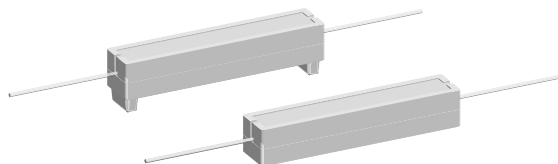


## Wirewound/Metal Oxide Resistors, Commercial Power, Axial Lead



### 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 (designated with a - 3 model ending)
- Special inorganic potting compound and ceramic case provide high thermal conductivity in a fireproof package

### STANDARD ELECTRICAL SPECIFICATIONS

MODEL	POWER RATING $P_{40^{\circ}\text{C}}$ W	RESISTANCE RANGE $\Omega$ $\pm 10\%$ Standard, $\pm 5\%$ Available		WEIGHT (Typical) g
		WIREWOUND*	METAL OXIDE*	
		CP-2	2	
CP-2-3	2	0.1 - 1k	100 - 12k	2.2
CP-3	3	0.1 - 2k	150 - 22k	3.4
CP-3-3	3	0.1 - 2k	150 - 22k	3.6
CP-5	5	0.1 - 2.4k	150 - 27k	4.8
CP-5-3	5	0.1 - 2.4k	150 - 27k	5.0
CP-7	7	0.1 - 5k	1k - 35k	6.8
CP-7-3	7	0.1 - 5k	1k - 35k	7.0
CP-10	10	0.1 - 7k	1k - 40k	9.5
CP-10-3	10	0.1 - 7k	1k - 40k	9.9
CP-15	15	0.1 - 8k	1k - 40k	16.8
CP-15-3	15	0.1 - 8k	1k - 40k	17.4
CP-20	20	0.1 - 10k	1k - 45k	22.8
CP-20-3	20	0.1 - 10k	—	23.6
CP-22	22	0.1 - 10k	—	24.5
CP-22-3	22	0.1 - 10k	—	25.3
CP-25	25	0.1 - 10k	—	37.0

\*To specifically order a Wirewound sub-assembly for resistance values that overlap between the Wirewound and Metal Oxide technologies, the model will be a CP-x-85 for standard body and CP-x-91 for body with stand-offs. To specifically order a Metal Oxide sub-assembly for resistance values that overlap between the Wirewound and Metal Oxide technologies, the model will be a CP-x-100 for a standard body and CP-x-101 for body with stand-offs. If no dash type is specified, either technology may be supplied.

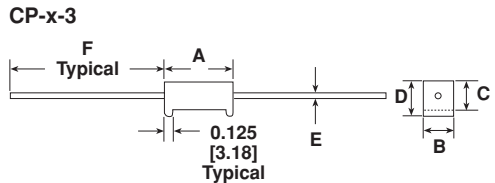
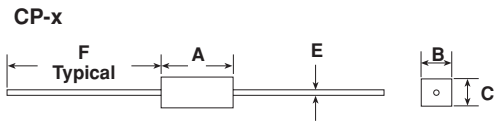
### TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	WIREWOUND CHARACTERISTICS	METAL OXIDE CHARACTERISTICS
Temperature Coefficient	ppm/ $^{\circ}\text{C}$	$\pm 600$ below 1 $\Omega$ , $\pm 300$ 1 $\Omega$ and above	$\pm 300$ for CP-2 to CP-5; $\pm 400$ for CP-7 to CP-20
Short Time Overload	-	5 x rated power for 5 seconds	5 x rated power for 5 seconds
Terminal Strength	lb	10 minimum	10 minimum
Operating Temperature Range	$^{\circ}\text{C}$	- 65/+ 275	- 65/+ 225
Dielectric Withstanding Voltage	$V_{AC}$	1000	1000
Maximum Working Voltage	V	$(P \times R)^{1/2}$	$(P \times R)^{1/2}$

**NOTE:** Wirewound CP resistors can reliably function as a fuse and as a resistor. Such components involve compromise between fusing and resistive functions; therefore, each design should be tailored to the application to ensure optimum performance. Contact factory by using the e-mail address at the bottom of this page for design assistance.

