

90 Series



Lead Free Vitreous Enamel Molded Axial Term. Wirewound, 5% Tolerance Standard



When you need the highest quality wirewound axial terminal resistors available, choose Ohmite's 90 Series resistors.

They are manufactured by a unique process that molds the vitreous enamel over the resistive element, helping to ensure consistent dimensions. This uniformity permits 90 Series resistors to be mounted in clips, creating a heat-sinking benefit (see next page).

The durable vitreous enamel coating, which is totally lead free, permits the 90 Series resistors to maintain a hard coating while operating at high temperatures. Mechanical integrity is enhanced by the all-welded construction.

FEATURES

- Molded Construction provides consistent shape and size (Permits mounting in clips which extends power rating).
- Meets MIL-R-26 requirements for insulated resistors.
- All-welded construction.
- Flame resistant lead free vitreous enamel coating.
- Higher ratings in smaller sizes.
- Heat sink mounting clips available.
- RoHS compliant; add "E" suffix to part number to specify.

SERIES SPECIFICATIONS

| Series | Wattage* | Ohms | Voltage |
|--------|----------|------------|---------|
| 91 | 1.5 | 0.1Ω-3.6K | 150 |
| 92 | 2.25 | 0.1Ω-3.5K | 85 |
| 93 | 3.25 | 0.1Ω-10.5K | 200 |
| 95 | 5.0 | 0.1Ω-25K | 495 |
| 96 | 6.5 | 0.1Ω-50K | 625 |
| 90 | 11.0 | 0.1Ω-91K | 1080 |

* 2x power ratings by using heat-sink mounting clips shown on following page.

Note: Due to space restrictions, parts are stamped with wattage ratings reduced to the nearest whole number. The actual wattage ratings are as published in this catalog.

CHARACTERISTICS

| | |
|--|---|
| Coating | Molded lead free vitreous enamel |
| Core | Ceramic |
| Terminals | Solder-coated copper clad axial. RoHS solder composition is 96% Sn, 3.5% Ag, 0.5% Cu |
| Derating | Linearly from 100% @ +25°C to 0% @ +350°C |
| Tolerance | ±5% (other tolerances available) |
| Power rating | Based on 25°C free air rating (other wattages available*) |
| Maximum ohmic values | See chart |
| Overload | Under 11 watts: 5 times rated wattage for 5 seconds. 11 watts: 10 times rated wattage for 5 seconds |
| Temperature coefficient | 1 to 9.99Ω: ±100 ppm/°C; 10Ω and over: ±30 ppm/°C |
| Dielectric withstanding voltage | 500 VAC: 1W rating; 1000 VAC: 2, 3, 5 and 11W |

DIMENSIONS

(in./mm max.)



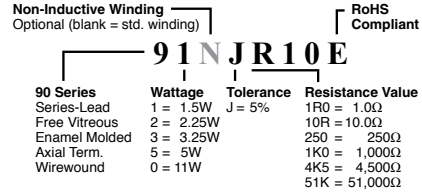
| Series | Wattage | Length | Diameter | Lead gauge |
|--------|---------|--------------|-------------|------------|
| 91 | 1.5 | 0.452 / 11.5 | 0.140 / 3.6 | 24 |
| 92 | 2.25 | 0.405 / 10.3 | 0.219 / 5.6 | 20 |
| 93 | 3.25 | 0.577 / 14.7 | 0.234 / 5.9 | 20 |
| 95 | 5.0 | 0.968 / 24.6 | 0.265 / 6.7 | 20 |
| 96 | 6.5 | 0.952 / 24.2 | 0.343 / 8.7 | 20 |
| 90 | 11.0 | 1.811 / 46.0 | 0.343 / 8.7 | 20 |

(continued)

