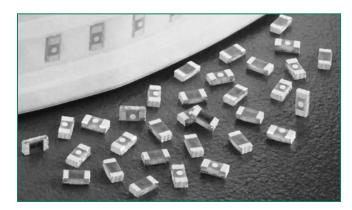


# RoHS M HF 435 Series Fuse







### **Agency Approvals**

AGENCY	AGENCY FILE NUMBER	AMPERE RANGE		
<b>71</b> 2	E10480	0.250 - 5.0A		
<b>(1)</b>	LR 29862	0.250 - 5.0A		

### **Electrical Characteristics for Series**

% of Ampere Rating	Ampere Rating	Opening Time at 25°C	
100%	0.250A - 5A	4 hours, Minimum	
200%	0.375A - 5A 5 secs., Maximum		
300%	0.250A	5 secs., Maximum	
300%	0.375A - 5A	0.2 sec., Maximum	

### **Description**

The 435 Series are fast-acting surface mount thin-film fuses. Their ultra-small size (0402 size) makes them ideal for secondary protection of circuits used in space constrained applications such as hand-held portable electronic devices.

This series is 100% lead-free and meet the requirements of the RoHS directive. New Halogen-Free 435 Series fuses are available-to order use the "HF" suffix. See Part Numbering section for additional information.

### **Features**

- 35A interrupt rating at 32VDC
- Small size with current ratings of 0.25 to 5.0 amperes
- RoHS compliant, leadfree and halogen-free
- Maximum protection of sensitive circuits as fuses are designed to open consistently in <5sec at 200% overload.
- **Enhanced Breaking** Capacity, High I2t

### **Applications**

Secondary protection for space constrained applications such as:

- Cell phones
- DVD players
- Battery packs
- Hard disk drives.
- Digital cameras

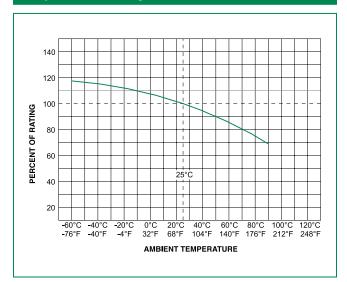
### **Electrical Specifications by Item**

Ampere		Max		Nominal Cold	Nominal	Nom	Nom	Agency A	Approvals
Rating (A)	Rating Code Rating Rating		Resistance M	Melting I <sup>2</sup> t (A <sup>2</sup> sec)	Voltage Drop (mV)	Power Dissipation (W)	712	<b>(</b>	
0.250	.250	32		0.2265	0.0025	60.67	0.01517	х	Х
0.375	.375	32		0.1930	0.0035	84.64	0.03174	×	X
0.500	.500	32		0.1600	0.0053	93.35	0.04668	×	Х
0.750	.750	32		0.1050	0.0120	101.84	0.07638	×	X
1.00	001.	32		0.0730	0.0200	87.45	0.08745	X	Х
1.25	1.25	32		0.0600	0.0350	96.37	0.12046	×	х
1.50	01.5	32	254 @231/ DC	0.0470	0.0560	86.70	0.13005	х	Х
1.75	1.75	32	35A @32V DC	0.0390	0.0750	81.13	0.14198	×	x
2.00	002.	32		0.0300	0.1000	70.62	0.14120	Х	Х
2.50	02.5	32		0.0185	0.1560	55.25	0.13813	х	X
3.00	003.	32		0.0165	0.2032	60.58	0.18740	Х	Х
3.50	03.5	32		0.0135	0.3017	57.84	0.20244	х	X
4.00	004.	32		0.0115	0.3084	57.00	0.22800	х	х
5.00	005.	32		0.0085	0.5310	52.44	0.26220	х	Х

- 1 Measured at 10% of rated current 25°C
- 2. Measured at rated voltage



### **Temperature Rerating Curve**



#### Note:

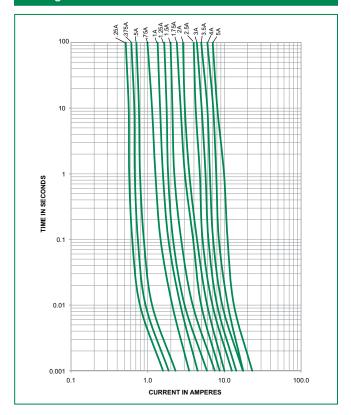
 Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

#### Example:

For continuous operation at 70 degrees celsius, the fuse should be derated as follows: I =  $(0.75)(0.80)I_{RAT} = (0.60)I_{RAT}$ 

The temperature derating curve represents the nominal conditions. For questions about temperature derating curve, please consult Littelfuse technical support for assistance.

