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DIRECT

Electronics Tech.

(DOE)

Oval Edge-Wound High Power Resistor

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▶ Product Introduction

High current oval edge wire wound resistor (DOE) is the best choice when conditions demand top-notch performance.

Features :

- Power rating from 525W to 1750W
- Resistance nominal tolerance $\pm 10\%$ (K)
- Resistance value range 0.0426Ω to 6.13Ω ,
- suitable for high current applications

Applications :

- Power Industrial Machinery Resistors.
- Dynamic Braking Resistors, Load Banks, Motor Starting Resistor.
- Plugging Resistor, Power Load Measurements, Electric Distribution Resistors.
- Instrumentation, Automation Control Installations.

Direct DOE Series are commonly used as a dynamic braking resistor on Transit applications. Built to perform in rugged environments, they feature corrosion resistant stainless steel insulator supports, solid nickel terminals, and special electroless nickel-plated solid copper terminal supports.

The resistance element is made of a stainless steel resistance alloy. Terminals are welded or silver brazed to the oval, spiral edge-wound resistance element. Toothed ceramic insulators isolate the resistance element from the center support. Ceramic end bushings insulate the center support from the mountings.

Order individual replacement units or entire grids with various mounting configurations. Contact us with your specific needs, or you can link to Direct official website "[High Power Resistors](#)" to get more information.

Options:

- Terminal blocks, thermal switches, conduit knockouts, fusing, fans, and other customer specified requirements are available on request.



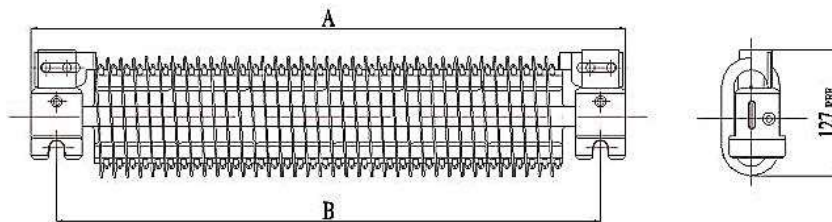
► Dimensions

Oval Edge-Wound Dimensions (DOE 525W - 1750W)

| Power Rating | A | | | B | | |
|--------------|-------|---------|---------------------------------|-------|---------|---------------------------------|
| | mm | inch | | mm | inch | |
| 525W | 295.3 | 11.375 | 11 ⁵ / ₈ | 244.5 | 9.625 | 9 ⁵ / ₈ |
| 850W | 385.7 | 15.1875 | 15 ³ / ₁₆ | 334.9 | 13.1875 | 13 ³ / ₁₆ |
| 1200W | 469.9 | 18.5 | 18 ¹ / ₂ | 419.1 | 16.5 | 16 ¹ / ₂ |
| 1450W | 555.6 | 21.875 | 21 ⁷ / ₈ | 504.8 | 19.875 | 19 ⁷ / ₈ |
| 1750W | 638.2 | 25.125 | 25 ¹ / ₈ | 587.4 | 23.125 | 23 ¹ / ₈ |



High Current Oval Edge-Wound (DOE)



High Current Oval Edge-Wound (DOE) Dimensions

► **Electrical Characteristics**

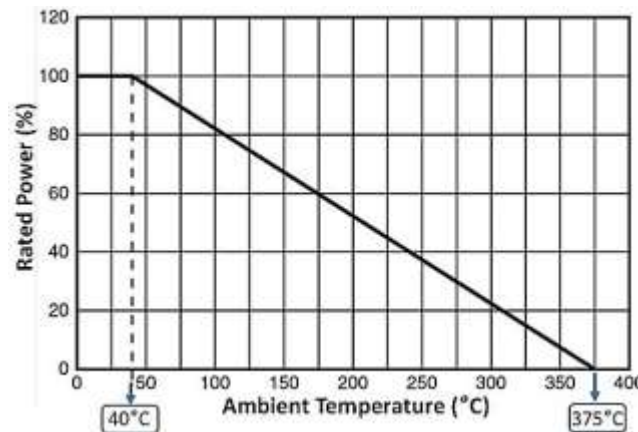
Electrical Characteristics (DOE)

