

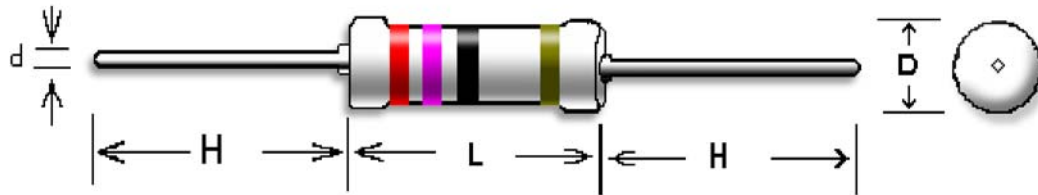
NFR - Non Flammable Carbon Film Resistor

Specifications Per

- IEC 115-1 115-4
- MIL R-10509
- DIN 44051 44052

Features

- Conformal Multi-layer Non-Flammable Coating
- Color Code Per MIL & EIA Standards
- Special Tin Plated Electrolytic Copper Lead Wire



Dimensions:

Type	Body Length (L , mm)	Body Diameter (D , mm)	Lead Wire Length (H , mm)	Lead Wire Diameter (d , mm)	Net Weight Per 1000Pcs
NFR16	3.2±1.0	1.9±0.2	28±3.0	0.45±0.02	145 Grams
NFR20	3.2±1.0	1.9±0.2	28±3.0	0.45±0.02	145 Grams
NFR25	6.5±1.0	2.4±0.2	26±3.0	0.55±0.03	220 Grams
NFR51	8.8±1.0	3.2±0.2	26±3.0	0.60±0.03	340 Grams
NFR52	6.5±1.0	2.6±0.3	26±3.0	0.55±0.03	300 Grams
NFR100	12.0±1.0	4.5±0.5	26±3.0	0.70±0.03	600 Grams
NFR200	15.5±1.0	6.0±0.5	26±3.0	0.80±0.03	1200 Grams

General Specifications:

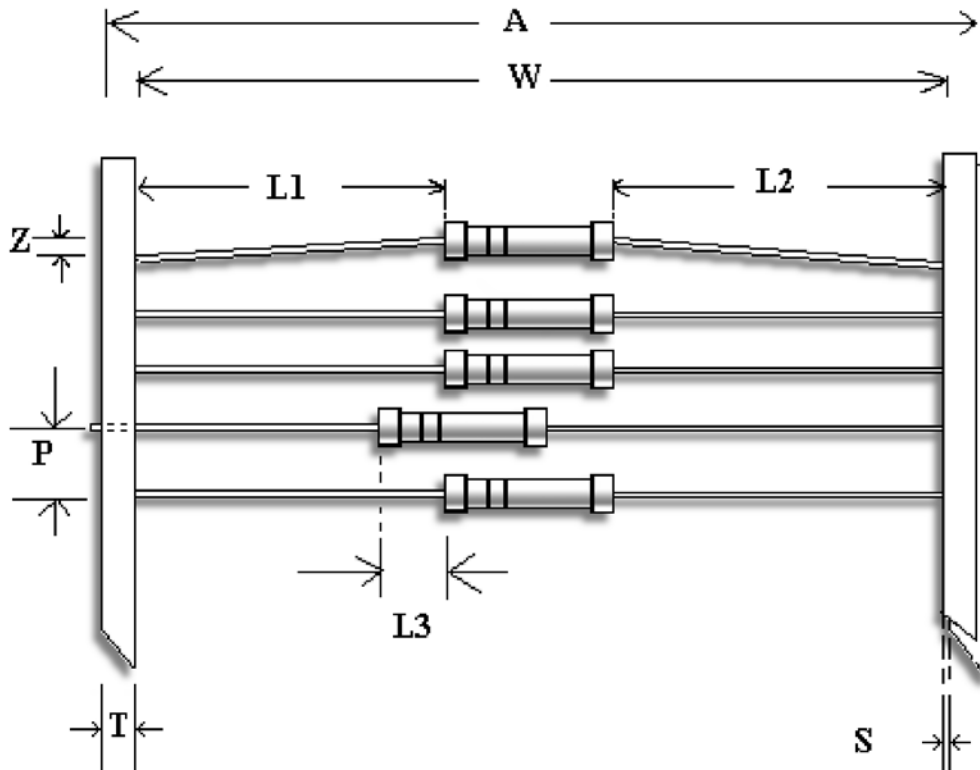
Type	Power Rating At 70°C	Max. Working Voltage	Max. Overload Voltage	Min. Resistance	Max. Resistance	Resistance Tolerance	Standard Resistance Values
NFR16	1/6W	200V	400V	1Ω	1.0MΩ	±5%	E-24
NFR20	1/4W	250V	500V	1Ω	1.0MΩ	±5%	E-24
NFR25	1/3W	250V	500V	1Ω	10MΩ	±5%	E-24
NFR51	1/2W	350V	650V	1Ω	10MΩ	±5%	E-24
NFR52	1/2W	350V	500V	1Ω	4.7MΩ	±5%	E-24
NFR100	1W	500V	1000V	1Ω	1.0MΩ	±5%	E-24
NFR200	2W	500V	1000V	1Ω	1.0MΩ	±5%	E-24

