

## Metal Film Resistors, Industrial, ± 1 % Tolerance



### FEATURES

- Power Ratings: 1/4, 1/2, 3/4 and 1 W at + 70 °C
- ± 100 ppm/°C temperature coefficient
- Superior electrical performance
- Flame retardant epoxy conformal coating
- Standard 5 band color code marking for ease of identification after mounting
- Tape and reel packaging for automatic insertion (52.4 mm inside tape spacing per EIA-296-E)
- Lead (Pb)-free version is RoHS compliant



**RoHS\***  
COMPLIANT

### STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $P_{70\text{ }^\circ\text{C}}$ W	LIMITING ELEMENT VOLTAGE MAX. $V_{\equiv}$	TEMPERATURE COEFFICIENT ppm/°C	TOLERANCE %	RESISTANCE RANGE $\Omega$	E-SERIES
CCF55	CCF-55	0.25/0.5	250	± 100	± 1	10R - 3.01M	96
CCF60	CCF-60	0.50/0.75/1.0	500	± 100	± 1	10R - 1M	96

### TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CCF55	CCF60
Rated Dissipation at 70 °C	W	0.25/0.5	0.5/0.75/1.0
Maximum Working Voltage	$V_{\equiv}$	≤ 250	≤ 500
Insulation Voltage (1 min)	$V_{\text{eff}}$	500	500
Dielectric Strength	$V_{\text{AC}}$	450	450
Insulation Resistance	$\Omega$	≥ 10 <sup>11</sup>	≥ 10 <sup>11</sup>
Operating Temperature Range	°C	- 65/+ 165	- 65/+ 165
Terminal Strength (pull test)	lb	2	2
Weight	g	0.35 max	0.75 max

### GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CCF55301RFKR36 (preferred part numbering format)



GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	TEMPERATURE COEFFICIENT	PACKAGING	SPECIAL
CCF55 CCF60	R = Decimal K = Thousand M = Million 10R0 = 10 $\Omega$ 680K = 680 k $\Omega$ 1M00 = 1.0 M $\Omega$	F = ± 1 %	K = 100 ppm	E36 = Lead (Pb)-free, CCF55 = T/R (5000 pieces) CCF60 = T/R (2500 pieces) R36 = Tin/Lead, CCF55 = T/R (5000 pieces) CCF60 = T/R (2500 pieces)	Blank = Standard (Dash Number) (up to 3 digits) From 1 - 999 as applicable

Historical Part Number example: CCF-553010F (will continue to be accepted)



\* Pb containing terminations are not RoHS compliant, exemptions may apply

**DIMENSIONS** in inches [millimeters]


GLOBAL MODEL	A	B	C (Max.)	D	E
<b>CCF55 (Sn/Pb)</b>	0.245 $\pm$ 0.020 [6.22 $\pm$ 0.51]	0.090 $\pm$ 0.008 [2.29 $\pm$ 0.20]	0.265 [6.73]	0.025 $\pm$ 0.002 [0.64 $\pm$ 0.05]	1.100 $\pm$ 0.040 [27.94 $\pm$ 1.02]
<b>CCF55 (Sn)</b>	0.245 $\pm$ 0.020 [6.22 $\pm$ 0.51]	0.090 $\pm$ 0.008 [2.29 $\pm$ 0.20]	0.265 [6.73]	0.023 $\pm$ 0.002 [0.60 $\pm$ 0.05]	1.100 $\pm$ 0.040 [27.94 $\pm$ 1.02]
<b>CCF60</b>	0.344 $\pm$ 0.031 [8.74 $\pm$ 0.79]	0.139 $\pm$ 0.009 [3.53 $\pm$ 0.23]	0.400 [10.16]	0.025 $\pm$ 0.002 [0.64 $\pm$ 0.05]	1.000 $\pm$ 0.040 [25.40 $\pm$ 1.02]

**RESISTANCE VALUES**

Vishay Dale Models CCF55 and CCF60 are available in the standard 96 resistance values per decade. Values are obtained from the following decade table by multiplying by powers of 10. As an example: 30.1 can represent 30.1  $\Omega$ , 301  $\Omega$ , 3.01 k $\Omega$ , 30.1 k $\Omega$  or 301 k $\Omega$ .

10.0	14.7	21.5	31.6	46.4	68.1
10.2	15.0	22.1	32.4	47.5	69.8
10.5	15.4	22.6	33.2	48.7	71.5
10.7	15.8	23.2	34.0	49.9	73.2
11.0	16.2	23.7	34.8	51.1	75.0
11.3	16.5	24.3	35.7	52.3	76.8
11.5	16.9	24.9	36.5	53.6	78.7
11.8	17.4	25.5	37.4	54.9	80.6
12.1	17.8	26.1	38.3	56.2	82.5
12.4	18.2	26.7	39.2	57.6	84.5
12.7	18.7	27.4	40.2	59.0	86.6
13.0	19.1	28.0	41.2	60.4	88.7
13.3	19.6	28.7	42.2	61.9	90.9
13.7	20.0	29.4	43.2	63.4	93.1
14.0	20.5	30.1	44.2	64.9	95.3
14.3	21.0	30.9	45.3	66.5	97.6


**DERATING**
**MARKING**

- Color band

**PERFORMANCE**

POWER RATING at + 70 °C		
CCF55	1/4 W	1/2 W
CCF60	1/2 W	3/4 W and 1 W
TEST <sup>(1)</sup>	MAXIMUM $\Delta R$	MAXIMUM $\Delta R$
Thermal Shock	$\pm 0.5\%$	-
Short Time Overload	$\pm 0.5\%$	-
Low Temperature Operation	$\pm 0.5\%$	-
Moisture Resistance	$\pm 1.5\%$	-
Resistance to Soldering Heat	$\pm 0.5\%$	-
Shock/Bump	$\pm 0.5\%$	-
Vibration	$\pm 0.5\%$	-
Life	$\pm 0.5\%$	$\pm 1.0\%$
Terminal Strength	$\pm 0.2\%$	-
Dielectric Withstanding Voltage	$\pm 0.5\%$	-

**Note:**
<sup>(1)</sup> Test Methods per MIL-STD-202G/IEC 60115/DIN EN140000 (as applicable).



## Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.