

# 235 Series

## 5×20 mm, Fast-Acting Fuse



### Description

5×20mm fast-acting glass body cartridge fuse designed to UL specification.

### Features & Benefits

- Designed to UL/CSA/ANCE 248 Standard
- Available in cartridge and axial lead format
- RoHS compliant and lead-free

### Applications

Used as supplementary protection in appliance or utilization equipment to provide individual protection for components or internal circuits.

### Web Resources



Download ECAD models, order samples, and find technical resources at [www.littelfuse.com](http://www.littelfuse.com)

### Agency Approvals

Agency	Agency File Number	Ampere Range
	Cartridge: NBK030609-JP1021A NBK190609-JP1021A NBK030609-JP1021B	1A - 3.5A 4A -5A 6A -7A
	Leaded: NBK030609-JP1021C NBK190609-JP1021B NBK030609-JP1021D	1A - 3.5A 4A -5A 6A -7A
	SU05001 - 3007	0.100A - 0.400A
	SU05001 - 2002	0.500A - 3A
	SU05001 - 2003	4A - 6A
	E10480	0.100A - 7A
	29862	0.100A - 7A
	N/A	0.100A - 7A

### Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time
100%	0.100A - 7A	4 hours, Minimum
135%		1 hour, Maximum
200%		5 seconds, Maximum

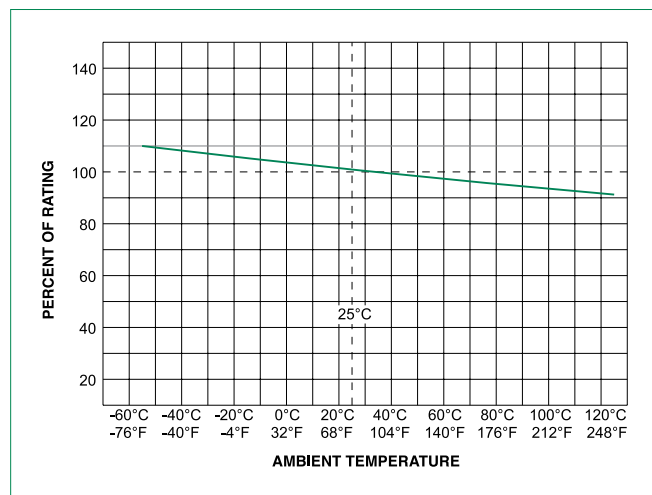
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### Electrical Characteristic Specifications by Item

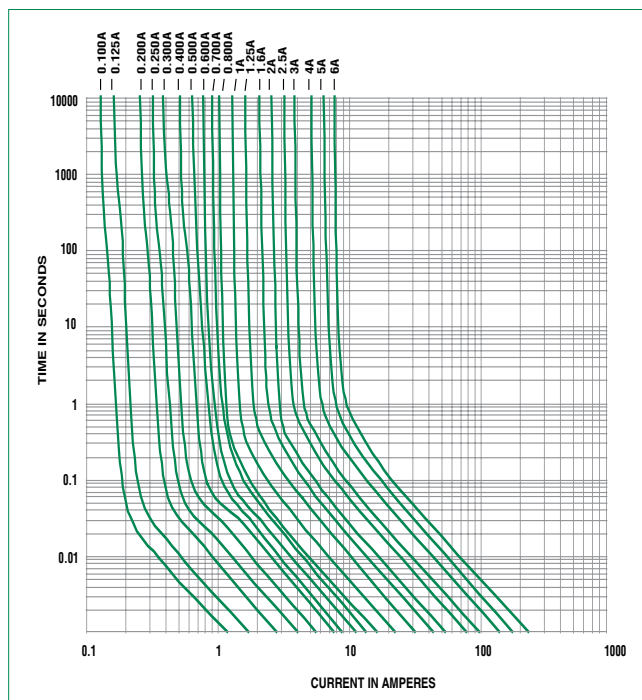
Amp Code	Amp Rating (A)	Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec)	Agency Approvals				
						CE	UL	SP	PP	CC
.100	0.1	250	35A @ 250VAC 10kA @ 125VAC	8.4000	0.00127	x	x	x	-	x
.125	0.125	250		5.7500	0.00273	x	x	x	-	x
.200	0.2	250		3.1500	0.00867	x	x	x	-	x
.250	0.25	250		2.2500	0.01660	x	x	x	-	x
.300	0.3	250		1.6000	0.03215	x	x	x	-	x
.400	0.4	250		1.075	0.05845	x	x	x	-	x
.500	0.5	250		0.4265	0.06915	x	x	x	-	x
.600	0.6	250		0.3195	0.11200	x	x	x	-	x
.700	0.7	250		0.2625	0.15600	x	x	x	-	x
.800	0.8	250		0.1920	0.25300	x	x	x	-	x
001.	1	250		0.1530	0.46750	x	x	x	x	x
1.25	1.25	250		0.1055	1.08500	x	x	x	x	x
01.6	1.6	250		0.0758	2.02500	x	x	x	x	x
002.	2	250		0.0603	2.64500	x	x	x	x	x
02.5	2.5	250	0.0437	5.44500	x	x	x	x	x	
003.	3	250	0.0347	8.39500	x	x	x	x	x	
03.5	3.5	250	0.0331	17.14000	x	x	-	x	-	
004.	4	125	0.0246	17.14000	x	x	x	x	x	
005.	5	125	0.0184	27.41000	x	x	x	x	x	
006.	6	125	0.0148	47.32500	x	x	x	x	x	
007.	7	125	0.0157	64.81500	x	x	-	x	-	