| Test Item | Specification | Test Methods |
|--|---|--|
| Ambient Temperatures | Ambient Temperature: -55°C ~350°C. Derated current rating: 95% for 50°C ambient, 90% for 75°C ambient, 85% for 100°C ambient, 10% for 350°C ambient. | Standard ratings are based on maximum ambient temperatures of 40°C. |
| Continuous current ratings and temperatures Rise | 375°C Max. | The rating of continuous current is based on a 375°C temperature rise at ambient temperatures of 40°C. |
| Resistance tolerance | Resistance Nominal Tolerance ±10 % (K) for all units; as low as ±3% if required. | JIS-C-5202 5-1 |
| Thermal Shock | $\Delta \leq \pm(2\%R + 0.1\Omega)$ | JIS-C-5202 7.3, Room temp 30 minutes, -55°C 15 minutes. |
| Terminal strength | $\Delta \leq \pm(2\%R + 0.1\Omega)$ | JIS-C-5202 6.1, 45N, 30S |
| Short-term Overload | $\Delta \leq \pm(2\%R + 0.1\Omega)$ | JIS-C-5202 5.5, 10PR, 5S. |

- Resistance and resistance tolerance were tested in-house at room temperature (25°C) with micro resistance meter.
- Ambient Temperature: refers to the temperature inside the subject and around the specimen, not to the air-temperature outside the subject.

► **Derating Curve**

Oval Edge-Wound Derating Curve (DOE)



High Current Oval Edge-Wound (DOE) Derating Curve

Nominal Current

Nominal Current & Resistance Oval Edge-Wound Resistor (DOE)

| 525W | | 850W | | 1200W | | 1450W | | 1750W | |
|------|--------|------|--------|-------|--------|-------|-------|-------|-------|
| Amps | Ohms | Amps | Ohms | Amps | Ohms | Amps | Ohms | Amps | Ohms |
| - | - | - | - | 146 | 0.055 | - | - | 146 | 0.082 |
| - | - | - | - | 135 | 0.0677 | - | - | - | - |
| - | - | - | - | 124 | 0.080 | - | - | - | - |
| - | - | - | - | 116 | 0.0915 | - | - | 116 | 0.142 |
| 113 | 0.0426 | 113 | 0.071 | 113 | 0.092 | 113 | 0.121 | 113 | 0.142 |
| 103 | 0.0497 | 103 | 0.0781 | 103 | 0.107 | 103 | 0.140 | 103 | 0.163 |
| - | - | 100 | 0.080 | 100 | 0.122 | - | - | 100 | 0.185 |
| 94 | 0.0581 | 94 | 0.0913 | 94 | 0.125 | 94 | 0.158 | 94 | 0.191 |
| 86 | 0.0747 | 86 | 0.116 | 86 | 0.158 | 86 | 0.199 | 86 | 0.241 |
| 85 | 0.0671 | 85 | 0.116 | 85 | 0.159 | 85 | 0.201 | 85 | 0.244 |
| 80 | 0.0864 | 80 | 0.134 | 80 | 0.182 | 80 | 0.230 | 80 | 0.278 |
| 79 | 0.0781 | 79 | 0.135 | 79 | 0.185 | 79 | 0.234 | 79 | 0.284 |
| 74 | 0.0984 | 74 | 0.156 | 74 | 0.213 | 74 | 0.279 | 74 | 0.336 |
| 70 | 0.110 | 70 | 0.171 | 70 | 0.232 | 70 | 0.293 | 70 | 0.354 |
| 69 | 0.115 | 69 | 0.182 | 69 | 0.249 | 69 | 0.326 | 69 | 0.394 |
| 65 | 0.128 | 65 | 0.199 | 65 | 0.270 | 65 | 0.341 | 65 | 0.412 |
| 62 | 0.146 | 62 | 0.220 | 62 | 0.305 | 62 | 0.390 | 62 | 0.463 |
| 61 | 0.148 | 61 | 0.230 | 61 | 0.312 | 61 | 0.394 | 61 | 0.476 |
| 56 | 0.170 | 56 | 0.270 | 56 | 0.369 | 56 | 0.483 | 56 | 0.568 |
| - | - | 54 | 0.269 | 54 | 0.378 | - | - | 54 | 0.573 |
| 51 | 0.213 | 51 | 0.327 | 51 | 0.440 | 51 | 0.554 | 51 | 0.667 |
| 47 | 0.249 | 47 | 0.382 | 47 | 0.514 | 47 | 0.647 | 47 | 0.780 |
| 43 | 0.299 | 43 | 0.465 | 43 | 0.631 | 43 | 0.796 | 43 | 0.963 |
| 39 | 0.364 | 39 | 0.566 | 39 | 0.768 | 39 | 0.970 | 39 | 1.170 |
| 35 | 0.465 | 35 | 0.707 | 35 | 0.909 | 35 | 1.190 | 35 | 1.390 |
| 32 | 0.544 | 32 | 0.846 | 32 | 1.148 | 32 | 1.450 | 32 | 1.750 |
| 30 | 0.695 | 30 | 1.057 | 30 | 1.360 | 30 | 1.780 | 30 | 2.080 |
| 26 | 0.860 | 26 | 1.310 | 26 | 1.680 | 26 | 2.210 | 26 | 2.580 |
| 25 | 1.060 | 25 | 1.620 | 25 | 2.080 | 25 | 2.730 | 25 | 3.190 |
| 22 | 1.200 | 22 | 1.830 | 22 | 2.450 | 22 | 3.070 | 22 | 3.700 |
| 18 | 2.040 | 18 | 3.110 | 18 | 3.990 | 18 | 5.240 | 18 | 6.130 |