### ORDERING INFORMATION

CP-5-3 MODEL	100 $\Omega$ RESISTANCE $\Omega$	10% TOLERANCE $\pm \%$
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**DIMENSIONS**

**MATERIAL SPECIFICATIONS**

**Element:** Wirewound = Copper-nickel alloy or nickel-chrome alloy, depending on resistance value  
 Metal Oxide = High temperature fired Metal Oxide film

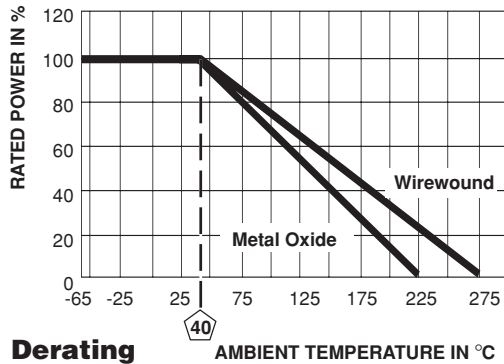
**Core:** Wirewound = Woven fiberglass  
 Metal Oxide = Alumina ceramic

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

**End Caps:** Tin plated steel

**Terminals:** Tinned copper

**Part Marking:** DALE, Model, Wattage, Value, Tolerance, Date Code


**Derating**

MODEL	DIMENSIONS in inches [millimeters]							
	A*	B	C	D	E		F	
	±0.031 [0.794]	±0.031 [0.794]	±0.031 [0.794]	±0.031 [0.794]	±0.001 [0.025]		WIRE- WOUND	METAL OXIDE
					WIRE- WOUND	METAL OXIDE	±0.125 [3.175]	MINIMUM
CP-2	0.688 [17.46]	0.250 [6.35]	0.250 [6.35]	—	0.032 [0.813]	0.032 [0.813]	1.500 [38.10]	0.750 [19.05]
CP-2-3	0.688 [17.46]	0.250 [6.35]	0.250 [6.35]	0.313 [7.94]	0.032 [0.813]	0.032 [0.813]	1.500 [38.10]	0.750 [19.05]
CP-3	0.875 [22.22]	0.313 [7.94]	0.313 [7.94]	—	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-3-3	0.875 [22.22]	0.313 [7.94]	0.313 [7.94]	0.375 [9.52]	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-5	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	—	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-5-3	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	0.406 [10.32]	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-7	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	—	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-7-3	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-10	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	—	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-10-3	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-15	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	—	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-15-3	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-20**	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	—	0.036 [0.914]	0.032 [0.813]	1.500 [38.10]	1.000 [25.40]
CP-20-3	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.036 [0.914]	—	1.500 [38.10]	—
CP-22	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	—	0.036 [0.914]	—	1.500 [38.10]	—
CP-22-3	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.036 [0.914]	—	1.500 [38.10]	—
CP-25	2.500 [63.50]	0.625 [15.87]	0.625 [15.87]	—	0.040 [1.016]	—	1.500 [38.10]	—

\*Potting compound may extend outside of ceramic case up to 0.060" [1.52] maximum per side.

\*\*Dimensions for the metal oxide

A = 2.360 [59.94], B = 0.570 [14.48], C = 0.530 [13.46], E = 0.032 [0.813], F = 1.000 [25.40]

**PERFORMANCE**

TEST	CONDITIONS OF TEST	TEST LIMITS (EIA RS-344)
Thermal Shock	-55°C to + 275°C (+225°C for Metal Oxide), 5 cycles, 30 minute dwell time	± (5.0% + 0.05Ω)ΔR
Short Time Overload	5 x rated power for 5 seconds	± (4.0% + 0.05Ω)ΔR
Dielectric Withstanding Voltage	1000V <sub>rms</sub> for one minute	± (2.0% + 0.05Ω)ΔR
Low Temperature Operation	- 65°C, full rated working voltage for 45 minutes	± (3.0% + 0.05Ω)ΔR
Humidity	75°C, 90% - 100% RH, 240 hours	± (5.0% + 0.05Ω)ΔR
Load Life	1000 hours at rated power, + 25°C, 1.5 hours "ON", 0.5 hours "OFF"	± (10.0% + 0.05Ω)ΔR
Terminal Strength	5 pounds for 30 seconds; body twisted about axis, 3 360° rotations	± (2.0% + 0.05Ω)ΔR
Resistance to Solder Heat	Terminal immersed 3.5 seconds in molten solder at 1/8" to 3/16" from body	± (4.0% + 0.05Ω)ΔR