Special sizes, values, and specifications not listed available on special order.

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Taping/Packing Specifications:



Unit (mm)

Type	A Max.	L1-L2 (Max.)	L3 (Max.)	P ±0.5	S (Max.)	T ±0.5	W ±1.5	Z (Max.)
NFR16	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
NFR20	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
NFR25	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
NFR51	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
NFR52	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
NFR100	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
NFR200	76	±1.5	1.0	10.0	0.8	6.0	63.5	1.2

Type	Packing Type	NFR16	NFR20	NFR25	NFR51	NFR52	NFR100	NFR200
Minimum Packing QTY (pcs)	Reel	5000	5000	5000	3000	5000	2000	1000
	Ammo pack	5000	5000	5000	2000	2000	1000	500

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Technical Specifications:

Characteristics	Limits			
Dielectric Withstanding Voltage, V AC or DC	NFR16 / 20	300		
	NFR25 / 52	500		
	NFR51	700		
	NFR100 / 200	1000		
Temperature Coefficient, PPM / °C	NFR16 /20	NFR25 /51 /52	NFR100 /200	
	≤ 33K	≤ 33K	≤ 56K	±300
	36K~330K	36K~330K	68K~470K	- 500
	130K~470K	360K~470K	510K~1.0M	- 700
	510K~910K	510K~1.0M	>1.0M	-1000
	>910K	>1.0M		-1500
Operating Temperature Range, °C	-55~+155			
Insulation Resistance, MΩ	10 ⁴			
Voltage Coefficient, PPM/V	25			
Power Derating, Linear	100% at 70°C, down to zero at 155°C			

Performance Specifications:

Test Characteristics	Test Conditions	Limits
Short Time Over Load	IEC 60115-1 4.13 5 seconds 2.5x rated voltage (not over max. overload voltage)	±(1%+0.05R)
Load Life In Humidity	IEC 60115-1 4.24 56 days at 40°C and 93% relative humidity	±5%
Load Life 1,000 hours	IEC 60115-1 4.25.1 Rated load 1.5 hours ON, 0.5 hours OFF, at 70°C	±5%
Resistance To Soldering Heat	IEC 60115-1 4.18 10 seconds at 260°C solder bath temperature	±(1%+0.05R)
Solderability	MIL-STD-202 Method 208 Solder area covered after 230±5°C/5±0.5 seconds w/ flux applied	95% Min.
Vibration	IEC 60115-1 4.22 Six hours in each parallel and axial direction w/ a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±(1%+0.05R)
Terminal Endurance	IEC 60115-1 4.25.3 1000 hours at 155°C without load	±(1%+0.05R)
Thermal Shock	IEC 60115-1 4.19 -55°C 30minutes, +155°C 30minutes, 5 cycles	±(2%+0.05R)

Ordering Information

Type	Tolerance	Resistance Value	Packaging	Special Request (Optional)
NFR16	J (5%)	10K	TB (Tape/Box)	LV (Low value)

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