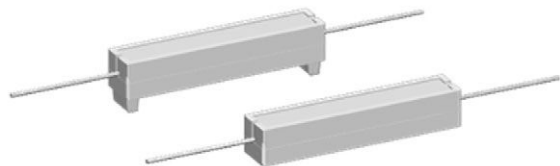




## Wirewound/Metal Oxide Resistors, Commercial Power, Axial Lead



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 PC, PCA 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 (PCA Series)
- 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	HISTORICAL MODEL	POWER RATING $P_{40^\circ\text{C}}$ W	RESISTANCE RANGE $\Omega$ WIREWOUND	RESISTANCE RANGE $\Omega$ METAL OXIDE	TOLERANCE $\pm \%$	WEIGHT (typical) g
PC-03	PC-3	3	0.1 to 2K	2.001K to 33K	5, 10	3.4
PC-05	PC-5	5	0.1 to 2.4K	2.401K to 50K	5, 10	4.8
PCA-05	PCA-5	5	0.1 to 2.4K	2.401K to 50K	5, 10	5.0
PC-07	PC-7	7	0.1 to 5K	5.001K to 50K	5, 10	6.8
PCA-07	PCA-7	7	0.1 to 5K	5.001K to 50K	5, 10	7.0
PC-10	PC-10	10	0.1 to 30K	30.001K to 50K	5, 10	9.5
PCA-10	PCA-10	10	0.1 to 30K	30.001K to 50K	5, 10	9.9
PC-15	PC-15	15	0.1 to 8K	8.001K to 50K	5, 10	16.8
PCA-15	PCA-15	15	0.1 to 8K	8.001K to 50K	5, 10	17.4
PC-20	PC-20	20	0.1 to 10K	10.001K to 50K	5, 10	22.8
PC-22	PC-22	22	0.1 to 10K	-	5, 10	24.5
PC-25	PC-25	25	0.1 to 10K	-	5, 10	37.0

## TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	WIREWOUND CHARACTERISTICS	METAL OXIDE CHARACTERISTICS
Temperature Coefficient	ppm/ $^\circ\text{C}$	$\pm 300$ for 1.0 $\Omega$ and above, $\pm 600$ below 1 $\Omega$	$\pm 400$
Short Time Overload	-	5 x rated power for 5 s	5 x rated power for 5 s
Terminal Strength	lb	10 minimum	10 minimum
Operating Temperature Range	$^\circ\text{C}$	-65 to +275	-65 to +225
Dielectric Withstanding Voltage	$V_{AC}$	1000	1000
Maximum Working Voltage	V	$(P \times R)^{1/2}$	$(P \times R)^{1/2}$

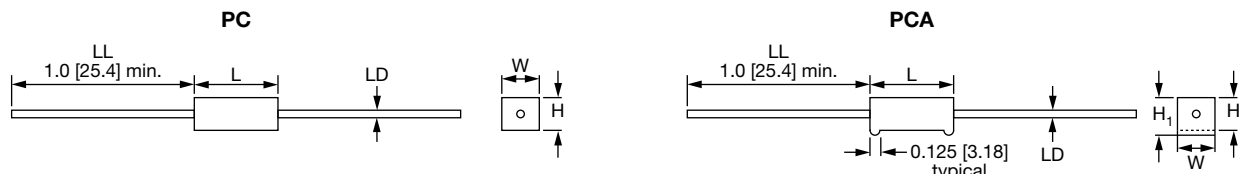
## GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: PC-0522R00KE31 (Visit [www.vishay.net](http://www.vishay.net) SAP Parts Manual for all options)

P	C	-	0	5	2	2	R	0	0	K	E	3	1			
GLOBAL MODEL (5 or 6 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 E66 = Use for metal oxide values only			(Dash Number) From 1 to 999 as applicable NI = Non-inductive				

Historical Part Number example: PC-5-22-10 %

PC-5	22 $\Omega$	10 %
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE

**DIMENSIONS** in inches [millimeters]

GLOBAL MODEL	DIMENSIONS in inches [millimeters] <sup>(1)</sup>				
	L <sup>(2)</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]
PC-03	0.875 [22.22]	0.313 [7.94]	0.313 [7.94]	-	0.036 [0.914]
PC-05	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	-	0.036 [0.914]
PCA-05	0.875 [22.22]	0.375 [9.52]	0.344 [8.73]	0.406 [10.32]	0.036 [0.914]
PC-07	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	-	0.036 [0.914]
PCA-07	1.391 [35.32]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.036 [0.914]
PC-10	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	-	0.036 [0.914]
PCA-10	1.875 [47.62]	0.375 [9.52]	0.344 [8.73]	0.469 [11.91]	0.036 [0.914]
PC-15	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	-	0.036 [0.914]
PCA-15	1.875 [47.62]	0.500 [12.70]	0.500 [12.70]	0.625 [15.87]	0.036 [0.914]
PC-20	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	-	0.036 [0.914]
PC-22	2.500 [63.50]	0.500 [12.70]	0.500 [12.70]	-	0.036 [0.914]
PC-25	2.500 [63.50]	0.625 [15.87]	0.625 [15.87]	-	0.040 [1.016]

**Notes**

- (1) For metal oxide dimensions please contact factory.  
 (2) Potting compound may extend outside of ceramic case up to 0.060 [1.52] maximum per side.

**MATERIAL SPECIFICATIONS****Element:**

wirewound = copper-nickel alloy or nickel-chrome alloy, depending on resistance value.  
 metal oxide = high temperature fired metal oxide film

**Core:**

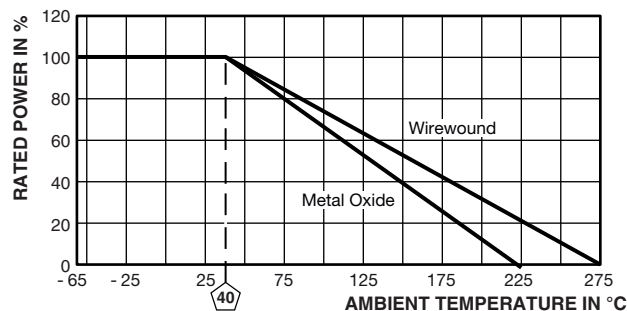
wirewound = woven fiberglass  
 metal oxide = alumina ceramic

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

**End Caps:** tin plated steel

**Terminals:** tinned copper

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

**DERATING**

PERFORMANCE		
TEST	CONDITIONS OF TEST	TEST LIMITS (EIA-344)
Thermal Shock	-55 °C to +275 °C (+225 °C for Metal Oxide), 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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