

- Features:**
- WWS offers miniature size at higher power rating
 - High performance for low cost
 - High power to size ratio
 - MWW – completely molded construction with welded terminations
 - Complete welded terminations
 - Tinned copper leads
 - Available in non-inductive styles
 - High temperature silicone coating
 - RoHS compliant
 - Higher operating temperatures available
 - “B” packaging code denotes bulk packaging - contact Stackpole for package quantities

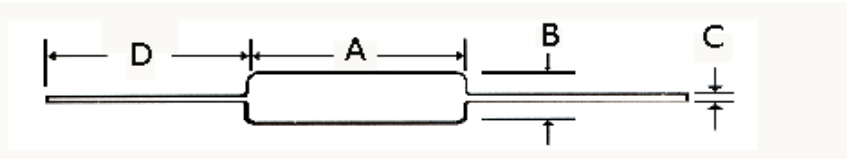


| Electrical Specifications | | | | | | | | |
|---------------------------|---------------|-----------------------------|----------------------------|---|-----------------------------------|------------|------------|------------|
| Type / Code | MIL-R-26 Ref. | Power Rating (W) @ 125°C | Power Rating (W) @ 70°C | TCR (ppm/°C) | Ohmic Range (Ω) and Tolerance (*) | | | |
| | | | | | 0.1% | 0.5% | 1% | 5% |
| WW12 | - | 0.4 W | 0.5 W | $< 1\Omega = \pm 90\text{ppm}/^\circ\text{C}$ $1\Omega \text{ to } 10\Omega = \pm 50\text{ppm}/^\circ\text{C}$ $> 10\Omega = \pm 20\text{ppm}/^\circ\text{C}$ | 5 - 2K | 3 - 2K | 3 - 2K | 5 - 2K |
| WW1 | - | 1 W | 1.1 W | | 2 - 3K | 2 - 3K | 2 - 3K | 2 - 3K |
| WW1A | RW-70 | 1 W | 1.3 W | | 1 - 5K | 1 - 5K | 1 - 5K | 1 - 5K |
| WW2 | RW-69 | 1.5 W | 2.1 W | | 1 - 10K | 0.5 - 10K | 0.5 - 10K | 0.5 - 10K |
| WW2S | - | 2.5 W | 2.6 W | | 1 - 10K | 0.5 - 10K | 0.5 - 10K | 0.5 - 10K |
| WW2A | - | 2.5 W | 2.6 W | | 1 - 10K | 0.5 - 10K | 0.5 - 10K | 0.5 - 10K |
| WW3 | RW-79 | 3 W | 3.2 W | | 1 - 22K | 0.5 - 22K | 0.5 - 22K | 0.5 - 22K |
| WWS3 | - | 3 W | 3.2 W | | 3 - 10K | 1 - 10K | 1 - 10K | 1 - 10K |
| WW3A | - | 3 W | 3.4 W | | 1 - 30K | 0.5 - 30K | 0.5 - 30K | 0.5 - 30K |
| WW4 | - | 4 W | 4.3 W | | 1 - 40K | 0.5 - 40K | 0.5 - 40K | 0.5 - 40K |
| WWS4 | RW-79 | 4 W | 4.3 W | | 1 - 22K | 0.5 - 22K | 0.5 - 22K | 0.5 - 22K |
| WW5 | RW-67, RW-74 | 5 W | 5.1 W | | 1 - 50K | 0.5 - 50K | 0.5 - 50K | 0.5 - 50K |
| WWS5 | - | 5 W | 5.1 W | | 1 - 40K | 0.5 - 40K | 0.5 - 40K | 0.5 - 40K |
| WW7 | - | 6.5 W | 7.2 W | | 1 - 70K | 0.5 - 70K | 0.5 - 70K | 0.5 - 70K |
| WWS7 | RW-67, RW-74 | 6.5 W | 7.2 W | | 1 - 50K | 0.5 - 50K | 0.5 - 50K | 0.5 - 50K |
