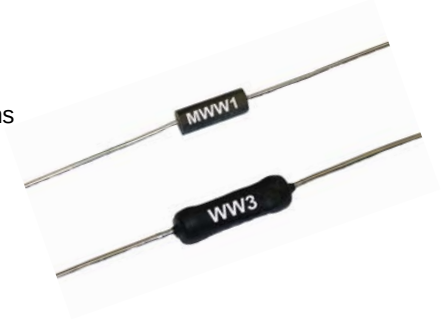
Features:

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



Electrical Specifications – WW, WWS, MWW

Type / Code	MIL-R-26 Ref.	Power Rating (W) @ 125ºC	Power Rating (W) @ 70ºC	TCR (ppm/ºC)	Ohmic Range (Ω) and Tolerance (*)			
					0.1%	0.5%	1%	5%
WW12	-	0.4 W	0.5 W	< 1Ω = ±90ppm/ºC 1Ω to 10Ω = ± 50ppm/ºC >10Ω = ±20ppm/ºC	5 - 2K	3 - 2K		5 - 2K
WW1	-	1 W	1.1 W		2 - 3K			
WW1A	RW-70	1 W	1.3 W		1 - 5K			
WW2	RW-69	1.5 W	2.1 W		1 - 10K	0.5 - 10K		
WWS2	-	2.5 W	2.6 W		1 - 10K	0.5 - 10K		
WW2A	-	2.5 W	2.6 W		1 - 10K	0.5 - 10K		
WW3	RW-79	3 W	3.2 W		1 - 22K	0.5 - 22K		
WWS3	-	3 W	3.2 W		3 - 10K	1 - 10K		
WW3A	-	3 W	3.4 W		1 - 30K	0.5 - 30K		
WW4	-	4 W	4.3 W		1 - 40K	0.5 - 40K		
WWS4	RW-79	4 W	4.3 W		1 - 22K	0.5 - 22K		
WW5	RW-67, RW-74	5 W	5.1 W		1 - 50K	0.5 - 50K		
WWS5	-	5 W	5.1 W		1 - 40K	0.5 - 40K		
WW7	-	6.5 W	7.2 W		1 - 70K	0.5 - 70K		
WWS7	RW-67, RW-74	6.5 W	7.2 W		1 - 50K	0.5 - 50K		
WW7B	-	7 W	7.7 W		1 - 70K	0.5 - 70K		
WW10	RW-78	10 W	11 W		1 - 100K	0.5 - 100K		
WWS10	-	10 W	11 W		1 - 70K	0.5 - 70K		
MWW1	RW-70	1 W	1.3 W		5 - 2K			
MWW3	RW-79	3 W	3.2 W		3 - 20K			
MWW5	RW-67, RW-74	5 W	5.5 W		2 - 40K			
MWW10	RW-68, RW-74	10 W	11 W		2 - 80K			

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

Electrical Specifications – Non-Inductive Styles

Type / Code	MIL-R-26 Ref.	Power Rating (W) @ 125ºC	Power Rating (W) @ 70ºC	TCR (ppm/ºC)	Ohmic Range (Ω) and Tolerance (*)	
					1%	5%
NWW12	-	0.4 W	0.5 W	< 1Ω = ±90ppm/ºC 1Ω to 10Ω = ± 50ppm/ºC >10Ω = ±20ppm/ºC	10 - 1K	
NWW1	-	1 W	1.1 W		2 - 1.5K	
NWW1A	RW-70	1 W	1.3 W		1 - 2.5K	
NWW2	RW-69	1.5 W	2.1 W		1 - 5K	
NWWS2	-	2.5 W	2.6 W		1 - 5K	
NWW2A	-	2.5 W	2.6 W		1 - 5K	
NWW3	RW-79	3 W	3.2 W		1 - 11K	
NWWS3	-	3 W	3.2 W		3 - 5K	
NWW3A	-	3 W	3.4 W		1 - 15K	
NWW4	-	4 W	4.3 W		1 - 20K	
NWWS4	RW-79	4 W	4.3 W		1 - 11K	
NWW5	RW-67, RW-74	5 W	5.1 W		1 - 25K	
NWWS5	-	5 W	5.1 W		1 - 20K	
NWW7	-	6.5 W	7.2 W		1 - 35K	
NWWS7	RW-67, RW-74	6.5 W	7.2 W		1 - 25K	
NWW7B	-	7 W	7.7 W		1 - 35K	

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

Electrical Specifications – Non-Inductive Styles (cont.)

