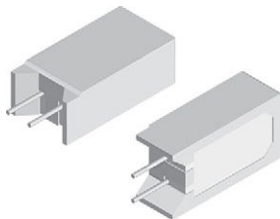


## Wirewound / Metal Film Resistors, Commercial Power, Vertical Mount



### FEATURES

- Board space saving due to vertical design
- Meets or exceeds requirements of EIA standard RS-344
- High power to size ratio
- 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)



### Note

\* This datasheet provides information about parts that are RoHS-compliant and /or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

### STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $P_{70^{\circ}\text{C}}$ W	RESISTANCE RANGE $\Omega$	TOLERANCE $\pm \%$	WEIGHT (typical) g
CPCL02	CPCL-2	2	0.01 to 0.10	5, 10	3.5
CPCC02	CPCC-2	2	0.1 to 500	5, 10	3.5
CPCP02	CPCP-2	2	0.1 to 4K	1, 5	3.5
CPCF02	CPCF-2	2	501 to 150K	1, 5, 10	3.5
CPCL03	CPCL-3	3	0.01 to 0.10	5, 10	5.5
CPCC03	CPCC-3	3	0.1 to 800	5, 10	5.5
CPCP03	CPCP-3	3	0.1 to 5K	1, 5	5.5
CPCF03	CPCF-3	3	801 to 150K	1, 5, 10	5.5
CPCL05	CPCL-5	5	0.01 to 0.10	5, 10	6.9
CPCC05	CPCC-5	5	0.1 to 800	5, 10	6.9
CPCP05	CPCP-5	5	0.1 to 5K	1, 5	6.9
CPCF05	CPCF-5	5	801 to 150K	1, 5, 10	6.9
CPCL10	CPCL-10	10	0.01 to 0.10	5, 10	14.3
CPCC10	CPCC-10	10	0.1 to 1.5K	5, 10	14.3
CPCP10	CPCP-10	10	0.1 to 8K	1, 5	14.3

### Note

- Non-inductively wound types are available on the CPCP series signified by a 1 in the special character on part number such as CPCP0510R00FB321. Maximum resistance value will be  $\frac{1}{2}$  of the standard CPCP

### TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CPCLxx	CPCCxx	CPCPxx	CPCFxx
Temperature Coefficient	ppm/ $^{\circ}\text{C}$	$\pm 100 = 0.05 \Omega$ to $0.1 \Omega$ , $\pm 400 = 0.01 \Omega$ to $0.049 \Omega$	$\pm 300 = 1.0 \Omega$ and above, $\pm 600 = 0.1 \Omega$ to $0.99 \Omega$ ,	$\pm 20 = 10 \Omega$ and above, $\pm 50 = 1.0 \Omega$ to $9.9 \Omega$ , $\pm 90 = 0.1 \Omega$ to $0.99 \Omega$	$\pm 50$ all values
Short Time Overload	-	5 x rated power for 5 s			
Maximum Working Voltage	V	$(P \times R)^{1/2}$			
Operating Temperature Range	$^{\circ}\text{C}$	-65 to +275			
Terminal Strength	lb	10 minimum			
Dielectric Withstanding Voltage	$V_{AC}$	1000			

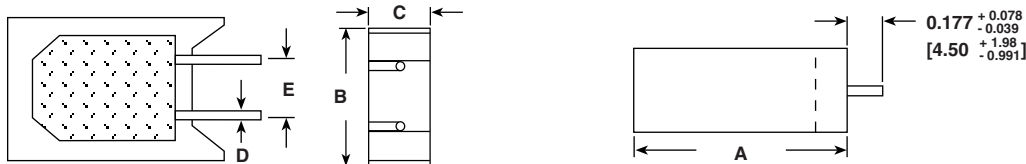
**GLOBAL PART NUMBER INFORMATION**
**Global Part Numbering Example: CPCC0515R00JB32**

C	P	C	C	0	5	1	5	R	0	0	J	B	3	2			
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--

GLOBAL MODEL	VALUE	TOLERANCE	PACKAGING	SPECIAL
(See Standard Electrical Specifications Global Model column for options)	R = decimal K = thousand R1500 = 0.15 $\Omega$ 1K500 = 1500 $\Omega$	F = $\pm 1.0\%$ H = $\pm 3.0\%$ J = $\pm 5.0\%$ K = $\pm 10.0\%$	E32 = lead (Pb)-free two layer bulk E01 = lead (Pb)-free skin pack B32 = tin / lead two layer bulk J01 = tin / lead skin pack	(Dash number) (up to 3 digits) From 1 to 999 as applicable