90 Series

ORDERING INFORMATION

Lead Free Vitreous Enamel Molded Axial Term. Wirewound, 5% Tolerance Standard



Standard part numbers for 90 series

| Wattage | | | | | | Wattage | | | | | | Wattage | | | | | | Wattage | | | | | | Wattage | | | | | | |
|-------------|------------------------|-----|------|------|---|---------|-------------|------------------------|-----|------|------|---------|----|-------------|------------------------|-----|------|---------|---|----|-------------|------------------------|------|---------|----|-------------|------------------------|---|----|--|
| Ohmic value | Part No. Prefix Suffix | 1.5 | 2.25 | 3.25 | 5 | 11 | Ohmic value | Part No. Prefix Suffix | 1.5 | 2.25 | 3.25 | 5 | 11 | Ohmic value | Part No. Prefix Suffix | 1.5 | 2.25 | 3.25 | 5 | 11 | Ohmic value | Part No. Prefix Suffix | 3.25 | 5 | 11 | Ohmic value | Part No. Prefix Suffix | 5 | 11 | |
| 1 | —1R0 | ✓ | ✓ | ✓ | ✓ | ✓ | 22 | —22R | ✓ | ✓ | ✓ | ✓ | ✓ | 350 | —350 | ✓ | ✓ | ✓ | ✓ | ✓ | 3,500 | —3K5 | ✓ | ✓ | ✓ | 13,000 | —13K | ✓ | ✓ | |
| 1.1 | —1R1 | ✓ | ✓ | ✓ | ✓ | ✓ | 24 | —24R | ✓ | ✓ | ✓ | ✓ | ✓ | 360 | —360 | ✓ | ✓ | ✓ | ✓ | ✓ | 3,600 | —3K6 | ✓ | ✓ | ✓ | 14,000 | —14K | ✓ | ✓ | |
| 1.2 | —1R2 | ✓ | ✓ | ✓ | ✓ | ✓ | 25 | —25R | ✓ | ✓ | ✓ | ✓ | ✓ | 390 | —390 | ✓ | ✓ | ✓ | ✓ | ✓ | 3,900 | —3K9 | ✓ | ✓ | ✓ | 15,000 | —15K | ✓ | ✓ | |
| 1.3 | —1R3 | ✓ | ✓ | ✓ | ✓ | ✓ | 27 | —27R | ✓ | ✓ | ✓ | ✓ | ✓ | 400 | —400 | ✓ | ✓ | ✓ | ✓ | ✓ | 4,000 | —4K0 | ✓ | ✓ | ✓ | 16,000 | —16K | ✓ | ✓ | |
| 1.5 | —1R5 | ✓ | ✓ | ✓ | ✓ | ✓ | 30 | —30R | ✓ | ✓ | ✓ | ✓ | ✓ | 430 | —430 | ✓ | ✓ | ✓ | ✓ | ✓ | 4,300 | —4K3 | ✓ | ✓ | ✓ | 17,000 | —17K | ✓ | ✓ | |
| 1.6 | —1R6 | ✓ | ✓ | ✓ | ✓ | ✓ | 33 | —33R | ✓ | ✓ | ✓ | ✓ | ✓ | 450 | —450 | ✓ | ✓ | ✓ | ✓ | ✓ | 4,500 | —4K5 | ✓ | ✓ | ✓ | 18,000 | —18K | ✓ | ✓ | |
| 1.8 | —1R8 | ✓ | ✓ | ✓ | ✓ | ✓ | 35 | —35R | ✓ | ✓ | ✓ | ✓ | ✓ | 470 | —470 | ✓ | ✓ | ✓ | ✓ | ✓ | 4,700 | —4K7 | ✓ | ✓ | ✓ | 20,000 | —20K | ✓ | ✓ | |
| 2 | —2R0 | ✓ | ✓ | ✓ | ✓ | ✓ | 36 | —36R | ✓ | ✓ | ✓ | ✓ | ✓ | 500 | —500 | ✓ | ✓ | ✓ | ✓ | ✓ | 5,000 | —5K0 | ✓ | ✓ | ✓ | 22,000 | —22K | ✓ | ✓ | |
| 2.2 | —2R2 | ✓ | ✓ | ✓ | ✓ | ✓ | 39 | —39R | ✓ | ✓ | ✓ | ✓ | ✓ | 510 | —510 | ✓ | ✓ | ✓ | ✓ | ✓ | 5,100 | —5K1 | ✓ | ✓ | ✓ | 24,000 | —24K | ✓ | ✓ | |
| 2.4 | —2R4 | ✓ | ✓ | ✓ | ✓ | ✓ | 40 | —40R | ✓ | ✓ | ✓ | ✓ | ✓ | 560 | —560 | ✓ | ✓ | ✓ | ✓ | ✓ | 5,600 | —5K6 | ✓ | ✓ | ✓ | 25,000 | —25K | ✓ | ✓ | |
| 2.7 | —2R7 | ✓ | ✓ | ✓ | ✓ | ✓ | 43 | —43R | ✓ | ✓ | ✓ | ✓ | ✓ | 600 | —600 | ✓ | ✓ | ✓ | ✓ | ✓ | 6,000 | —6K0 | ✓ | ✓ | ✓ | 27,000 | —27K | ✓ | ✓ | |
| 3 | —3R0 | ✓ | ✓ | ✓ | ✓ | ✓ | 47 | —47R | ✓ | ✓ | ✓ | ✓ | ✓ | 620 | —620 | ✓ | ✓ | ✓ | ✓ | ✓ | 6,200 | —6K2 | ✓ | ✓ | ✓ | 30,000 | —30K | ✓ | ✓ | |
| 3.3 | —3R3 | ✓ | ✓ | ✓ | ✓ | ✓ | 50 | —50R | ✓ | ✓ | ✓ | ✓ | ✓ | 680 | —680 | ✓ | ✓ | ✓ | ✓ | ✓ | 6,800 | —6K8 | ✓ | ✓ | ✓ | 33,000 | —33K | ✓ | ✓ | |
