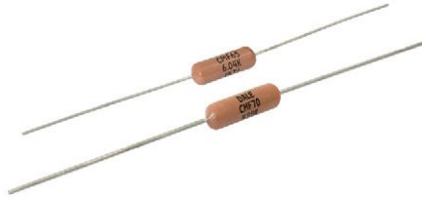


# Metal Film Resistors, Axial, Industrial, Flame Retardant



MATERIAL SPECIFICATIONS	
Element	Vacuum-deposited nickel-chrome alloy
Core	Fire-cleaned high purity ceramic
Coating	Flame retardant epoxy, with flameproof undercoat; formulated for higher power, with superior moisture and mechanical protection
Solderability	Continuous satisfactory coverage when tested in accordance with MIL-R-10509

## FEATURES

- Flame retardant epoxy coating (UL 94 V-0)
- Especially suited for circuitry where functions, environments and duty cycles demand power resistors
- Controlled temperature coefficient
- Excellent high frequency characteristics
- Exceptionally low noise; typically 0.10  $\mu\text{V/V}$
- Low voltage coefficient to  $\pm 5$  ppm/V
- Operating temperature range:  $-55^\circ\text{C}$  to  $+175^\circ\text{C}$
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS\***  
Available

### 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	POWER RATING <sup>(1)</sup> $P_{25^\circ\text{C}}$ W	POWER RATING <sup>(1)</sup> $P_{70^\circ\text{C}}$ W	POWER RATING <sup>(1)</sup> $P_{125^\circ\text{C}}$ W	MAXIMUM WORKING VOLTAGE V	RESISTANCE RANGE $\Omega$	TOLERANCE $\pm \%$	TEMPERATURE COEFFICIENT $\pm$ ppm/ $^\circ\text{C}$
CMF65..146	2.5	1.75	1.25	500	1 to 15M	1, 2, 5	100
CMF70..146	3	2	1.5	500	1 to 15M	1, 2, 5	100

### Note

<sup>(1)</sup> Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less.

TECHNICAL SPECIFICATIONS			
PARAMETER	UNIT	CMF65...146	CMF70...146
Maximum Working Voltage	$V_{\equiv}$	$\leq 500$	
Insulation Voltage (1 min)	$V_{\text{eff}}$	$> 500$	
Voltage Coefficient (Max.)	ppm/V	$\pm 5$ (measured between 10 % and full rated voltage)	
Dielectric Strength	$V_{\text{AC}}$	900	
Insulation Resistance	$\Omega$	$\geq 10^{11}$	
Operating Temperature Range	$^\circ\text{C}$	$-55$ to $+175$	
Terminal Strength (Pull test)	lb	2	5
Noise	dB	0.10 $\mu\text{V/V}$ over a decade of frequency, with low and intermediate resistance values typically below 0.5 $\mu\text{V/V}$	
Weight (Max.)	g	1.20	1.30

GLOBAL PART NUMBER INFORMATION																	
Global Part Numbering: CMF6551K100FKCP146 (preferred part numbering format)																	
C	M	F	6	5	5	1	K	1	0	0	F	K	C	P	1	4	6
GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	TEMP. COEFFICIENT	PACKAGING	SPECIAL												
CMF65 CMF70	R = $\Omega$ K = k $\Omega$ M = M $\Omega$ 10R000 = 10 $\Omega$ 1K3300 = 1.33 k $\Omega$ 1M0000 = 1.0 M $\Omega$	F = $\pm 1 \%$ G = $\pm 2 \%$ J = $\pm 5 \%$	K = 100 ppm	EK = lead (Pb)-free, bulk EA = lead (Pb)-free, T/R (1000 pieces) BF = tin/lead, bulk CP = tin/lead, T/R (1000 pieces)	(Dash number) 146 = flame retardant												