| WW7B | - | 7 W | 7.7 W | | 1 - 70K | 0.5 - 70K | 0.5 - 70K | 0.5 - 70K |
| WW10 | RW-78 | 10 W | 11 W | | 1 - 100K | 0.5 - 100K | 0.5 - 100K | 0.5 - 100K |
| WWS10 | - | 10 W | 11 W | | 1 - 70K | 0.5 - 70K | 0.5 - 70K | 0.5 - 70K |
| NWW12 | - | 0.4 W | 0.5 W | | 10 - 1K | 10 - 1K | 10 - 1K | 10 - 1K |
| NWW1 | - | 1 W | 1.1 W | | 4 - 1.5K | 4 - 1.5K | 2 - 1.5K | 2 - 1.5K |
| NWW1A | RW-70 | 1 W | 1.3 W | | 2 - 2.5K | 2 - 2.5K | 1 - 2.5K | 1 - 2.5K |
| NWW2 | RW-69 | 1.5 W | 2.1 W | | 2 - 5K | 2 - 5K | 1 - 5K | 1 - 5K |
| NWWS2 | - | 2.5 W | 2.6 W | | 2 - 5K | 2 - 5K | 1 - 5K | 1 - 5K |
| NWW2A | - | 2.5 W | 2.6 W | | 2 - 5K | 2 - 5K | 1 - 5K | 1 - 5K |
| NWWS3 | RW-79 | 3 W | 3.2 W | | 2 - 11K | 2 - 11K | 1 - 11K | 1 - 11K |
| NWWS3 | - | 3 W | 3.2 W | | 5 - 5K | 5 - 5K | 3 - 5K | 3 - 5K |
| NWW3A | - | 3 W | 3.4 W | | 2 - 15K | 2 - 15K | 1 - 15K | 1 - 15K |
| NWW4 | - | 4 W | 4.3 W | | 2 - 20K | 2 - 20K | 1 - 20K | 1 - 20K |
| NWWS4 | RW-79 | 4 W | 4.3 W | | 2 - 11K | 2 - 11K | 1 - 11K | 1 - 11K |
| NWW5 | RW-67, RW-74 | 5 W | 5.1 W | | 2 - 25K | 2 - 25K | 1 - 25K | 1 - 25K |
| NWWS5 | - | 5 W | 5.1 W | | 2 - 20K | 2 - 20K | 1 - 20K | 1 - 20K |
| NWW7 | - | 6.5 W | 7.2 W | | 2 - 35K | 2 - 35K | 1 - 35K | 1 - 35K |
| NWWS7 | RW-67, RW-74 | 6.5 W | 7.2 W | | 2 - 25K | 2 - 25K | 1 - 25K | 1 - 25K |
| NWW7B | - | 7 W | 7.7 W | | 2 - 35K | 2 - 35K | 1 - 35K | 1 - 35K |
| NWW10 | RW-78 | 10 W | 11 W | | 2 - 50K | 2 - 50K | 1 - 50K | 1 - 50K |
| NWWS10 | - | 10 W | 11 W | | 2 - 35K | 2 - 35K | 1 - 35K | 1 - 35K |
| MWW1 | RW-70 | 1 W | 1.3 W | | 5 - 2K | 5 - 2K | 5 - 2K | 5 - 2K |
| MWW3 | RW-79 | 3 W | 3.2 W | | 3 - 20K | 3 - 20K | 3 - 20K | 3 - 20K |
| MWW5 | RW-67, RW-74 | 5 W | 5.5 W | | 2 - 40K | 2 - 40K | 2 - 40K | 2 - 40K |
| MWW10 | RW-68, RW-74 | 10 W | 11 W | | 2 - 80K | 2 - 80K | 2 - 80K | 2 - 80K |
| NMWW1 | RW-70 | 1 W | 1.3 W | 10 - 1K | 10 - 1K | 5 - 1K | 5 - 1K | |
| NMWW3 | RW-79 | 3 W | 3.2 W | 5 - 10K | 5 - 10K | 3 - 10K | 3 - 10K | |
| NMWW5 | RW-67, RW-74 | 5 W | 5.5 W | 3 - 20K | 3 - 20K | 2 - 20K | 2 - 20K | |
| NMWW10 | RW-68, RW-74 | 10 W | 11 W | 3 - 40K | 3 - 40K | 2 - 40K | 2 - 40K | |