| 3.6 | —3R6 | ✓ | ✓ | ✓ | ✓ | ✓ | 51 | —51R | ✓ | ✓ | ✓ | ✓ | ✓ | 700 | —700 | ✓ | ✓ | ✓ | ✓ | ✓ | 7,000 | —7K0 | ✓ | ✓ | ✓ | 35,000 | —35K | ✓ | ✓ | |
| 3.9 | —3R9 | ✓ | ✓ | ✓ | ✓ | ✓ | 56 | —56R | ✓ | ✓ | ✓ | ✓ | ✓ | 750 | —750 | ✓ | ✓ | ✓ | ✓ | ✓ | 7,500 | —7K5 | ✓ | ✓ | ✓ | 36,000 | —36K | ✓ | ✓ | |
| 4 | —4R0 | ✓ | ✓ | ✓ | ✓ | ✓ | 62 | —62R | ✓ | ✓ | ✓ | ✓ | ✓ | 800 | —800 | ✓ | ✓ | ✓ | ✓ | ✓ | 8,000 | —8K0 | ✓ | ✓ | ✓ | 39,000 | —39K | ✓ | ✓ | |
| 4.3 | —4R3 | ✓ | ✓ | ✓ | ✓ | ✓ | 68 | —68R | ✓ | ✓ | ✓ | ✓ | ✓ | 820 | —820 | ✓ | ✓ | ✓ | ✓ | ✓ | 8,200 | —8K2 | ✓ | ✓ | ✓ | 40,000 | —40K | ✓ | ✓ | |
| 4.7 | —4R7 | ✓ | ✓ | ✓ | ✓ | ✓ | 75 | —75R | ✓ | ✓ | ✓ | ✓ | ✓ | 900 | —900 | ✓ | ✓ | ✓ | ✓ | ✓ | 9,000 | —9K0 | ✓ | ✓ | ✓ | 43,000 | —43K | ✓ | ✓ | |
| 5 | —5R0 | ✓ | ✓ | ✓ | ✓ | ✓ | 82 | —82R | ✓ | ✓ | ✓ | ✓ | ✓ | 910 | —910 | ✓ | ✓ | ✓ | ✓ | ✓ | 9,100 | —9K1 | ✓ | ✓ | ✓ | 45,000 | —45K | ✓ | ✓ | |
| 5.1 | —5R1 | ✓ | ✓ | ✓ | ✓ | ✓ | 91 | —91R | ✓ | ✓ | ✓ | ✓ | ✓ | 1,000 | —1K0 | ✓ | ✓ | ✓ | ✓ | ✓ | 10,000 | —10K | ✓ | ✓ | ✓ | 47,000 | —47K | ✓ | ✓ | |
| 5.6 | —5R6 | ✓ | ✓ | ✓ | ✓ | ✓ | 100 | —100 | ✓ | ✓ | ✓ | ✓ | ✓ | 1,100 | —1K1 | ✓ | ✓ | ✓ | ✓ | ✓ | 11,000 | —11K | ✓ | ✓ | ✓ | 50,000 | —50K | ✓ | ✓ | |
| 6.2 | —6R2 | ✓ | ✓ | ✓ | ✓ | ✓ | 110 | —110 | ✓ | ✓ | ✓ | ✓ | ✓ | 1,200 | —1K2 | ✓ | ✓ | ✓ | ✓ | ✓ | 12,000 | —12K | ✓ | ✓ | ✓ | 51,000 | —51K | ✓ | ✓ | |
| 6.8 | —6R8 | ✓ | ✓ | ✓ | ✓ | ✓ | 120 | —120 | ✓ | ✓ | ✓ | ✓ | ✓ | 1,300 | —1K3 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 7.5 | —7R5 | ✓ | ✓ | ✓ | ✓ | ✓ | 130 | —130 | ✓ | ✓ | ✓ | ✓ | ✓ | 1,400 | —1K4 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 8.2 | —8R2 | ✓ | ✓ | ✓ | ✓ | ✓ | 150 | —150 | ✓ | ✓ | ✓ | ✓ | ✓ | 1,500 | —1K5 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 9.1 | —9R1 | ✓ | ✓ | ✓ | ✓ | ✓ | 160 | —160 | ✓ | ✓ | ✓ | ✓ | ✓ | 1,600 | —1K6 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 10 | —10R | ✓ | ✓ | ✓ | ✓ | ✓ | 180 | —180 | ✓ | ✓ | ✓ | ✓ | ✓ | 1,800 | —1K8 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 11 | —11R | ✓ | ✓ | ✓ | ✓ | ✓ | 200 | —200 | ✓ | ✓ | ✓ | ✓ | ✓ | 2,000 | —2K0 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 12 | —12R | ✓ | ✓ | ✓ | ✓ | ✓ | 220 | —220 | ✓ | ✓ | ✓ | ✓ | ✓ | 2,200 | —2K2 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 13 | —13R | ✓ | ✓ | ✓ | ✓ | ✓ | 240 | —240 | ✓ | ✓ | ✓ | ✓ | ✓ | 2,400 | —2K4 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 15 | —15R | ✓ | ✓ | ✓ | ✓ | ✓ | 250 | —250 | ✓ | ✓ | ✓ | ✓ | ✓ | 2,500 | —2K5 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 16 | —16R | ✓ | ✓ | ✓ | ✓ | ✓ | 270 | —270 | ✓ | ✓ | ✓ | ✓ | ✓ | 2,700 | —2K7 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 18 | —18R | ✓ | ✓ | ✓ | ✓ | ✓ | 300 | —300 | ✓ | ✓ | ✓ | ✓ | ✓ | 3,000 | —3K0 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| 20 | —20R | ✓ | ✓ | ✓ | ✓ | ✓ | 330 | —330 | ✓ | ✓ | ✓ | ✓ | ✓ | 3,300 | —3K3 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |

