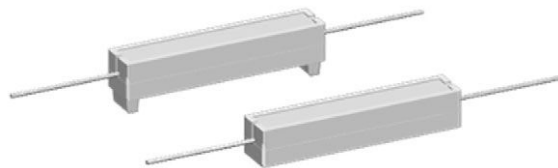




# Wirewound Resistors, Commercial Power, Axial Lead



Please reference the Vishay Dale closest equivalent:

- CP ([www.vishay.com/doc?30213](http://www.vishay.com/doc?30213))
- CP High Volume ([www.vishay.com/doc?30113](http://www.vishay.com/doc?30113))

## Notes

- There may be slight differences between the MRW product and the applicable replacement.
- See the cross-reference file for a complete list of differences and part number crosses:  
[www.vishay.net/files/Cross-Reference%20Data%20-%20PTN-DR-022-2015%20Rev%200.pdf](http://www.vishay.net/files/Cross-Reference%20Data%20-%20PTN-DR-022-2015%20Rev%200.pdf).

## FEATURES

- High performance for low cost
- Meets or exceeds requirements of EIA standard RS-344
- High power to size ratio
- Ceramic cases are available with circuit board stand-offs ("S" SPECIAL)
- Special inorganic potting compound and ceramic case provide high thermal conductivity in a fireproof package
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

## STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	POWER RATING $P_{40^{\circ}\text{C}}$ W	RESISTANCE RANGE $\Omega$	TOLERANCE $\pm \%$	WEIGHT (typical) g
MRW05	5	0.01 to 2.4K	5, 10	4.8
MRW05...S	5	0.01 to 2.4K	5, 10	4.8
MRW07	7	0.01 to 5K	5, 10	6.8
MRW07...S	7	0.01 to 5K	5, 10	6.8
MRW10	10	0.01 to 7K	5, 10	9.5
MRW10...S	10	0.01 to 7K	5, 10	9.5
MRW15	15	0.01 to 8K	5, 10	16.8
MRW15...S	15	0.01 to 8K	5, 10	16.8
MRW20	20	0.01 to 10K	5, 10	22.8
MRW20...S	20	0.01 to 10K	5, 10	22.8
MRW22	22	0.01 to 10K	5, 10	24.5
MRW22...S	22	0.01 to 10K	5, 10	24.5

## TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	MRW RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/ $^{\circ}\text{C}$	$\pm 300$ for 1.0 $\Omega$ and above, $\pm 600$ below 1 $\Omega$
Short Time Overload	-	5 x rated power for 5 s
Terminal Strength	lb	10 minimum
Operating Temperature Range	$^{\circ}\text{C}$	-65 to +275
Dielectric Withstanding Voltage	$V_{AC}$	1000
Maximum Working Voltage	V	$(P \times R)^{1/2}$

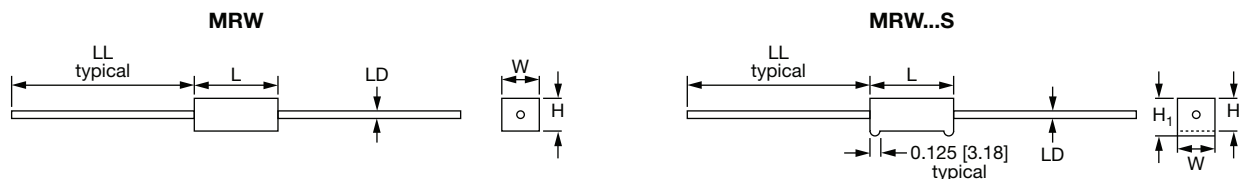
## GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: MRW101K500JE14 (Visit [www.vishay.net](http://www.vishay.net) SAP Parts Manual for all options)

M	R	W	1	0	1	K	5	0	0	J	E	1	4			
GLOBAL MODEL (5 digits)			VALUE (5 digits)			TOLERANCE (1 digit)		PACKAGING CODE (3 digits)			SPECIAL (up to 3 digits)					
(See Standard Electrical Specifications Global Model column for options)			R = Decimal K = Thousand 15R00 = 15 Ω 1K500 = 1.5 kΩ			J = ± 5 % K = ± 10 %		E14 = Lead (Pb)-free bulk pack E31 = Lead (Pb)-free four layer bulk pack			(Dash Number) From 1 to 999 as applicable S = Standoff					