(*) Other resistance values available - contact factory for details.

| Performance Characteristics | | |
|------------------------------|--|---|
| Test | Test Condition | Result |
| Moisture Resistance | 1000 hours, 95% R.H., 40°C | 1% max |
| Load Life | 1000 hours, cycled power 1.5 hours ON, 0.5 hours OFF, 25°C | 1% |
| Temperature Cycling | 5 cycles, -55°C to 200°C | 0.5% |
| Short Time Overload | 5 times rated power for 5 seconds | 1% |
| Dielectric Withstand Voltage | Resistor leads are grounded and high potential probe is touched to the resistor body | 500V for (N)WW12, 1, 1A and 2S. 1000V for all others |

Operating Temperature Range: -55°C to +350°C

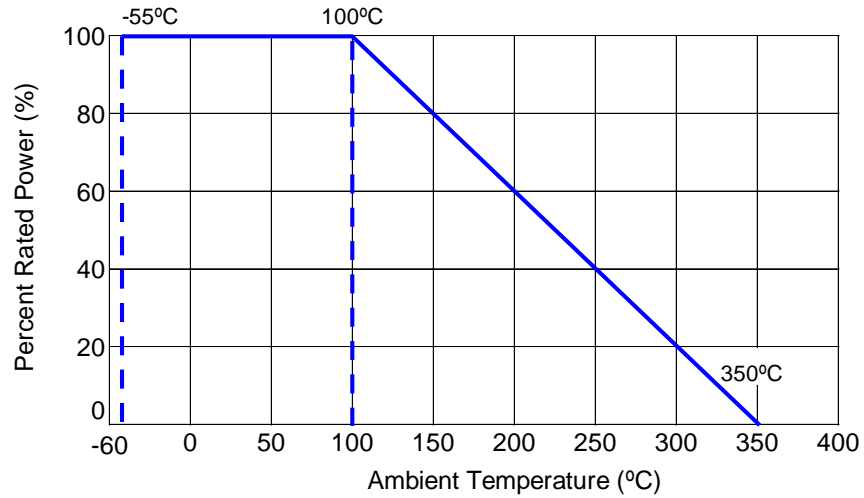


| Mechanical Specifications | | | | | |
|-----------------------------|---------------|---------------|-------------------|-----------------|--------|
| Type / Code | A | B | C | D (Bulk) (1) | Unit |
| WW12 / NWW12 | 0.312 ± 0.062 | 0.110 ± 0.031 | 0.025 ± 0.002 | 1.500 typ. | inches |
| | 7.92 ± 1.57 | 2.79 ± 0.79 | 0.64 ± 0.05 | 38.10 typ. | mm |
| WW1, WWS2 / NWW1, NWWS2 | 0.375 ± 0.062 | 0.110 ± 0.031 | 0.025 ± 0.002 | 1.500 typ. | inches |
| | 9.53 ± 1.57 | 2.79 ± 0.79 | 0.64 ± 0.05 | 38.10 typ. | mm |
| WW1A / NWW1A | 0.420 ± 0.062 | 0.110 ± 0.031 | 0.025 ± 0.002 | 1.500 typ. | inches |
| | 10.67 ± 1.57 | 2.79 ± 0.79 | 0.64 ± 0.05 | 38.10 typ. | mm |
| WW2, WWS3 / NWW2, NWWS3 | 0.370 ± 0.062 | 0.156 ± 0.031 | 0.032 ± 0.002 | 1.500 typ. | inches |
| | 9.40 ± 1.57 | 3.96 ± 0.79 | 0.81 ± 0.05 | 38.10 typ. | mm |
| WW2A / NWW2A | 0.550 ± 0.062 | 0.156 ± 0.031 | 0.032 ± 0.002 | 1.500 typ. | inches |
| | 13.97 ± 1.57 | 3.96 ± 0.79 | 0.81 ± 0.05 | 38.10 typ. | mm |
| WW3, WWS4 / NWW3, NWWS4 | 0.560 ± 0.062 | 0.187 ± 0.031 | 0.032 ± 0.002 | 1.500 typ. | inches |
| | 14.22 ± 1.57 | 4.75 ± 0.79 | 0.81 ± 0.05 | 38.10 typ. | mm |
| WW3A / NWW3A | 0.500 ± 0.062 | 0.218 ± 0.031 | 0.032 ± 0.002 | 1.500 typ. | inches |
| | 12.70 ± 1.57 | 5.54 ± 0.79 | 0.81 ± 0.05 | 38.10 typ. | mm |
| WW4, WWS5 / NWW4, NWWS5 | 0.700 ± 0.062 | 0.270 ± 0.031 | 0.036 ± 0.002 | 1.500 typ. | inches |
| | 17.78 ± 1.57 | 6.86 ± 0.79 | 0.91 ± 0.05 | 38.10 typ. | mm |
| WW5, WWS7 / NWW5, NWWS7 | 0.875 ± 0.062 | 0.312 ± 0.031 | 0.036 ± 0.002 | 1.500 typ. | inches |
| | 22.23 ± 1.57 | 7.92 ± 0.79 | 0.91 ± 0.05 | 38.10 typ. | mm |
| WW7 / NWW7 | 1.000 ± 0.062 | 0.312 ± 0.031 | 0.036 ± 0.002 | 1.500 typ. | inches |
| | 25.40 ± 1.57 | 7.92 ± 0.79 | 0.91 ± 0.05 | 38.10 typ. | mm |
| WW7B, WWS10 / NWW7B, NWWS10 | 1.200 ± 0.062 | 0.312 ± 0.031 | 0.036 ± 0.002 | 1.500 typ. | inches |
| | 30.48 ± 1.57 | 7.92 ± 0.79 | 0.91 ± 0.05 | 38.10 typ. | mm |
| WW10 / NWW10 | 1.780 ± 0.062 | 0.375 ± 0.031 | 0.040 ± 0.002 (2) | 1.500 typ. | inches |
| | 45.21 ± 1.57 | 9.53 ± 0.79 | 1.02 ± 0.05 (2) | 38.10 typ. | mm |
| MWW1 / NMWW1 | 0.385 ± 0.062 | 0.135 ± 0.031 | 0.032 ± 0.002 | 1.500 typ. | inches |
| | 9.78 ± 1.57 | 3.43 ± 0.79 | 0.81 ± 0.05 | 38.10 typ. | mm |
| MWW3 / NMWW3 | 0.560 ± 0.062 | 0.205 ± 0.031 | 0.032 ± 0.002 | 1.500 typ. | inches |
| | 14.22 ± 1.57 | 5.21 ± 0.79 | 0.81 ± 0.05 | 38.10 typ. | mm |
| MWW5 / NMWW5 | 0.925 ± 0.062 | 0.330 ± 0.031 | 0.036 ± 0.002 | 1.500 typ. | inches |
| | 23.50 ± 1.57 | 8.38 ± 0.79 | 0.91 ± 0.05 | 38.10 typ. | mm |
| MWW10 / NMWW10 | 1.965 ± 0.062 | 0.480 ± 0.031 | 0.040 ± 0.002 | 1.500 typ. | inches |
| | 49.91 ± 1.57 | 12.19 ± 0.79 | 1.02 ± 0.05 | 38.10 typ. | mm |

