

Additional Information







Resources

Accessories

Samples

Agency Approvals

Agency	Agency File Number	Ampere Range
71	E10480	0.250 A - 5.0 A
® ;	29862	0.250 A - 5.0 A
\triangle	J50481982	0.250 A - 5.0 A

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 & Benefits

- 50A interrupt rating at 32VDC
- Small size with current ratings of 0.25 to 5.0 amperes
- RoHS compliant, Lead-Free and Halogen-Free
- Enhanced Breaking Capacity, High I²t
- Maximum protection of sensitive circuits as fuses are designed to open consistently in <5sec at 200% overload.
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14

Applications

Secondary protection for space constrained applications such as:

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

Electrical Characteristics

% 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

Electrical Specifications

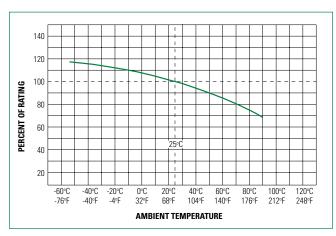
Ampere	Amp	Max Voltage	Interrupting	Nominal Cold	Nominal Melting	Nom	Nom Power Dissipation (W)	Agency Approvals		
Rating (A)	Code	Rating (V)	Rating	Resistance (Ohms)	I ² t (A ² sec)	Voltage Drop (mV)		A	M	® ;
0.250	.250	32		0.3600 ¹	0.0025	92.49	0.0231	X	X	X
0.375	.375	32		0.1930^{1}	0.0035	84.64	0.03174	X	X	X
0.500	.500	32		0.1600 ¹	0.0053	93.35	0.04668	X	X	X
0.750	.750	32		0.1050 ¹	0.0120	101.84	0.07638	X	Х	Х
1.00	001.	32		0.0730^{1}	0.0200	87.45	0.08745	X	X	X
1.25	1.25	32		0.0600 ¹	0.0350	96.37	0.12046	X	X	X
1.50	01.5	32	50A @32VDC ²	0.04701	0.0560	86.70	0.13005	X	X	X
1.75	1.75	32	50A @32VDC-	0.0390^{1}	0.0750	81.13	0.14198	X	Х	X
2.00	002.	32		0.0300^{1}	0.1000	70.62	0.14120	X	X	X
2.50	02.5	32		0.0200 ¹	0.1560	55.25	0.13813	X	Х	Х
3.00	003.	32		0.01701	0.2032	60.58	0.18740	X	X	X
3.50	03.5	32		0.0150 ¹	0.3017	57.84	0.20244	X	X	X
4.00	004.	32		0.01051	0.3084	57.00	0.22800	X	X	X
5.00	005.	32		0.00851	0.5310	52.44	0.26220	X	х	Х

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

^{2.} Measured at rated voltage



Temperature Re-rating Curve



Notes:

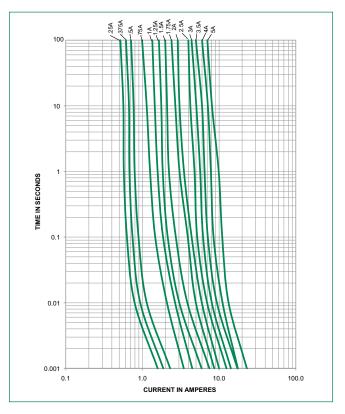
Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Example:

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

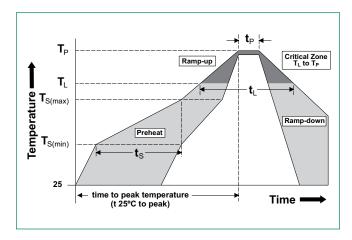
2. The temperature derating curve represents the nominal conditions. For questions about temperature derating curve, please consult Littelfuse technical support for assistance.

Average Time Current Curves



Soldering Parameters

Reflow Condition			Pb – Free assembly	
	- Temperature Min	emperature Min (T _{s(min)})		
Pre Heat	-Temperature Max (T _{s(max)})		200°C	
	-Time (Min to Ma	x) (t _s)	60 – 120 secs	
Average ramp up rate (Liquidus Temp (T _L) to peak			5°C/second max	
T _{S(max)} to T _L - Ramp-up Rate			5°C/second max	
Reflow	- Temperature (T _L) (Liquidus)		217°C	
	- Temperature (t _L)		60 – 150 seconds	
Peak Temperature (T _P)			250+0/-5 °C	
Time within 5°C of actual peak Temperature (t _p) 20 – 40 second			20 - 40 seconds	
Ramp-down Rate 5°C/second ma			5°C/second max	
Time 25°C to peak Temperature (T _p) 8 minutes Ma			8 minutes Max.	
Do not exceed 260°C		260°C		
Wave Soldering 260°C, 10 seconds max.			max.	





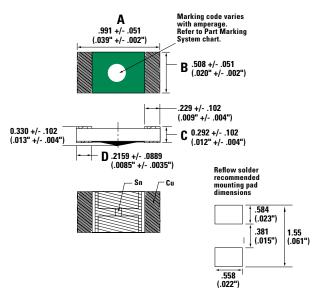
435 Series 0402 Fast-Acting Fuse

Product Characteristics

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

Operating Temperature	-55°C to 90°C. Consult temperature re-rating curve chart. For operation above 90°C please contact Littelfuse.
Thermal Shock	Withstands 5 cycles of -55°C to 125°C
Vibration	MIL-STD-202, Method 201

Dimensions



Unit	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

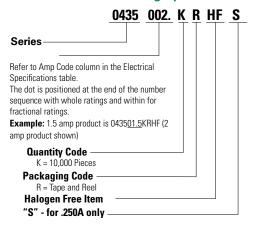
Packaging

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

Part Marking System

Amp Code	Marking Code
0.250	ПХП
0.375	□
0.500	
0.750	
001.	
1.25	
01.5	
1.75	
002.	•
02.5	
003.	
03.5	
004.	00
005.	

Part Numbering System



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