

494 Series Fuse, NRA Special Series Integrated Circuit Protector







Agency Approvals

AGENCY	AGENCY FILE NUMBER	AMPERE RANGE		
<i>U</i> R ®	E10480	250mA - 5A		
® .	LR29862	250mA - 5A		

Electrical Characteristics for Series

% of Ampere Rating	Opening Time at 25°C	
100%	4 hours, Minimum	
200%	5 sec., Maximum	
300%	0.2 sec., Maximum	

Additional Information





Resources



Samples

Description

The 494 Series Fast-Acting SMF is an ultra small (0603 size) thin-film device designed for secondary protection of circuits used in space constrained applications such as hand-held portable electronic devices. This series is 100% lead-free and meets the requirements of the RoHS directive. New Halide-Free 494 Series fuses are available to order using the "HF" suffix. See Part Numbering section for additional information.

Features

- · Compatible with leadfree solders and higher temperature profiles
- High performance materials provide improved performance in elevated ambient temperature applications
- Marked on top surface with code to allow ampere rating identification without testing
- Low profile for height sensitive applications
- Flat top surface for pickand-place operations

- Element-covering material is resistant to industry standard cleaning operations
- Mounting pad and electrical performance are identical to Littelfuse 431 and 434 Series products
- Alloy-based element construction provides superior inrush withstand characteristics (I2t) over ceramic or glass-based 0603 fuse products

Applications

Secondary protection for space constrained applications:

- Cell phones Battery packs
- Digital cameras

DVD players

 Hard disk drives

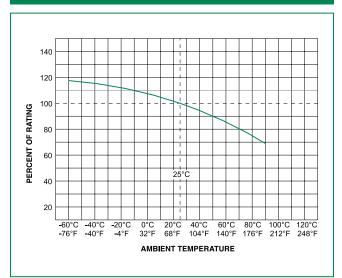
Electrical Specifications by Item

Ampere		Max		Nominal Cold	Nominal	Nom	Nom	Agency Approvals	
Rating (A)	Amp Code	Voltage Rating (V)	Interrupting Rating	Resistance (Ohms)	Melting I ² t (A ² sec)	Voltage Drop (mV)	Power Dissipation (W)	R ®	® ;
0.250	.250	32		0.5450	0.0030	158.56	0.0396	х	Х
0.375	.375	32	50A @32V AC/DC	0.2900	0.0053	128.03	0.0480	х	х
0.500	.500	32		0.1870	0.0087	115.71	0.0579	х	х
0.750	.750	32		0.1170	0.0171	107.33	0.0805	х	х
1.00	001.	32		0.0710	0.0212	89.10	0.0891	х	х
1.25	1.25	32		0.0530	0.0518	84.32	0.1054	х	х
1.40	01.4	32		0.049	0.05529	74.84	0.1048	х	х
1.50	01.5	32		0.0410	0.0766	81.14	0.1217	x	х
1.75	1.75	32		0.0320	0.0903	78.75	0.1378	х	X
2.00	002.	32		0.0300	0.1103	78.22	0.1564	х	х
2.50	02.5	32	35A @32V AC/DC	0.0220	0.1440	76.10	0.1903	х	х
3.00	003.	32		0.0180	0.2403	75.04	0.2251	х	х
3.15	3.15	32		0.017	0.27405	63.78	0.2009	х	х
3.50	03.5	32		0.0150	0.4306	74.25	0.2599	х	х
4.00	004.	32		0.0130	0.5760	73.72	0.2949	х	х
5.00	005.	32		0.0090	0.9000	72.71	0.3635	×	х

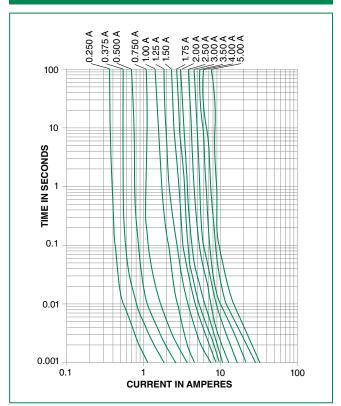
^{1.} Measured at 10% of rated current, 25°C. 2. Measured at rated voltage.



Temperature Rerating Curve

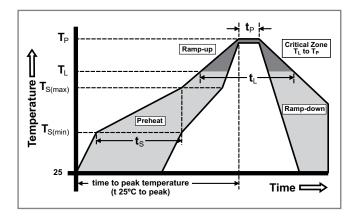


Average Time Current Curves



Soldering Parameters

Reflow Co	ndition	Pb – free assembly	
	-Temperature Min (T _{s(min)})	150°C	
Pre Heat	-Temperature Max (T _{s(max)})	200°C	
	-Time (Min to Max) (t _s)	60 – 180 seconds	
Average R (T _L) to pea	amp-up Rate (Liquidus Temp k)	5°C/second max.	
T _{S(max)} to T _l	- Ramp-up Rate	5°C/second max.	
Reflow	-Temperature (T _L) (Liquidus)	217°C	
Retiow	-Temperature (t _L)	60 – 150 seconds	
PeakTemperature (T _P)		250+0/-5 °C	
Time within 5°C of actual peak Temperature (t _p)		20 - 40 seconds	
Ramp-dov	vn Rate	5°C/second max.	
Time 25°C	to peakTemperature (T _P)	8 minutes max.	
Do not exc	ceed	260°C	



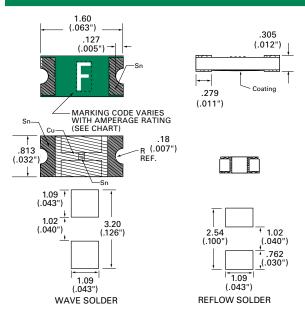


Product Characteristics

Materials	Body: Advanced High Temperature Substrate Terminations: 100% Tin over Nickel over Copper Element Cover Coat: Conformal Coating
Operating Temperature	– 55°C to 90°C. Consult temperature rerating curve chart. For operation above 90°C contact Littelfuse.
Humidity	MIL-STD-202F, Method 103B, Condition D

Thermal Shock	Withstands 5 cycles of – 55°C to 125°C		
Vibration	Per MIL-STD-202F		
Insulation Resistance (After Opening)	Greater than 10,000 ohms		
Resistance to Soldering Heat	Withstands 60 seconds above 200°C and up to 260°C, maximum		

Dimensions



Part Marking System

Amp Code	Marking Code
.250	D
.375	E
.500	F
.750	G
001.	Н
1.25	J
01.4	Ш
01.5	K
1.75	L
002.	N
02.5	0
003.	P
3.15	
03.5	R
004.	S
005.	Т

Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape and Reel	EIA RS-481-2 (IEC 286, part 3)	5000	NR

Part Numbering System

0494002.NRHF

SERIES

AMP Code

Refer to Amp Code column in the Electrical Specifications table. NOTE: The dot is poisitioned before the Packaging Suffix with whole ratings and within the numbering sequence for fractional ratings.

PACKAGING Code NR = Tape and Reel, 5000 pcs

'HF' SUFFIX HALIDE -FREE ITEM