**Historical Part Numbering Example: CPCC-5 15  $\Omega$  5 % B32**

CPCC-5	15 $\Omega$	5 %	B32
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

**DIMENSIONS** in inches [millimeters]


GLOBAL MODEL	DIMENSIONS in inches [millimeters]				
	A $\pm 0.031$ [0.794]	B $\pm 0.031$ [0.794]	C $+ 0.043$ [1.09] $- 0.012$ [0.305]	D $\pm 0.005$ [0.127]	E $\pm 0.040$ [1.02]
CPCL02, CPCC02 CPCP02, CPCF02	0.807 [20.50]	0.433 [11.00]	0.276 [7.01]	0.032 [0.813]	0.197 [5.00]
CPCL03, CPCC03 CPCP03, CPCF03	0.984 [24.99]	0.472 [11.99]	0.315 [8.00]	0.032 [0.813]	0.197 [5.00]
CPCL05, CPCC05 CPCP05, CPCF05	1.003 [25.48]	0.512 [13.00]	0.354 [8.99]	0.032 [0.813]	0.197 [5.00]
CPCL10, CPCP10	1.372 [34.85]	0.633 [16.08]	0.485 [12.32]	0.040 [1.02]	0.290 [7.37]
CPCC10				0.036 [0.914]	

**MATERIAL SPECIFICATIONS**
**Part Marking:** DALE, model, wattage, value, tolerance, date code

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

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

**Terminals:** tinned copper

**CPCC: 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

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

**Core:** ceramic

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

**End Caps:** stainless steel

**Terminals:** tinned Copperweld®

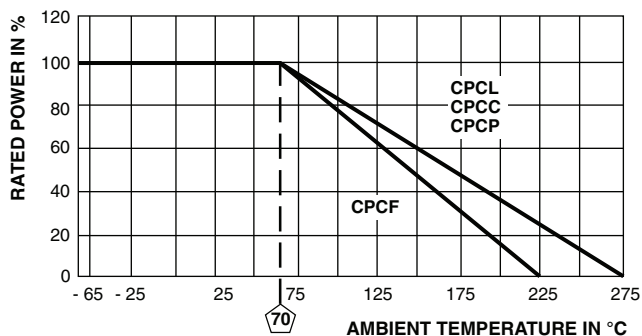
**CPCF: Element:** metal film - nickel-chrome alloy

**Core:** Alumina ceramic

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

**End Caps:** brass alloy

**Terminals:** solder-coated copper


**DERATING**


PERFORMANCE			
TEST	CONDITIONS OF TEST	CPCP TEST LIMITS	CPCC, CPCL, CPCF TEST LIMITS
Thermal Shock	-55 °C to +275 °C (+225 °C for CPCF), 5 cycles, 30 min dwell time	$\pm (2.0 \% + 0.05 \Omega) \Delta R$	$\pm (5.0 \% + 0.05 \Omega) \Delta R$
Short Time Overload	5 x rated power for 5 s	$\pm (2.0 \% + 0.05 \Omega) \Delta R$	$\pm (4.0 \% + 0.05 \Omega) \Delta R$
Dielectric Withstanding Voltage	1000 V <sub>RMS</sub> for 1 min	$\pm (0.1 \% + 0.05 \Omega) \Delta R$	$\pm (2.0 \% + 0.05 \Omega) \Delta R$
Low Temperature Storage	-65 °C, full rated working voltage for 45 min	$\pm (2.0 \% + 0.05 \Omega) \Delta R$	$\pm (3.0 \% + 0.05 \Omega) \Delta R$
Bias Humidity	75 °C, 90 % to 100 % RH, 240 h	$\pm (2.0 \% + 0.05 \Omega) \Delta R$	$\pm (5.0 \% + 0.05 \Omega) \Delta R$
Load Life	1000 h at rated power, + 40 °C, 1.5 h "ON", 0.5 h "OFF"	$\pm (5.0 \% + 0.05 \Omega) \Delta R$	$\pm (5.0 \% + 0.05 \Omega) \Delta R$
Terminal Strength	5 s to 10 s 10 pound pull test	$\pm (1.0 \% + 0.05 \Omega) \Delta R$	$\pm (1.0 \% + 0.05 \Omega) \Delta R$
Resistance to Solder Heat	Terminal immersed 3.5 s in molten solder up to body	$\pm (1.0 \% + 0.05 \Omega) \Delta R$	$\pm (4.0 \% + 0.05 \Omega) \Delta R$



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.