

Wirewound Resistors

High Voltage Surge
Capability Up to 12 kV

Z300-C

**All-Welded Construction,
Vitreous Coating,
Enhanced Humidity Protection**

G200

Ultra Precision Tolerance to
 $\pm 0.005\%$, Resistance Values
Up to 6 M Ω

MR100, MR600, MR700

**Fusible,
High Voltage Surge**
Capability Up to 6 kV

AC01, AC03, AC05 SAFETY

High Surge Immunity
Up to 12 kV, **High
Temperature Range**

CW...HS

**Non-Inductive, Non-Magnetic,
High Power** Up to 12 W

MRA

AEC-Q200 Qualified
Wirewound Resistors

AC-AT



WIREWOUND RESISTORS




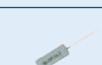




Focus Products




Leaded Wirewound Resistors					
Series	Power Rating $P_{25^\circ\text{C}}$	Resistance Value Range	Available Tolerance	TCR	Operating Temperature Range
 MRA	4 W to 12 W	0.01 Ω to 85 k Ω	$\pm 1\%$, $\pm 5\%$, $\pm 10\%$	Down to ± 30 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	Non-inductive; non-magnetic; all-welded construction				
 CW...HS	1 W to 13 W	0.1 Ω to 167 k Ω	$\pm 5\%$, $\pm 10\%$	Down to ± 30 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	IEC-61000-4-5 (1.2 μs / 50 μs) high surge immunity up to 12 kV; all-welded construction				
 CW...HE	3 W to 13 W	1.5 Ω to 938 Ω	$\pm 5\%$, $\pm 10\%$	Down to ± 30 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	High continuous energy handling up to 106.5 J				
 MR93, MR100, MR300, MR500	0.06 W to 2 W	1 Ω to 6 M Ω	$\pm 0.005\%$ to $\pm 1\%$	Down to ± 2 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +145 $^\circ\text{C}$
	Ultra-precision tolerances to $\pm 0.005\%$; excellent long term stability				
 CP	2 W to 25 W	0.1 Ω to 30 k Ω	$\pm 5\%$, $\pm 10\%$	Down to ± 300 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	Economical; high power-to-size ratio; cement potted; flameproof				
 CPW / CPWN	2 W to 20 W	0.1 Ω to 45 k Ω	$\pm 1\%$ to $\pm 5\%$	Down to ± 30 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	All-welded construction; high power-to-size ratio; non-inductive style available; flameproof				
 CPCP / CPCS / CPCL	2 W to 10 W	10 m Ω to 8 k Ω	$\pm 1\%$, $\pm 5\%$, $\pm 10\%$	Down to ± 20 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	Vertical PC board mount; cement potted; flameproof				
 RS / NS	0.4 W to 13 W	0.1 Ω to 273 k Ω	$\pm 0.05\%$ to $\pm 10\%$	Down to ± 20 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	High reliability; all-welded construction; high temperature capability				
 RH / NH	7.5 W to 250 W	10 m Ω to 273 k Ω	$\pm 0.05\%$ to $\pm 5\%$	Down to ± 20 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +250 $^\circ\text{C}$
	Aluminum housing; chassis mount; high power; high reliability; all-welded construction				
