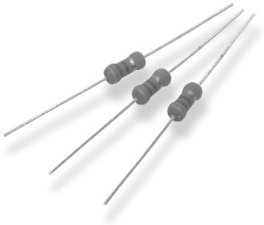
Type FRN Series



The resistive element comprises a resistive film sputtered onto a ceramic element. Metal end caps are force fitted to the element prior to spiralling. Tinned copper lead wires are welded to the end caps and the components are then coated with four layers of a flame-proof cement. All resistors are tested for value and tolerance. The technology allows the manufacture of custom fusible characteristics.

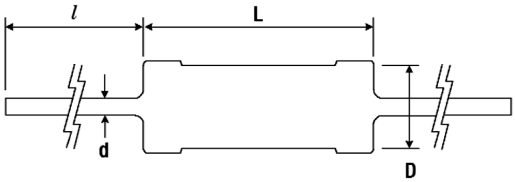
Key Features

- **Superior quality resistors with fusing characteristics for overload conditions.**
- **Flame-proof during fusing.**
- **Ideal for use in safety-critical and circuit protection applications.**
- **These resistors fuse in less than 60 seconds at 16 times rated power. (See table)**

Characteristics - Electrical

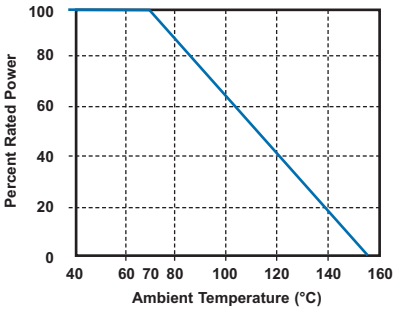
	FRN25	FRN50S	FRN100S	FRN200S	FRN300S
Rated Power @ 70°C (W)	0.25	0.5	1	2	3
Resistance Range (Ohms) Min	R12	R12	R33	R30	R30
Max	12K	12K	10K	1K0	1K0
Tolerance (%)	5				
Code letter	J				
Temperature Coefficient (ppm/°C)	±350			±200 (-30°C to +150°C)	
Selection Series	E12				
Limiting Element Voltage	250	250	300	300	300
Max Permitted Element Voltage	250	250	300	350	350
Max Overload Voltage	500	500	600	600	600
Max Intermittent Overload Voltage	500	500	600	600	600
Max Withstand Voltage After Fusing	300	350	450	450	450
Operating Temp. Range (°C)	-55 to +155				
Climatic Category	55/155/56				
Insulation Resistance Min Dry (ohms)	1000M				

Dimensions

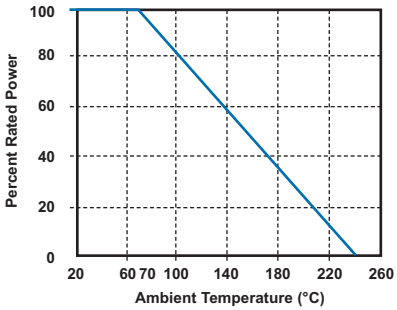


Style	L	D	d Nom	l
FRN25	6.3 ±0.5	2.3 ±0.3	0.54	25.0
FRN50S	6.3 ±0.5	2.3 ±0.3	0.54	25.0
FRN100S	9.0 ±0.5	3.2 ±0.5	0.54	25.0
FRN200S	11.0 ±1.0	4.5 ±1.0	0.70	25.0
FRN300S	15.0 ±1.0	5.5 ±1.0	0.80	25.0

Derating Curve - FRN25, FRN50S, FRN100S



FRN200S, FRN300S



Mounting

The resistors are suitable for processing on automatic insertion equipment.

Marking

The resistors are marked with a 3 colour band code indicating the value.
The fourth band indicates the multiplier.
The fifth band indicates the tolerance.

Packaging

FRN25, FRN50S and FRN100S are normally supplied taped in 'ammo' boxes of 4,000 pieces.
FRN200S and FRN300S resistors are normally supplied taped in 'ammo' boxes of 1,000 pieces.
Other package styles available on request.

All tape specifications are in accordance with IEC 286-1.

Fusing Characteristics

Overload Power	Maximum Fusing Time
16 times rated power	60 seconds
20 times rated power	40 seconds
24 times rated power	30 seconds
28 times rated power	20 seconds
32 times rated power	15 seconds

Performance Characteristics

The evaluation of the performance characteristics is carried out with reference to IECQ specifications QC 400 000 and QC 400 100.

TEST REF	Long Term Tests ±(5% + 0.5 ohm)
4.23	Climatic sequence
4.24	Damp heat, steady state
4.25.1	Endurance at 70 °C
4.25.3	Endurance at 155 °C
TEST REF	**Short Term Tests ±(1% + 0.05 ohm)**
4.13	Overload
4.16	Robustness of terminations
4.18	Resistance to soldering heat
4.19	Rapid change of temperature
4.22	Vibration

How to Order

FRN	25	J	1K0
Common Part	**Size**	**Tolerance**	**Resistance Value**
FRN - Fusible Leaded Resistor	25 - 1/4 Watt 50S - 1/2 Watt 100S - 1 Watt 200S - 2 Watts 300S - 3 Watts	J - 5%	1 ohm (1 ohm) 1R0 1K ohm (1000 ohms) 1K0

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TE Connectivity:
FRN100J1K0