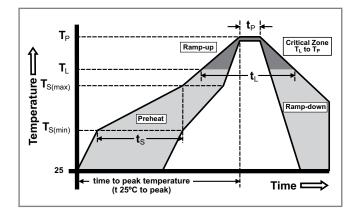
### **Average Time Current Curves**



## **Soldering Parameters**

Reflow Co	ndition	Pb – Free assembly	
	-Temperature Min (T <sub>s(min)</sub> )	150°C	
Pre Heat	-Temperature Max (T <sub>s(max)</sub> )	200°C	
	-Time (Min to Max) (t <sub>s</sub> )	60 – 120 secs	
Average ramp up rate (Liquidus Temp (T <sub>L</sub> ) to peak		5°C/second max	
T <sub>S(max)</sub> to T <sub>L</sub> - Ramp-up Rate		5°C/second max	
Reflow	-Temperature (T <sub>L</sub> ) (Liquidus)	217°C	
nellow	-Temperature (t <sub>L</sub> )	60 – 150 seconds	
PeakTemperature (T <sub>P</sub> )		250 <sup>+0/-5</sup> °C	
Time within 5°C of actual peak Temperature (t <sub>p</sub> )		20 - 40 seconds	
Ramp-down Rate		5°C/second max	
Time 25°C to peakTemperature (T <sub>p</sub> )		8 minutes Max.	
Do not exceed		260°C	





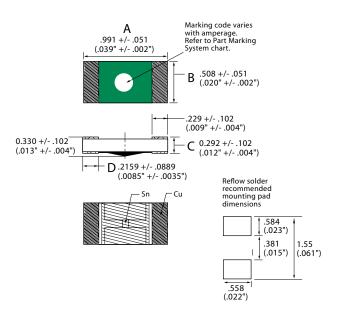


### **Product Characteristics**

Materials	Body: Epoxy / Glass Substrate; Parts with 'HF' suffix: Halogen Free Epoxy / Glas Terminations: 100% Tin over Nickel over Copper Device Weight: 0.316mg		
Terminal Strength	MIL-STD-202F, Method 211A, Test Condition A		
Insulation Resistance	After Opening: Greater than 10,000Ohms		

Operating Temperature	–55°C to 90°C. Consult temperature rerating curve chart. For operation above 90°C please contact Littelfuse.
Thermal Shock	Withstands 5 cycles of –55°C to 125°C
Vibration	MIL-STD-202F

### **Dimensions**



	Α	В	С	D
inch min	0.037	0.018	0.008	0.005
inch max	0.041	0.022	0.016	0.012
mm min	0.94	0.457	0.190	0.127
mm max	1.04	0.559	0.394	0.305

# **Part Marking System**

Amp Code	Marking Code
.250	[X]
.375	
.500	
.750	
001.	
1.25	:
01.5	
1.75	
002.	•
02.5	[ <b> -</b> ]
003.	
03.5	
004.	00
005.	

# **Part Numbering System**

### 0435 002. K R HF S **SERIES AMP Code** Refer to Amp Code column in the Electrical Specifications table. The dot is positioned at the end of the number sequence with whole ratings and within for fractional ratings. **Example:** 1.5 amp product is 0435<u>**01.5**</u>KRHF (2 amp product shown) **QUANTITY Code** K = 10,000 Pieces **PACKAGING Code** R = Tape and Reel **HALOGEN FREE ITEM** "S" - for .250A only

### **Packaging**

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape and Reel	EIA-481 Rev. D (IEC 60286, part 3)	10000	KR