

# Type MRF

## Fast Acting Radial Lead Micro Fuse Series

HF <sup>Pb</sup> MRF Series

RoHS 6 Compliant

### Description

Sub-miniature, fast-acting type, 250V rated fuses designed, approved and complied with IEC 60127-3, standard sheet 3.

### Features

- Fast Acting (250V AC@50A)
- Meet IEC standard 60127-3, sheet 3
- Wide operating temperature range
- Bulk and Tape & Reel packing available
- RoHS 6 compliant
- Halogen Free
- Leadfree

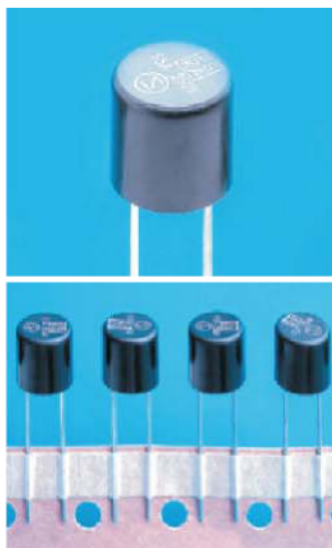
### Applications

- Provide individual protection for components or internal circuits.
- Power supplies
  - Battery chargers
  - Consumer Electronics
  - Adapter
  - Industrial Controllers

LEAD FREE = <sup>Pb</sup>  
HALOGEN FREE = HF

### Physical Specifications

Materials	Base and Cover : Black thermoplastic, UL 94-V0
	Pins : 100% Matte Tin Plated Copper
Marking	On Fuse :
	"bel", "F", "Current Rating", "250V" & " Appropriate Safety Logos"
	On Label :
	"bel", "MRF", "Current Rating", "Voltage Rating", "Interrupting Rating", " Appropriate Safety Logos" and " <sup>Pb</sup> ", " <sup>CE</sup> "(China RoHS compliant).



### Electrical Characteristics(IEC-127-3 STANDARD SHEET 3)

Rated Current	1.5 In		2.1 In		2.75 In		4 In		10 IN
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MAX
50mA to 6.3A inclusive	1 hr.	30 min.	10 ms	3 sec	3 ms	300 ms	20 ms		

In clause 9.2, the test voltage for MRF ratings from 80mA to 6.3A is 64VDC.

### Safety Agency Approvals

SAFETY AGENCY	SAFETY AGENCY CERTIFICATE NUMBER	VOLTAGE RATING (V)	AMPERE RANGE / VOLT @ I.R. ABILITY*
<sup>S</sup>	1026142;1026141 1026139;1111865	50mA - 6.3A / 250V AC	50mA - 5A / 250V AC @ 35A or 10 In whichever is greater
<sup>D'E</sup>	40017420		6.3A / 250V ac @ 63A
<sup>VDE</sup>	40028500		50mA - 6.3A / 250V AC @ 50A
<sup>SP</sup>	LR39772		50mA - 6.3A / 350V AC @ 100A
<sup>C</sup> <sup>UL</sup> <sup>US</sup>	E20624		1A - 5A / 250V AC @ 100A
<sup>PS</sup> <sup>E</sup>	JET 1037-31007-1001		

\* I.R. = INTERRUPTING RATING = SHORT CIRCUIT RATING (AMPS)

Specifications subject to change without notice



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### Environmental Specifications

Shock Resistance	MIL-STD-202G, Method 213B, Test Condition 1 (100 G's peak for 6 milliseconds; Sawtooth waveform)
Vibration Resistance	MIL-STD-202G, Method 201A(10-55 Hz X 3 axis / no load).
Salt Spray Resistance	MIL-STD-202G, Method 101E, Test Condition B(48 hrs).
Solderability	MIL-STD-202G, Method 208H
Resistance to solder Heat	MIL-STD-202G, Method 210F, Test Condition C. Top Side.(260 °C,20 sec)
Moisture Resistance	MIL-STD-202G, Method 202G, Method 106G
Operating Temperature	-55 °C to +125 °C

### Electrical Specifications

Catalog Number	Ampere Rating	Typical Cold Resistance (ohm)	Volt-drop @100% In (Volt) max.	Voltage and Interrupting Ratings	Melting I <sup>2</sup> T <10 mSec (A <sup>2</sup> Sec)	Melting I <sup>2</sup> T @10 In (A <sup>2</sup> Sec)	Maximum Power Dissipation (W)	Agency Approvals					
													