✓ = Standard values
✦ = Non-standard values subject to minimum handling charge per item

Shaded values involve very fine resistance wire and should not be used in critical applications without burn-in and/or thermal cycling.

MOUNTING CLIP



FEATURES

- Prevents severe vibration or mechanical shock to resistor
- Increases resistor wattage up to 100% when mounted on metal surface (1.5 sq. in. by 0.040 in. thick min. per watt dissipated)
- Holes in clip base permit fastening to chassis surface with machine screws, eyelets or rivets
- Sold in bags of ten (10)

Standard part numbers for mounting clip

| Part No. | Resistor rating (watts) | Clip length (in./mm) | Clip width (in./mm) | Clip height (in./mm) | No. of holes | Hole centers (in./mm) | Hole diameter (in./mm) |
|----------|-------------------------|----------------------|---------------------|----------------------|--------------|-----------------------|------------------------|
| ✓ 5900 | 1.5 | 0.40 / 10.319 | 0.150 / 3.810 | 0.250 / 6.350 | 1 | | 0.71 / 1.803 |
| ✓ 5902 | 2.25 | 0.35 / 8.890 | 0.217 / 5.500 | 0.275 / 6.980 | 2 | 0.156 / 3.969 | 0.71 / 1.803 |
| ✦ 5904 | 3.25 | 0.50 / 12.700 | 0.257 / 6.500 | 0.319 / 8.103 | 2 | 0.250 / 6.350 | 0.093 / 2.362 |
| ✦ 5906 | 5.0 | 0.90 / 22.860 | 0.237 / 6.019 | 0.284 / 7.214 | 2 | 0.400 / 10.160 | 0.103 / 2.616 |
| ✦ 5908 | 11.0 | 1.75 / 44.450 | 0.333 / 8.458 | 0.377 / 9.576 | 2 | 0.800 / 20.320 | 0.103 / 2.616 |

✦ = Most popular standard values
✓ = Standard values
✦ = Non-standard values subject to minimum handling charge per item