

# Metal Film Resistors, Industrial, $\pm 2\%$ and $\pm 5\%$ Tolerance



## FEATURES

- Dual power rating:  
 $P_{70} = 0.25\text{ W}$  with 1.5 % stability  
 $P_{70} = 0.50\text{ W}$  with 2.0 % stability
- $\pm 2\%$  and  $\pm 5\%$  tolerance
- Temperature coefficient:  $\pm 100\text{ ppm/K}$  and  $\pm 200\text{ ppm/K}$
- Tape and reel packaging for automatic insertion (52.4 mm inside tape spacing per EIA-296-E)
- Flame retardant epoxy conformal coating (red brown color)
- Standard 4 band color code marking for ease of identification after mounting
- Pure tin plating provides compatibility with lead (Pb)-free and lead containing soldering processes
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

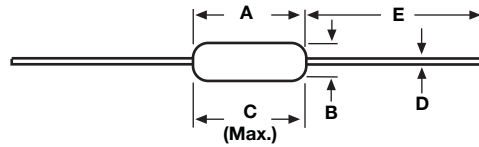

**RoHS**  
 COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS						
PRODUCT	POWER RATING $P_{70}$ W	LIMITING ELEMENT VOLTAGE MAX. $V_{\Xi}$	TEMPERATURE COEFFICIENT $\pm\text{ ppm/K}$	TOLERANCE $\pm\%$	RESISTANCE RANGE $\Omega$	E-SERIES
CCF07	0.25	250	100	2, 5	10 to 1M	E24
CCF07	0.5	250	100	2, 5	10 to 1M	E24
CCF07	0.25	250	200	5	1.1M to 2M	E24
CCF07	0.5	250	200	5	1.1M to 2M	E24

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	CCF07
Rated Dissipation, $P_{70}$	W	0.25/0.5
Maximum Working Voltage, $U_{\max}$	$V_{\Xi}$	$\leq 250$
Insulation Voltage (1 min)	$V_{\text{eff}}$	500
Dielectric Strength	$V_{\text{AC}}$	450
Insulation Resistance	$\Omega$	$\geq 10^{11}$
Operating Temperature Range	$^{\circ}\text{C}$	-65 to +150
Terminal Strength (pull test)	lb	2
Weight	g	0.35 max.

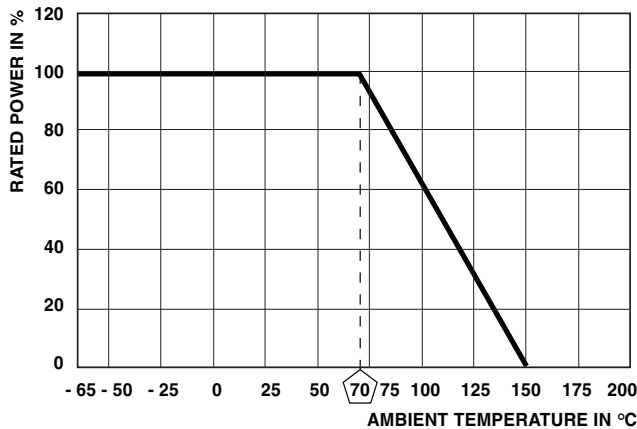
PART NUMBER AND PRODUCT DESCRIPTION						
PART NUMBER: CCF07240RGK E36						
C	C	F	0	7	2	4
0	R	G	K	E	3	6
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
PRODUCT	RESISTANCE VALUE	TOLERANCE CODE	TEMPERATURE COEFFICIENT	PACKAGING	SPECIAL	
CCF07	R = decimal K = thousand M = million 10R0 = 10 $\Omega$ 680K = 680 k $\Omega$ 2M00 = 2.0 M $\Omega$	G = $\pm 2\%$ J = $\pm 5\%$	K = 100 ppm/K N = 200 ppm/K	E36 = lead (Pb)-free T/R (5000 pieces)	Blank = standard (dash number) (up to 3 digits) From 1 to 999 as applicable	

**DIMENSIONS** in inches (millimeters)



PRODUCT	A	B	C (Max.)	D	E
CCF07	0.245 ± 0.020 (6.22 ± 0.51)	0.090 ± 0.008 (2.29 ± 0.20)	0.295 (7.5)	0.022 ± 0.002 (0.58 ± 0.05)	1.100 ± 0.040 (27.94 ± 1.02)

**DERATING**



**MARKING**

The nominal resistance and tolerance are marked on the resistor using four colored bands in accordance with IEC 60062, marking codes for resistors and capacitors.

**RESISTANCE VALUES**

Vishay CCF07 is available in the standard 24 resistance values per decade. Values are obtained from the following decade table by multiplying by powers of 10. As an example: 24 can represent 24 Ω, 240 Ω, 2.4 kΩ, 24 kΩ or 240 kΩ.

10	18	33	56
11	20	36	62
12	22	39	68
13	24	43	75
15	27	47	82
16	30	51	91

**PERFORMANCE**

TEST <sup>(1)</sup>	MAX. ΔR (Typical Test Lots)
Thermal Shock	± 1.0 %
Short Time Overload	± 0.5 %
Low Temperature Operation	± 0.5 %
Moisture Resistance	± 1.5 %
Resistance to Soldering Heat	± 0.5 %
Shock/Bump	± 0.5 %
Vibration	± 0.5 %
Terminal Strength	± 0.5 %
Dielectric Withstanding Voltage	± 0.5 %
Life	± 1.5 % <sup>(2)</sup>

**Notes**

- <sup>(1)</sup> Test specifications as per IEC 60115-1
- <sup>(2)</sup> Life ΔR is ± 2.0 % for 1/2 W rating



## **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.