MRF 50	50mA	11.9	0.73	See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings	0.001	0.001	0.09	Y	Y	Y	Y		
MRF 63	63mA	8.5	0.66		0.001	0.001	0.10	Y	Y	Y	Y		
MRF 80	80mA	6.3	0.64		0.002	0.002	0.11	Y	Y	Y	Y		
MRF 100	100mA	4.0	0.49		0.003	0.003	0.11	Y	Y	Y	Y		
MRF 125	125mA	3.1	0.50		0.007	0.007	0.13	Y	Y	Y	Y		
MRF 160	160mA	2.3	0.46		0.016	0.016	0.21	Y	Y	Y	Y		
MRF 200	200mA	1.7	0.41		0.027	0.027	0.19	Y	Y	Y	Y		
MRF 250	250mA	0.42	0.17		0.023	0.023	0.23	Y	Y	Y	Y		
MRF 315	315mA	0.29	0.15		0.044	0.044	0.22	Y	Y	Y	Y		
MRF 400	400mA	0.21	0.14		0.073	0.072	0.28	Y	Y	Y	Y		
MRF 500	500mA	0.17	0.15		0.20	0.18	0.42	Y	Y	Y	Y		
MRF 630	630mA	0.10	0.08		0.15	0.14	0.16	Y	Y	Y	Y		
MRF 800	800mA	0.071	0.08		0.4	0.4	0.20	Y	Y	Y	Y		
MRF 1	1A	0.057	0.08		0.7	0.6	0.38	Y	Y	Y	Y		Y
MRF 1.25	1.25A	0.047	0.081		1.3	1.2	0.69	Y	Y	Y	Y		Y
MRF 1.6	1.6A	0.035	0.077		1.4	1.3	0.62	Y	Y	Y	Y		Y
MRF 2	2A	0.028	0.075		2.1	2.0	0.72	Y	Y	Y	Y		Y
MRF 2.5	2.5A	0.022	0.071		4	3	0.92	Y	Y	Y	Y		Y
MRF 3.15	3.15A	0.016	0.064		6	4	0.82	Y	Y	Y	Y		Y
MRF 4	4A	0.011	0.059		8	6	0.65	Y	Y	Y	Y		Y
MRF 5	5A	0.010	0.056		15	11.8	0.91	Y	Y	Y	Y		Y
MRF 6.3	6.3A	0.008	0.054		25	19.8	1.05	Y	Y			Y	

Consult manufacturer for other ratings

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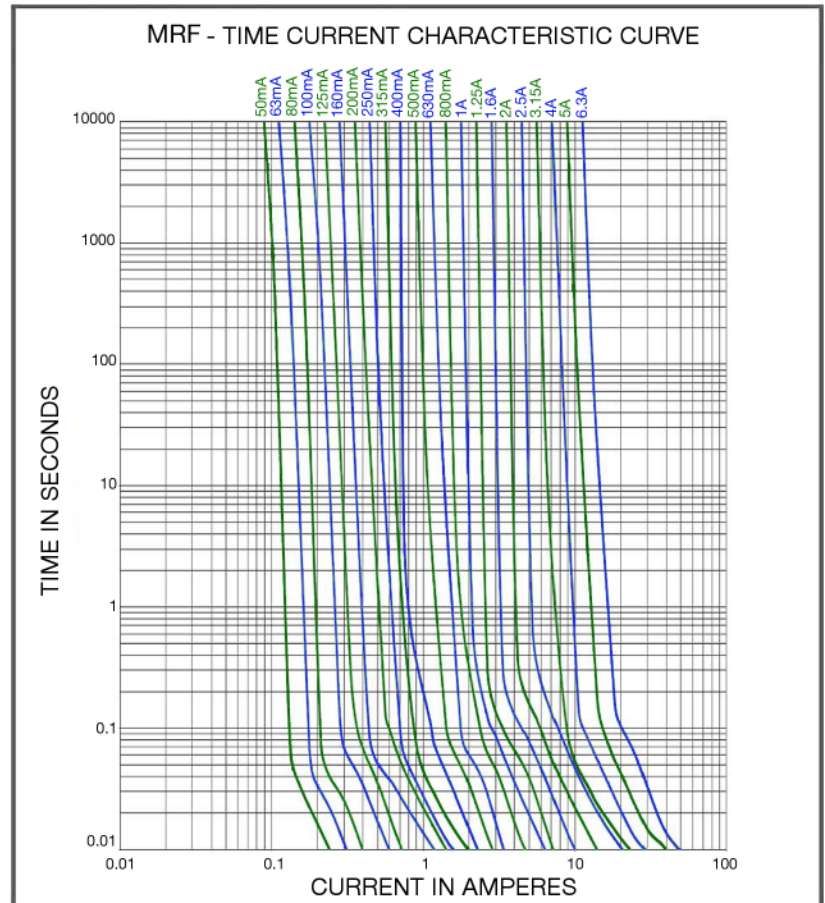
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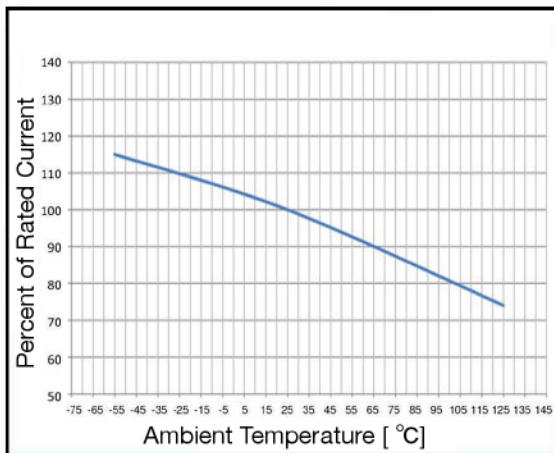
HF (Pb) MRF Series