 LVR	1 W to 10 W	5 m Ω to 0.8 Ω	$\pm 1\%$ to $\pm 10\%$	Down to ± 50 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	Ideal for current sensing; low inductance; high reliability				
 CW	0.5 W to 13 W	0.1 Ω to 167 k Ω	$\pm 5\%$, $\pm 10\%$	Down to ± 30 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	Economical; all-welded construction				
 G / GN	1 W to 10 W	0.1 Ω to 95.2 k Ω	$\pm 0.05\%$ to $\pm 5\%$	Down to ± 20 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	Miniature; high stability; high reliability; all-welded construction				
 SPR2213/2214	40 W to 100 W	0.5 Ω to 44 k Ω	$\pm 5\%$, $\pm 10\%$	Down to ± 30 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	High surge capability; quick connect terminals; fireproof				
 SR	1 W to 5 W	4 m Ω to 50 m Ω	$\pm 1\%$, $\pm 5\%$	Down to ± 100 ppm/ $^\circ\text{C}$	-65 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	Open-air design; all-welded construction; very low inductance; economical current sense solution				
 SPU Open Style	1 W, 1.875 W	1.67 m Ω to 20 m Ω	$\pm 1\%$	± 100 ppm/ $^\circ\text{C}$ typical	-65 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	Extremely low resistance; Kelvin terminals; all-welded construction				
 CPSL	3 W to 15 W	10 m Ω to 100 m Ω	$\pm 1\%$ to $\pm 10\%$	± 100 ppm/ $^\circ\text{C}$ maximum	-65 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	Extremely low resistance; Kelvin terminals; low inductance; all-welded construction; fireproof				
 NSR	n/a	1 k Ω to 15 k Ω	$\pm 10\%$, $\pm 15\%$, $\pm 20\%$	± 250 ppm/ $^\circ\text{C}$	-40 $^\circ\text{C}$ to +180 $^\circ\text{C}$
	Reduces RFI from gas engines; inductances from 5 μH to 56 μH ; withstands high frequency / high voltage pulses				
 NSR HP	n/a	1 k Ω to 15 k Ω	$\pm 10\%$, $\pm 15\%$, $\pm 20\%$	± 250 ppm/ $^\circ\text{C}$	-40 $^\circ\text{C}$ to +200 $^\circ\text{C}$
	Reduces RFI from gas engines; inductances from 9 μH to 78 μH ; withstands high frequency / high voltage pulses (up to 45 kV)				
 RLV	3 W, 5 W	10 m Ω to 500 m Ω	$\pm 1\%$, $\pm 3\%$, $\pm 5\%$	Down to ± 50 ppm/ $^\circ\text{C}$	-55 $^\circ\text{C}$ to +275 $^\circ\text{C}$
	MIL-PRF-49465 qualified; low inductance; low TCR; all-welded construction				
 RWR	1 W to 10 W	0.1 Ω to 39.2 k Ω	$\pm 0.1\%$, $\pm 0.5\%$, $\pm 1\%$	Down to ± 20 ppm/ $^\circ\text{C}$	-55 $^\circ\text{C}$ to +250 $^\circ\text{C}$
	MIL-PRF-39007 qualified; precision tolerances; low TCR; all-welded construction; non-inductive styles available				
 RER	5 W to 30 W	0.1 Ω to 39.2 k Ω	$\pm 1\%$	Down to ± 20 ppm/ $^\circ\text{C}$	-55 $^\circ\text{C}$ to +250 $^\circ\text{C}$
	MIL-PRF-39009 qualified; aluminum housed; chassis mount; low TCR; all-welded construction; non-inductive styles available				



