.6μH Max                                            | 1.0μH Max                                                                                                                                                                                                                                                                      |       |       |                           |            |                      |           |                      |           |
| Dielectric Strength                                             | 500V (300V Type 202), 1KV available (Opt. 33)                                                                                                                                                                                                                                  |       |       |                           |            |                      |           |                      |           |
| Overload, 5 Sec.                                                | 5X rated W 202-235, 10X rated W 255-272                                                                                                                                                                                                                                        |       |       |                           |            |                      |           |                      |           |

### P/N DESIGNATION:

**210** - **1001** - **F** **B** **W**

**RCD Type** \_\_\_\_\_

**Options:** X, P, F, ER, E, 22, 18 (leave blank if standard)

**Resis. Code:** ≤1%: 3 signif. figures & multiplier, e.g. R100=0.1Ω, 1R00=1Ω, 1000=100Ω, 1001=1KΩ.  
**Resis. Code 2% - 10%:** 2 signif. figures & multiplier, e.g. R10=0.1Ω, 1R0=1Ω, 100=10Ω, 101=100Ω, 102=1KΩ.  
 Use extra digits as needed: e.g. R005, R0075, R012

**Tolerance:** K=10%, J=5%, H=3%, F=1%, D=0.5%, C=0.25%, B=0.1%, A=0.05%, Q=0.02%, T=0.01%

**Packaging:** B = Bulk, T = T&R

**Optional TC:** 5= 5ppm, 10= 10ppm, etc., if 100ppm & above use 3-digit code: 101 = 100ppm, 201= 200ppm, etc. (leave blank if standard)

**Termination:** W= Lead-free, Q= Tin/Lead (leave blank if either is acceptable, in which case RCD will select based on lowest price and quickest delivery)