Type / Code	MIL-R-26 Ref.	Power Rating (W) @ 125ºC	Power Rating (W) @ 70ºC	TCR (ppm/ºC)	Ohmic Range (Ω) and Tolerance (*)	
					1%	5%
NWW10	RW-78	10 W	11 W	< 1Ω = ±90ppm/ºC 1Ω to 10Ω = ± 50ppm/ºC >10Ω = ±20ppm/ºC	1 - 50K	
NWWS10	-	10 W	11 W		1 - 35K	
NMWW1	RW-70	1 W	1.3 W		5 - 1K	
NMWW3	RW-79	3 W	3.2 W		3 - 10K	
NMWW5	RW-67, RW-74	5 W	5.5 W		2 - 20K	
NMWW10	RW-68, RW-74	10 W	11 W		2 - 40K	

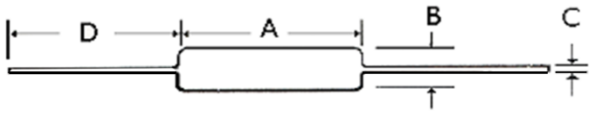
(*) Other resistance values available - contact factory for details.

Performance Characteristics

Test	Test Condition	Test Specification
Moisture Resistance	1000 hours, 95% R.H., 40ºC	1% max
Load Life	1000 hours, cycled power 1.5 hours ON, 0.5 hours OFF, 25ºC	1%
Temperature Cycling	5 cycles, -55ºC to 200ºC	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: -55ºC to +350ºC

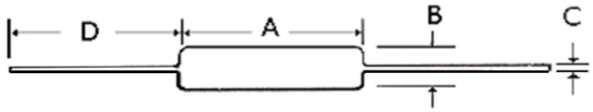
Mechanical Specifications



Type / Code	A	B	C	D (Bulk) (1)	Unit
WW12 / NWW12	0.312 ± 0.062 7.92 ± 1.57	0.110 ± 0.031 2.79 ± 0.79	0.025 ± 0.002 0.64 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW1, WWS2 / NWW1, NWWS2	0.375 ± 0.062 9.53 ± 1.57	0.110 ± 0.031 2.79 ± 0.79	0.025 ± 0.002 0.64 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW1A / NWW1A	0.420 ± 0.062 10.67 ± 1.57	0.110 ± 0.031 2.79 ± 0.79	0.025 ± 0.002 0.64 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW2, WWS3 / NWW2, NWWS3	0.370 ± 0.062 9.40 ± 1.57	0.156 ± 0.031 3.96 ± 0.79	0.032 ± 0.002 0.81 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW2A / NWW2A	0.550 ± 0.062 13.97 ± 1.57	0.156 ± 0.031 3.96 ± 0.79	0.032 ± 0.002 0.81 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW3, WWS4 / NWW3, NWWS4	0.560 ± 0.062 14.22 ± 1.57	0.187 ± 0.031 4.75 ± 0.79	0.032 ± 0.002 0.81 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW3A / NWW3A	0.500 ± 0.062 12.70 ± 1.57	0.218 ± 0.031 5.54 ± 0.79	0.032 ± 0.002 0.81 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW4, WWS5 / NWW4, NWWS5	0.700 ± 0.062 17.78 ± 1.57	0.270 ± 0.031 6.86 ± 0.79	0.036 ± 0.002 0.91 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW5, WWS7 / NWW5, NWWS7	0.875 ± 0.062 22.23 ± 1.57	0.312 ± 0.031 7.92 ± 0.79	0.036 ± 0.002 0.91 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW7 / NWW7	1.000 ± 0.062 25.40 ± 1.57	0.312 ± 0.031 7.92 ± 0.79	0.036 ± 0.002 0.91 ± 0.05	1.500 typ. 38.10 typ.	inches mm

