

# Metal Film Resistors, Industrial, $\pm 1\%$ and $\pm 5\%$ Tolerance



## FEATURES

- 0.33 W power rating
- $\pm 100$  ppm/ $^{\circ}\text{C}$  standard,  $\pm 50$  ppm/ $^{\circ}\text{C}$  available upon request
- Superior electrical performance
- Flame retardant epoxy conformal coating
- Standard 4 or 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)
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS\***  
COMPLIANT

## Note

\* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

## STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $P_{70^{\circ}\text{C}}$ W	MAXIMUM WORKING VOLTAGE V <sup>(2)</sup>	TEMPERATURE COEFF. <sup>(1)</sup> $\pm$ ppm/ $^{\circ}\text{C}$	TOLERANCE $\pm$ %	RESISTANCE RANGE $\Omega$	E-SERIES
CCF50	CCF-50	0.33	200	100	1, 5	10 to 1M	96 for 1 % 24 for 5 %

## Notes

<sup>(1)</sup> 50 ppm/ $^{\circ}\text{C}$  on request

<sup>(2)</sup> Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less.

## TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CCF50
Rated Dissipation at 70 $^{\circ}\text{C}$	W	0.33
Maximum Working Voltage	V	$\leq 200$
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 + 165
Weight	g	0.11 max.

## GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CCF50301RFKR36 (preferred part numbering format)

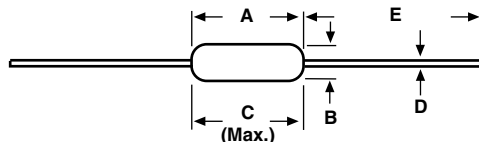
C	C	F	5	0	3	0	1	R	F	K	R	3	6			
GLOBAL MODEL		RESISTANCE VALUE				TOLERANCE CODE		TEMPERATURE COEFFICIENT		PACKAGING			SPECIAL			
CCF50		R = Ω K = kΩ M = MΩ 10R0 = 10 Ω 680K = 680 kΩ 1M00 = 1.0 MΩ				F = ± 1 % J = ± 5 %		H = 50 ppm K = 100 ppm		E36 = Lead (Pb)-free, T/R (5000 pieces)  R36 = Tin/Lead, T/R (5000 pieces)			Blank = Standard (Dash Number) (up to 3 digits) From 1 to 999 as applicable			

Historical Part Number example: CCF-503010F (will continue to be accepted)

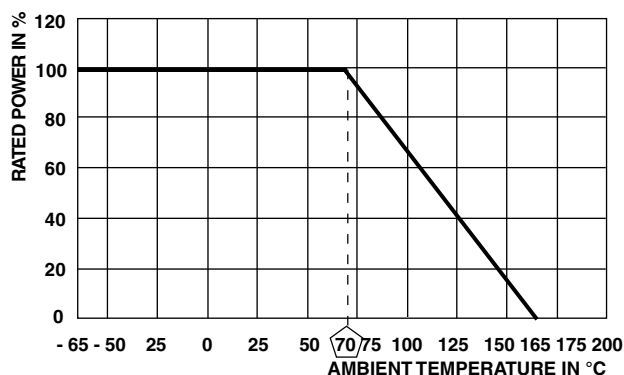
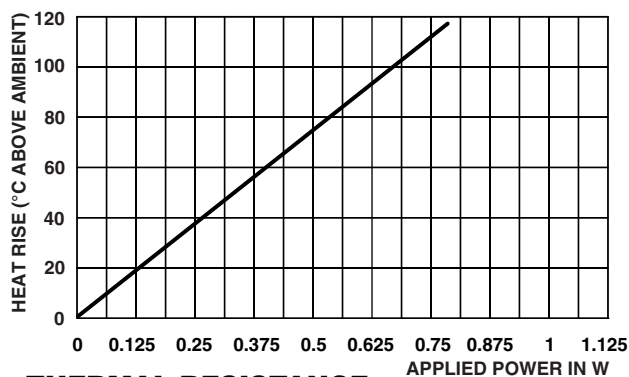
CCF-50	3010	F	R36
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

## Note

- For additional information on packaging, refer to the Through-Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544)).

**DIMENSIONS** in inches (millimeters)


DIMENSION	INCHES	MILLIMETERS
A	$0.133 \pm 0.010$	$(3.3 \pm 0.025)$
B	$0.062 \pm 0.004$	$(1.57 \pm 0.10)$
C (Max.)	0.143	(3.63)
D	$0.020 \pm 0.002$	$(0.51 \pm 0.05)$
E	$1.125 \pm 0.040$	$(28.58 \pm 1.02)$


**DERATING**

**THERMAL RESISTANCE**
**MARKING**

Color code marking with 5 color bands for  $\pm 1\%$  product and 4 color bands for  $\pm 5\%$  product

**PERFORMANCE**

TEST <sup>(1)</sup>	MAXIMUM $\Delta R$ (TYPICAL TEST LOTS)
Thermal Shock	$\pm 0.1\%$
Short Time Overload	$\pm 0.1\%$
Low Temperature Operation	$\pm 0.1\%$
Moisture Resistance	$\pm 0.2\%$
Resistance to Soldering Heat	$\pm 0.05\%$
Shock	$\pm 0.1\%$
Vibration	$\pm 0.05\%$
Life	$\pm 0.5\%$
Terminal Strength	$\pm 0.1\%$
Dielectric Withstanding Voltage	$\pm 0.05\%$

**Note**

<sup>(1)</sup> Tests per MIL-R-10509



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## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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