- Call or e-mail for information on mounting, grid configurations, unusual service conditions, or special requests.
- The rating of continuous current (Amps) is based on a 375°C temperature rise.
- Power: varies. •Tolerance: ± 10 %.

▶ Order Codes**Order Codes (DOE)**

| DOE | 1750W | 1R2 | | K | | F |
|-------------|-----------------|------------------|-------|--------------------------|------|-----------|
| Part Number | Rated Power (W) | Resistance Value | | Resistance Tolerance (%) | | Lead Free |
| DOE | 525W~1750W | 1R2 | 1.2Ω | K | ±10% | |
| | | R23 | 0.23Ω | | | |

► General Information

Benefits & Features

Providing design engineers with an economical resistor with high quality performance, Direct Electronics offers industry grade power wire wound devices.

Direct provide terminal blocks, thermal switches, fusing, fans, junction boxes, screened or solid bottom plates, conduit knockouts, and customer specified requirements. For large applications a welded frame construction is utilized to provide a robust design for power resistor mounting in both indoor and outdoor environments.

Products range from large capacity metal clad, nonflammable fixed and adjustable, wave ribbon wire-wound, slide, starter, box type, to nonflammable flat type. Direct extends a complete line for both military and commercial applications.

Utilization Notes

1. Smoke emitted from non-flammable resistors on initial use in powered circuits is a normal phenomenon and the component can be safely utilized.
2. All resistors manufactured by Direct Electronics Industry Corporation comply with the U.S. UL-94 non- flammability test, Class V-0, a continuous combustion period of zero seconds.
3. Never use organic solvents to clean non-flammable resistors.
4. Non-flammable resistors cannot be utilized in oil.
5. Non-flammable resistors cannot be used in high frequency machinery because of the inductance produced by the windings. A suitable type of resistor must be selected. Contact us for details.
6. In applications where resistors are subject to intermittent current surges and spikes, be sure in advance that the components selected are capable of withstanding brief durations of increased load.
7. Do not exceed the recommended usable load. Resistors must use within the rated voltage range to prevent the shortening of service life and/or failure of the wound resistance elements.
8. Minimum load. Resistors must be utilized at 1/10 or more of the rated voltage to prevent poor conductance due to oxidation build-up.
9. Although the hardness exceeds that of a 3H pencil lead, do not nick the resistor coating with screw drivers or other pointed objects.
10. Avoid touching non-flammable resistors in operation; the surface temperature ranges from approximately 350°C ~ 400°C when utilized at the full rated value. Maintaining a surface temperature of 200°C or less will extend resistor service life.
11. Keep temperature from rising by choosing a resistor with a higher rated capacity; do not use a component having the exact load value required. For considerations of safety in extended period applications, the resistor rating should be more than four times higher than the actual wattage involved, but never use a resistor at less than 25% of its rated power.
12. Application and Placement: Wire-wound resistors use different gauges of wire as resistance elements. Sometimes the gauge is extremely thin (finer than a strand of human hair) and very susceptible to breakage in environments containing salts, ash, dust and corrosives. Avoid utilization in such environments. Do not install in dusty areas because the accumulation will cause shorts and poor conductance.