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

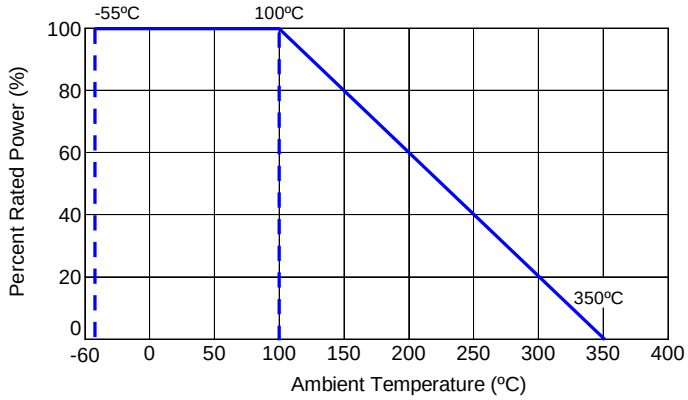
Mechanical Specifications (cont.)



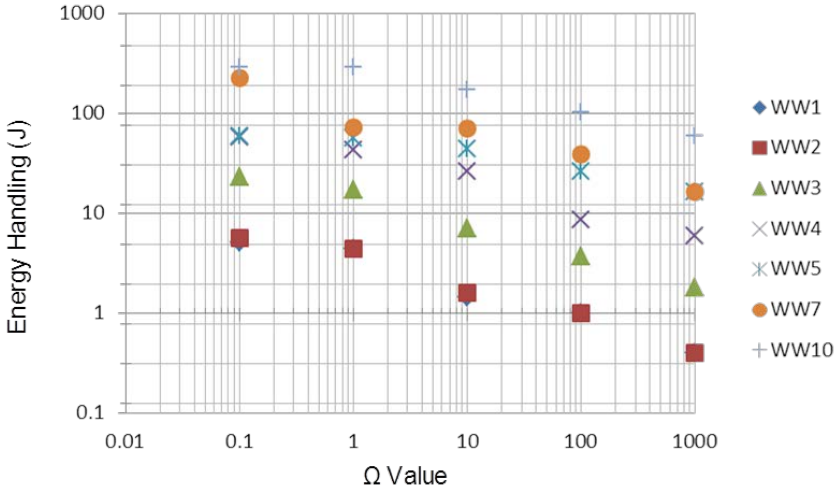
Type / Code	A	B	C	D (Bulk) (1)	Unit
WW7B, WWS10 / NWW7B, NWWS10	1.200 ± 0.062 30.48 ± 1.57	0.312 ± 0.031 7.92 ± 0.79	0.036 ± 0.002 0.91 ± 0.05	1.500 typ. 38.10 typ.	inches mm
WW10 / NWW10 (2)	1.780 ± 0.062 45.21 ± 1.57	0.375 ± 0.031 9.53 ± 0.79	0.040 ± 0.002 1.02 ± 0.05	1.500 typ. 38.10 typ.	inches mm
MWW1 / NMWW1	0.385 ± 0.062 9.78 ± 1.57	0.135 ± 0.031 3.43 ± 0.79	0.032 ± 0.002 0.81 ± 0.05	1.500 typ. 38.10 typ.	inches mm
MWW3 / NMWW3	0.560 ± 0.062 14.22 ± 1.57	0.205 ± 0.031 5.21 ± 0.79	0.032 ± 0.002 0.81 ± 0.05	1.500 typ. 38.10 typ.	inches mm
MWW5 / NMWW5	0.925 ± 0.062 23.50 ± 1.57	0.330 ± 0.031 8.38 ± 0.79	0.036 ± 0.002 0.91 ± 0.05	1.500 typ. 38.10 typ.	inches mm
MWW10 / NMWW10	1.965 ± 0.062 49.91 ± 1.57	0.480 ± 0.031 12.19 ± 0.79	0.040 ± 0.002 1.02 ± 0.05	1.500 typ. 38.10 typ.	inches mm