WIREWOUND RESISTORS

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Wirewound Resistors					
Series	Power Rating $P_{25^\circ\text{C}}$	Resistance Value Range	Available Tolerance	TCR	Operating Temperature Range
 AC Series AC-AT Series	1 W to 10 W	0.1 Ω to 27 k Ω	$\pm 5\%$	-10 ppm/K to 180 ppm/K	-40 $^\circ\text{C}$ to +250 $^\circ\text{C}$
	AEC-Q200 qualified; all-welded construction; non-flammable cement coating				
 Z300-C	1 W to 6 W	0.15 Ω to 10 k Ω	$\pm 5\%$; $\pm 10\%$	± 200 ppm/K	-40 $^\circ\text{C}$ to +250 $^\circ\text{C}$
	All-welded construction; high voltage surge up to 12 kV; non-flammable cement coating				
 G200	4 W to 17 W	0.1 Ω to 120 k Ω	$\pm 2\%$; $\pm 5\%$; $\pm 10\%$	100 ppm/K to 180 ppm/K	-55 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	All-welded construction; vitreous coating; enhanced humidity protection; available in CECC version (G202, G204, and G206)				
 Z300	1 W to 10 W	0.1 Ω to 30 k Ω	$\pm 1\%$; $\pm 2\%$; $\pm 5\%$; $\pm 10\%$	-10 ppm/K to 180 ppm/K	-40 $^\circ\text{C}$ to +250 $^\circ\text{C}$
	All-welded construction; non-flammable cement coating				
 PAC	1 W to 6 W	0.1 Ω to 12 k Ω	$\pm 1\%$	± 100 ppm/K	-55 $^\circ\text{C}$ to +250 $^\circ\text{C}$
	Tolerance to $\pm 1\%$				
 KK...	4 W to 17 W	0.056 Ω to 1.6 Ω ; 0.22 Ω to 82 k Ω ; 330 Ω to 82 k Ω	$\pm 5\%$; $\pm 10\%$	+400 ppm/K ± 50 ppm/K, +0 ppm/K ± 40 ppm/K, +0 ppm/K ± 10 ppm/K	-55 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	Fiberglass core, ceramic case; fireproof inorganic construction; fuseable version available (KKE.. Si)				
 WSZ	1.8 W to 3.75 W	0.1 Ω to 15 k Ω	$\pm 1\%$; $\pm 2\%$; $\pm 3\%$; $\pm 5\%$; $\pm 10\%$	-10 ppm/K to 180 ppm/K	-55 $^\circ\text{C}$ to +350 $^\circ\text{C}$
	High power wirewound SMD resistor				
 HPR	0.5 W, 1 W, 2 W	1 k Ω to 5 k Ω	$\pm 10\%$; $\pm 20\%$	± 200 ppm/K	-55 $^\circ\text{C}$ to +200 $^\circ\text{C}$
	High pulse wirewound resistor; noise suppressor				

Safety Wirewound Resistors					
Series	Power Rating $P_{25^\circ\text{C}}$	Resistance Value Range	Available Tolerance	TCR	Operating Temperature Range
 AC01..CS	1 W	3 Ω to 100 Ω	$\pm 5\%$	± 200 ppm/K	-40 $^\circ\text{C}$ to +200 $^\circ\text{C}$
	UL 1412-approved fusible wirewound safety resistor; high voltage surge handling capability up to 3 kV				
 AC03..CS	3 W	4.7 Ω to 100 Ω	$\pm 5\%$	± 200 ppm/K	-40 $^\circ\text{C}$ to +200 $^\circ\text{C}$
	UL 1412-approved fusible wirewound safety resistor; high voltage surge handling capability up to 4 kV				
 AC05..CS	5 W	10 Ω to 100 Ω	$\pm 5\%$	± 200 ppm/K	-40 $^\circ\text{C}$ to +200 $^\circ\text{C}$
	UL 1412-approved fusible wirewound safety resistor; high voltage surge handling capability up to 6 kV				

Wirewound Resistors Offer the Best Solutions for Pulse Applications

Advantages of Vishay Wirewound Resistors

- Broad product offering
- Highest power ratings up to 250 W
- Resistance values from 1.67 mΩ up to 6.0 MΩ

For the Following Applications

- Automotive
- White goods, commercial appliances, welding equipment, precision scales
- Voltage regulators, inverters, battery management
- MRI control systems, communications equipment
- Safety resistors for e-meters



Vishay's MRA wirewound resistor is NOT susceptible to the high magnetic field strengths of MRI machines



Vishay safety wirewound resistors offer source pulse load handling and are UL-recognized according to UL 1412



Useful Links

- Pulse Handling Capabilities of Wirewound Resistors
www.vishay.com/doc?49076
- Cement-Coated Wirewound Resistors
www.vishay.com/doc?49629
- Precision Wirewound Resistors
www.vishay.com/doc?49237

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