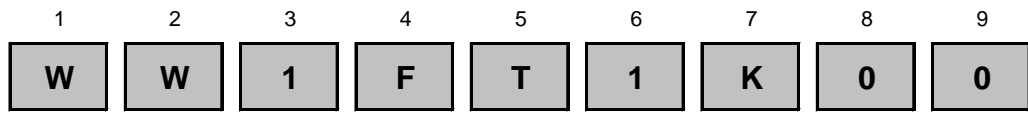
(1) See "Resistor Packaging Specification Document" for lead length dimension for tape and reel packaged product

(2) Available in 0.036" / 0.91mm

Power Derating Curve:




How to Order



| Product Series | | Type/Code | Power Rating | | Tolerance | | Packaging | | | Resistance Value | |
|----------------|--------------------|--------------|----------------|----------------|-----------|------|-----------|---|--------------|------------------|---|
| WW | Standard | | @ 125°C | @ 70°C | Code | Tol | Code | Description | Quantity | | |
| WWS | Mini | WW12 / NWW12 | 0.4W | 0.5 W | B | 0.1% | T | 11" Tape and Reel | WW12 / NWW12 | 2,500 | Four characters with the multiplier used as the decimal holder. 0.5 ohm = R500 1 ohm = 1R00 10 Kohm = 10K0 |
| MWW | Molded | WW1 / NWW1 | 1W | 1.1 W | D | 0.5% | | | WW1 / NWW1 | | |
| NWW | Non-Inductive | WW1A / NWW1A | 1W | 1.3 W | F | 1% | | | WWS2 / NWS2 | | |
| NWWWS | Mini Non-Inductive | WW2 / NWW2 | 1.5W | 2.1 W | J | 5% | | | WW1A / NWW1A | | |
| | | WWS2 / NWS2 | 2.5W | 2.6 W | | | | | MWW1 / NMWW1 | | |
| | | WW2A / NWW2A | 2.5W | 2.6 W | | | | | WW2 / NWW2 | 2,000 | |
| | | WW3 / NWW3 | 3W | 3.2 W | | | | | WWS3 / NWS3 | | |
| | | WWS3 / NWS3 | 3W | 3.2 W | | | | | WW2A / NWW2A | | |
| WW3A / NWW3A | 3W | 3.4 W | WW3 / NWW3 | | | | | | | | |
| WW4 / NWW4 | 4W | 4.3 W | WWS4 / NWS4 | WW4 / NWW4 | 500 | | | | | | |
| WWS4 / NWS4 | 4W | 4.3 W | MWW3 / NMWW3 | | | | | | | | |
| WW5 / NWW5 | 5W | 5.1 W | WW3A / NWW3A | WW5 / NWW5 | | | | | | | |
| WWS5 / NWS5 | 5W | 5.1 W | WW4 / NWW4 | WWS5 / NWS5 | | | | | | | |
| WW7 / NWW7 | 6.5W | 7.2 W | WW5 / NWW5 | WW7 / NWW7 | | | | | | | |
| WWS7 / NWS7 | 6.5W | 7.2 W | WW7B / NWW7B | WW7B / NWW7B | 250 | | | | | | |
| WW7B / NWW7B | 7W | 7.7 W | WWS10 / NWS10 | MWW5 / NMWW5 | | | | | | | |
| WW10 / NWW10 | 10W | 11.0 W | WW10 / NWW10 | WW10 / NWW10 | 250 | | | | | | |
| WWS10 / NWS10 | 10W | 11.0 W | MWW10 / NMWW10 | MWW10 / NMWW10 | | | | | | | |
| MWW1 / NMWW1 | 1W | 1.3 W | | | | B | Bulk | Contact Stackpole for package quantities. | | | |

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