### Temperature Re-rating Curve



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

### Average Time Current Curves

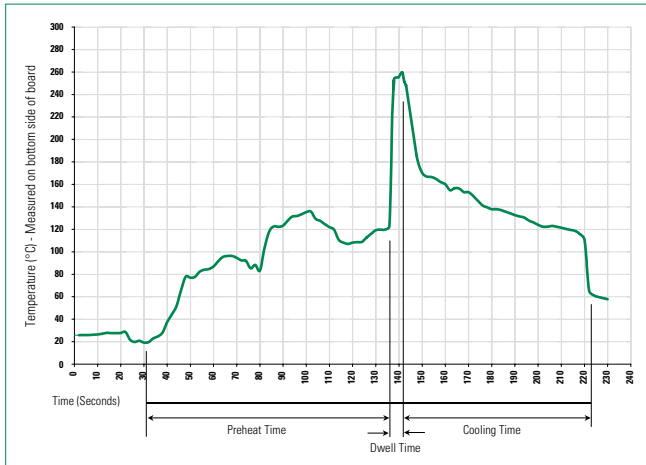


Please contact Littelfuse for details on T-C curve for 7A rating

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### Soldering Parameters - Wave Soldering



#### Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	(Typical Industry Recommendation)
Temperature Minimum:	100°C
Temperature Maximum:	150°C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	260°C Maximum
Solder Dwell Time:	2-5 seconds

#### Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350°C +/- 5°C  
 Heating Time: 5 seconds max.

**Note:** These devices are not recommended for IR or Convection Reflow process.

### Product Characteristics

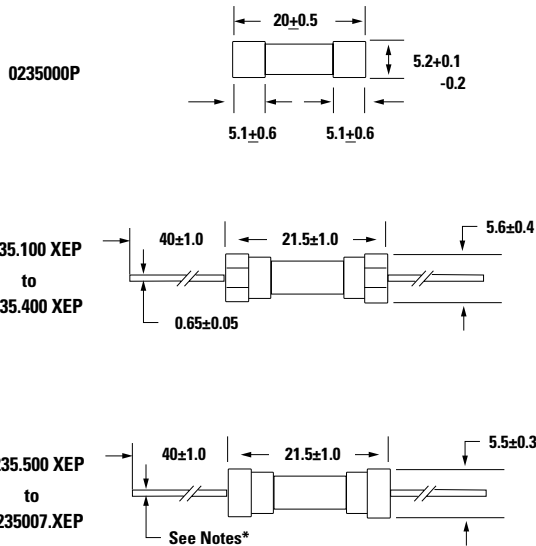
<b>Materials</b>	Body: Glass Cap: Nickel-plated brass Leads: Tin-plated Copper
<b>Terminal Strength</b>	MIL-STD-202, Method 211, Test Condition A
<b>Solderability</b>	MIL-STD-202 Method 208
<b>Product Marking</b>	Cap 1: Brand logo, current and voltage rating Cap 2: Series and agency approval markings
<b>Packaging</b>	Available in Bulk (M=1000 pcs/pkg) or on Tape/Reel (MRET1=1000 pcs/reel)

<b>Operating Temperature</b>	-55°C to +125°C
<b>Thermal Shock</b>	MIL-STD-202, Method 107, Test Condition B: (5 cycles -65°C + 125°C)
<b>Vibration</b>	MIL-STD-202, Method 201
<b>Humidity</b>	MIL-STD-202, Method 103, Test Condition A high RH (95%) and elevated temperature (40°C) for 240 hours
<b>Salt Spray</b>	MIL-STD-202, Method 101, Test Condition B

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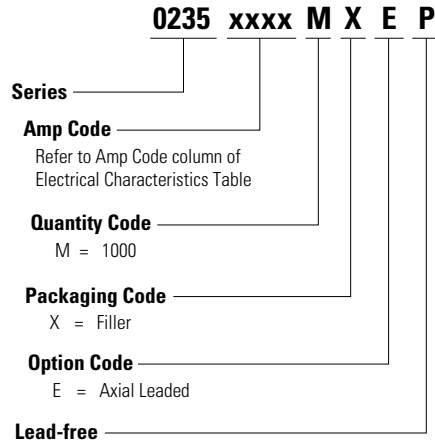
### Dimensions



All dimensions in mm

Notes:  
\* 0.1A-6A have 0.65±0.05 diameter lead.  
7A have 0.8±0.05 diameter lead.

### Part Numbering System



### Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code	Taping Width
<b>235 Series</b>				
Bulk	N/A	1000	MX	N/A
Bulk	N/A	1000	MXE	N/A
Reel and Tape	EIA 296-E	1000	MRET1	T1=53mm (2.087")

### Recommended Accessories

Accessory Type	Series	Description	Max Application Voltage	Max Application Amperage
Holder	<a href="#">345_ISE</a>	Panel Mount Shock-Safe Fuseholder	250	20
	<a href="#">345</a>	Shock-Safe Fuseholder with PC Mount, Solder Mount and Panel Mount options		20
	<a href="#">830</a>	PC Mount Shock-Safe Miniature Fuseholder		16
Block	<a href="#">520</a>	Metric OMNI-BLOK® Fuse Block		10
	<a href="#">646</a>	PC Mount Miniature Fuse Block		6.3
	<a href="#">658</a>	Surface Mount Miniature Fuse Block		10
Clip	<a href="#">520_W</a>	PC Mount Miniature Fuse Clip		6.3
	<a href="#">111</a>	PC Board Mount Fuse Clip		10
	<a href="#">445</a>	PC Board Mount Fuse Clip		10

Notes:  
1. Do not use in applications above rating.  
2. Please refer to fuseholder data sheet for specific re-rating information.  
3. Please contact factory for applications greater than the max voltage and amperage shown.

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