### Note

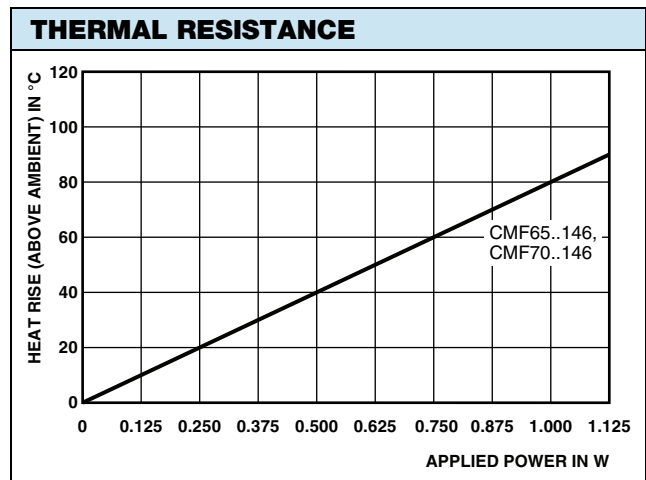
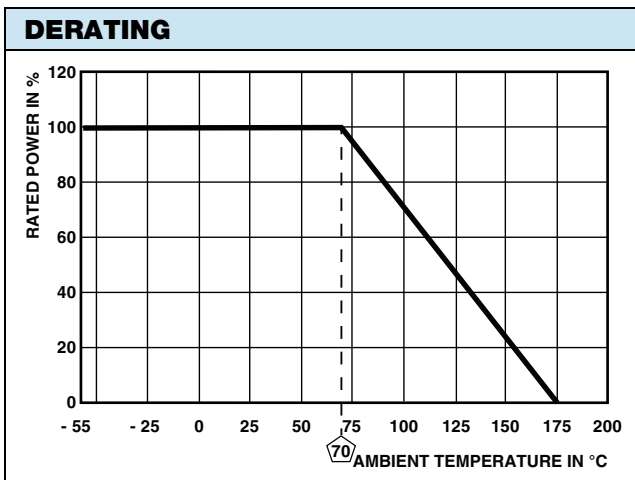
- For additional information on packaging, refer to the Through Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544)).



DIMENSIONS in inches (millimeters)				
GLOBAL MODEL	A	B	C (Max.)	D
CMF65..146	0.562 ± 0.031 (14.27 ± 0.79)	0.215 ± 0.015 (5.46 ± 0.38)	0.687 (17.45)	0.025 ± 0.002 (0.64 ± 0.05)
CMF70..146	0.562 ± 0.031 (14.27 ± 0.79)	0.230 ± 0.015 (5.84 ± 0.38)	0.687 (17.45)	0.032 ± 0.002 (0.81 ± 0.05)

**Note**

(1) Lead length for product in bulk pack. For product supplied in tape and reel, the actual lead length would be based on body size, tape spacing, and lead trim.



PERFORMANCE		
TEST (TEST METHODS - MIL-STD-202)	AT +70 °C	AT +125 °C
	MAXIMUM ΔR (TYPICAL TEST LOTS)	
Short Time Overload	± 0.05 %	± 0.05 %
Low Temperature Operation	± 0.05 %	± 0.05 %
Moisture Resistance	± 0.05 %	± 0.05 %
Shock	± 0.01 %	± 0.01 %
Vibration	± 0.04 %	± 0.04 %
Temperature Cycling	± 0.15 %	± 0.15 %
Load Life	± 1.0 %	± 1.0 %
Dielectric Withstanding Voltage	± 0.01 %	± 0.01 %
Effect of Solder	± 0.03 %	± 0.03 %

MARKING	
CMF65-146, CMF70-146: (5 lines):	
DALE	Manufacturer
C65-146	Model (C65-146 = CMF65-146, C70-146 = CMF70-146)
49.9KΩ	Value
1% T1	Tolerance and TC (T1 = 100 ppm)
1308	4-digit date code



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