Historical Part Number example: MRW10W1K50J

MRW10	W = STANDARD	1.5 k $\Omega$	5 %
HISTORICAL MODEL	TC	RESISTANCE VALUE	TOLERANCE

**DIMENSIONS** in inches [millimeters]

GLOBAL MODEL	DIMENSIONS in inches [millimeters]					
	L <sup>(1)</sup> ± 0.031 [0.794]	W ± 0.031 [0.794]	H ± 0.031 [0.794]	H <sub>1</sub> ± 0.031 [0.794]	LD ± 0.001 [0.025]	LL ± 0.125 [3.175]
MRW05	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	-	0.036 [0.914]	1.500 [38.10]
MRW05...S	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	0.406 [10.32]	0.036 [0.914]	1.500 [38.10]
MRW07	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	-	0.036 [0.914]	1.500 [38.10]
MRW07...S	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.036 [0.914]	1.500 [38.10]
MRW10	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	-	0.036 [0.914]	1.500 [38.10]
MRW10...S	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.036 [0.914]	1.500 [38.10]
MRW15	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	-	0.036 [0.914]	1.500 [38.10]
MRW15...S	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.036 [0.914]	1.500 [38.10]
MRW20	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	-	0.036 [0.914]	1.500 [38.10]
MRW20...S	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.036 [0.914]	1.500 [38.10]
MRW22	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	-	0.036 [0.914]	1.500 [38.10]
MRW22...S	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.036 [0.914]	1.500 [38.10]

**Note**

(1) Potting compound may extend outside of ceramic case up to 0.060 [1.52] maximum per side.

**MATERIAL SPECIFICATIONS**

**Element:** copper-nickel alloy or nickel-chrome alloy, depending on resistance value

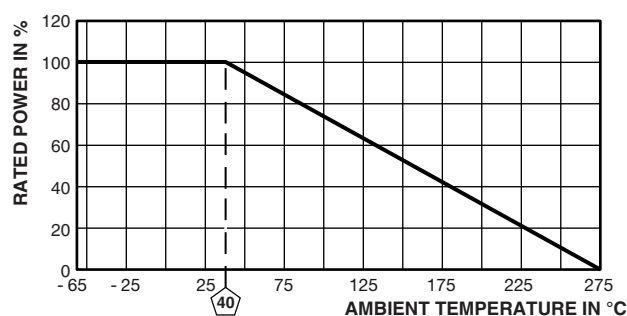
**Core:** woven fiberglass

**Body:** steatite ceramic case with inorganic potting compound

**End Caps:** tin plated steel

**Terminals:** tinned copper

**Part Marking:** MILLS, model, wattage, value, tolerance, date code

**DERATING****PERFORMANCE**

TEST	CONDITIONS OF TEST	TEST LIMITS (EIA-344)
Thermal Shock	-55 °C to +275 °C, 5 cycles, 30 min dwell time	± (5.0 % + 0.05 Ω) ΔR
Short Time Overload	5 x rated power for 5 s	± (4.0 % + 0.05 Ω) ΔR
Dielectric Withstanding Voltage	1000 V <sub>RMS</sub> for 1 min	± (2.0 % + 0.05 Ω) ΔR
Low Temperature Storage	-65 °C, full rated working voltage for 45 min	± (3.0 % + 0.05 Ω) ΔR
Humidity	75 °C, 90 % to 100 % RH, 240 h	± (5.0 % + 0.05 Ω) ΔR
Load Life	1000 h at rated power, +25 °C, 1.5 h "ON", 0.5 h "OFF"	± (10.0 % + 0.05 Ω) ΔR
Terminal Strength	5 pounds for 30 s; body twisted about axis, 3 x 360° rotations	± (2.0 % + 0.05 Ω) ΔR
Resistance to Solder Heat	Terminal immersed 3.5 s in molten solder up to body	± (4.0 % + 0.05 Ω) ΔR



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