RoHS 6 Compliant

### Average Time Current Curve

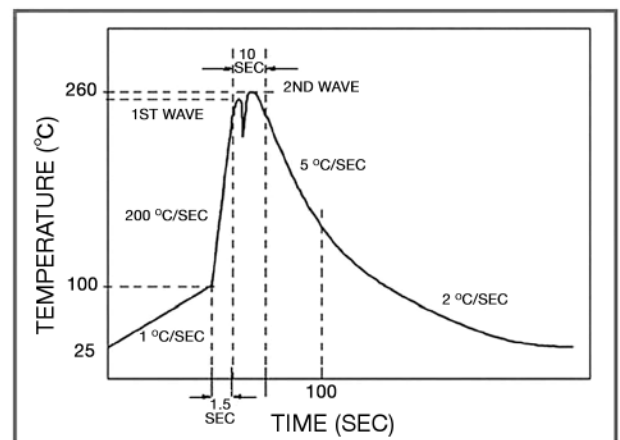


### Temperature Derating Curve



### Soldering Parameters

Lead-free Wave Soldering Profile	
Wave Soldering Parameter	
Average ramp-up rate	200 °C / second
Heating rate during preheat	typical 1 - 2 °C / second Max 4 °C / second
Final preheat temperature	within 125 °C of soldering temperature
Peak temperature Tp	260 °C
Time within +0 °C / -5 °C of actual peak temperature	10 seconds
Ramp-down rate	5 °C / second max.



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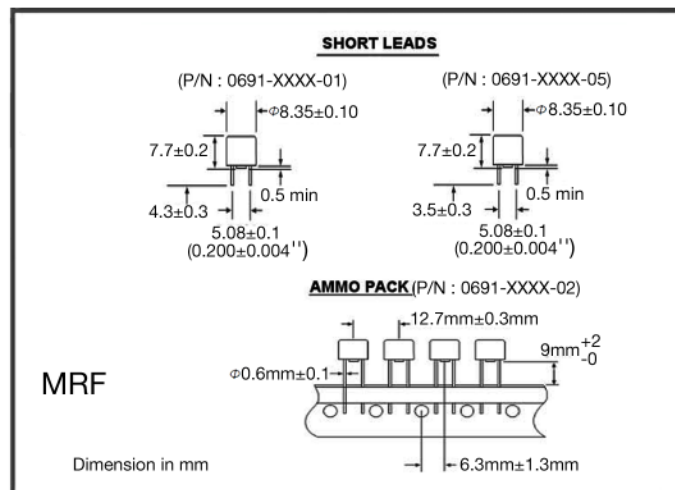
### Fuse FGNO Explanation

0691 - [XXXX] - XX

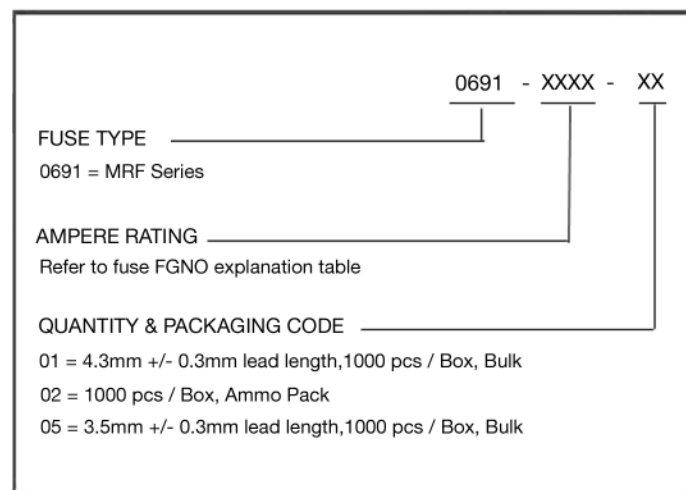
0691=MRF; [XXXX]=Ampere Rating; XX=See Ordering Information as below

Fraction	Decimal	Milliamps	Bel FGNO[XXXX]	Fraction	Decimal	Amps	Bel FGNO[XXXX]
1/20	0.050	50	0050		1.0	1	1000
1/16	.063	63	0063	1-1/4	1.25	1.25	1250
8/100	.080	80	0080		1.60	1.6	1600
1/10	.100	100	0100		2.0	2	2000
1/8	.125	125	0125	2-1/2	2.5	2.5	2500
	.160	160	0160		3.15	3.15	3150
2/10	.200	200	0200		4.0	4	4000
1/4	.250	250	0250		5.0	5	5000
	.315	315	0315		6.3	6.3	6300
4/10	.400	400	0400				
1/2	.500	500	0500				
	.630	630	0630				
8/10	.800	800	0800				

### Mechanical Dimensions



### Ordering Information



### Packaging

Packaging Option	Packaging Specification	Quantity	Packaging Code
Bulk / bag, 1000 / box	N/A	1000	01 , 05
12.7 mm pitch, On Tape / box	IEC-286-2	1000	02

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