(1) See "Resistor Packaging Specification Document" for lead length dimension for tape and reel packaged product.
(2) Lead diameter (C) available in 0.036" / 0.91mm.

Power Derating Curve:



Energy Handling Capability:
(Typical performance - for reference only.)



RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 2). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament.

RoHS Compliance Status

Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)
MWW	General Purpose and Precision Leaded Wirewound Resistor - Molded	Axial	YES	100% Matte Sn	Jan-06	06/01
NWW	General Purpose and Precision Leaded Wirewound Resistor - Conformal Coated - Non-Inductive	Axial	YES	100% Matte Sn	Jan-06	06/01
WW	General Purpose and Precision Leaded Wirewound Resistor - Conformal Coated - Non-Inductive	Axial	YES	100% Matte Sn	Jan-06	06/01

"Conflict Metals" Commitment

We at Stackpole electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the Easter Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

How to Order

1	2	3	4	5	6	7	8	9
W	**W**	**1**	**F**	**T**	**1**	**K**	**0**	**0**

Product Series	
WW	Standard
WWS	Mini
MWW	Molded
NWW	Non-Inductive
NWWS	Mini Non-Inductive
NMWW	Non-Inductive Molded

Type/Code	Power Rating @ 125ºC	Power Rating @ 70ºC
WW12 / NWW12	0.4W	0.5 W
WW1 / NWW1	1W	1.1 W
WW1A / NWW1A	1W	1.3 W
WW2 / NWW2	1.5W	2.1 W
WWS2 / NWWS2	2.5W	2.6 W
WW2A / NWW2A	2.5W	2.6 W
WW3 / NWW3	3W	3.2 W
WWS3 / NWWS3	3W	3.2 W
WW3A / NWW3A	3W	3.4 W
WW4 / NWW4	4W	4.3 W
WWS4 / NWWS4	4W	4.3 W
WW5 / NWW5	5W	5.1 W
WWS5 / NWWS5	5W	5.1 W
WW7 / NWW7	6.5W	7.2 W
WWS7 / NWWS7	6.5W	7.2 W
WW7B / NWW7B	7W	7.7 W
WW10 / NWW10	10W	11.0 W
WWS10 / NWWS10	10W	11.0 W
MWW1 / NMWW1	1W	1.3 W
MWW3 / NMWW3	3W	3.2 W
MWW5 / NMWW5	5W	5.5 W
MWW10 / NMWW10	10W	11.0 W

Tolerance Code	Tol
B	0.1%
D	0.5%
F	1%
J	5%

Packaging Code	Description	Size	Quantity
T	11" Tape and Reel	WW12 / NWW12 WW1 / NWW1 WWS2 / NWWS2 WW1A / NWW1A MWW1 / NMWW1	2,500
		WW2 / NWW2 WWS3 / NWWS3 WW2A / NWW2A WW3 / NWW3 WWS4 / NWWS4 MWW3 / NMWW3	2,000
		WW3A / NWW3A WW4 / NWW4 WWS5 / NWWS5 WW5 / NWW5 WWS7 / NWWS7 WW7 / NWW7 WW7B / NWW7B WWS10 / NWWS10 MWW5 / NMWW5	500
		WW10 / NWW10 MWW10 / NMWW10	250
B	Bulk	Contact Stackpole for package quantities.	

Resistance Value
Four characters with the multiplier used as the decimal holder.
0.5 ohm = R500 1 ohm = 1R00 10 Kohm = 10K0