235 Series

5×20 mm, Fast-Acting Fuse



Web Resources

Download ECAD models, order samples, and find technical recources at www.littelfuse.com

Agency Approvals

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

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.

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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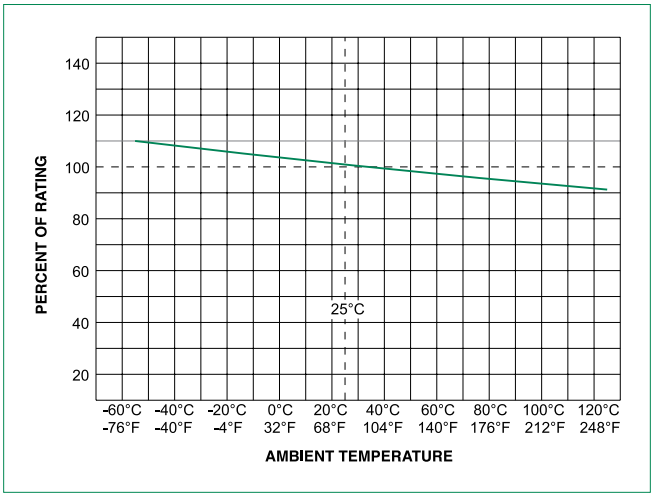
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Electrical Characteristic Specifications by Item

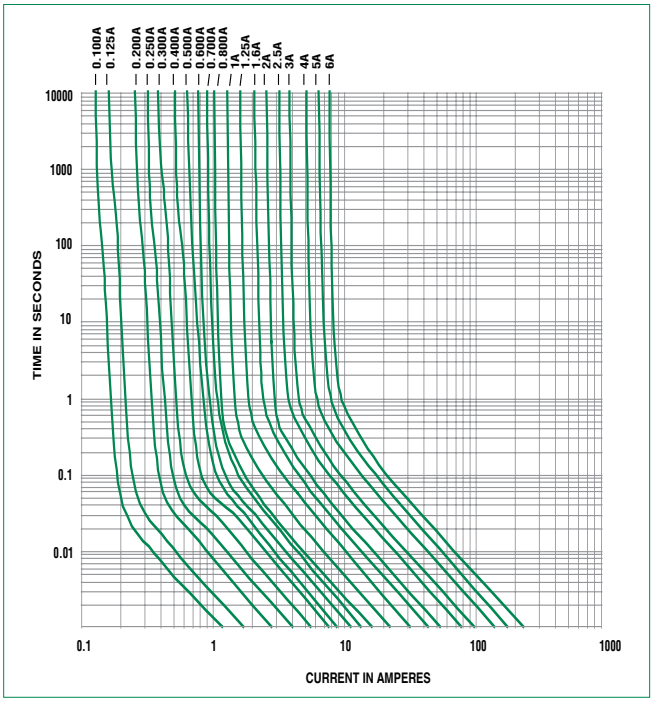
Amp Code	Amp Rating (A)	Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I²t (A² sec)	Agency Approvals				
						CE	UL	CSA	PSE	KC
.100	0.1	250	35A @ 250VAC 10kA @ 125VAC	8.4000	0.00127	x	x	x	-	x
.125	0.125	250		5.7500	0.00273	x	x	x	-	x
.200	0.2	250		3.1500	0.00867	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	100A @ 250VAC 10kA @ 125VAC	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	10kA @ 125VAC	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

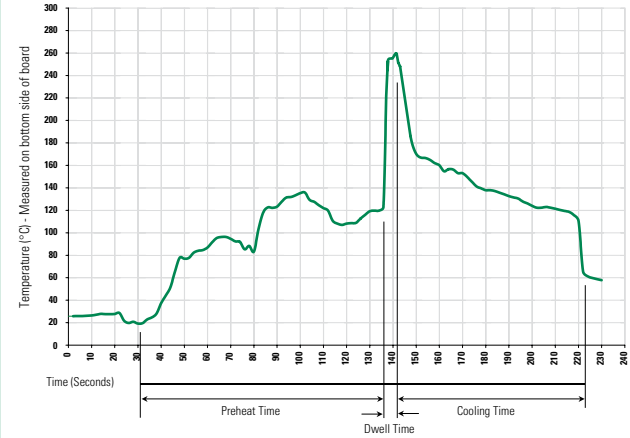


Please contact Littelfuse for details on T-C curve for 7A rating

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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

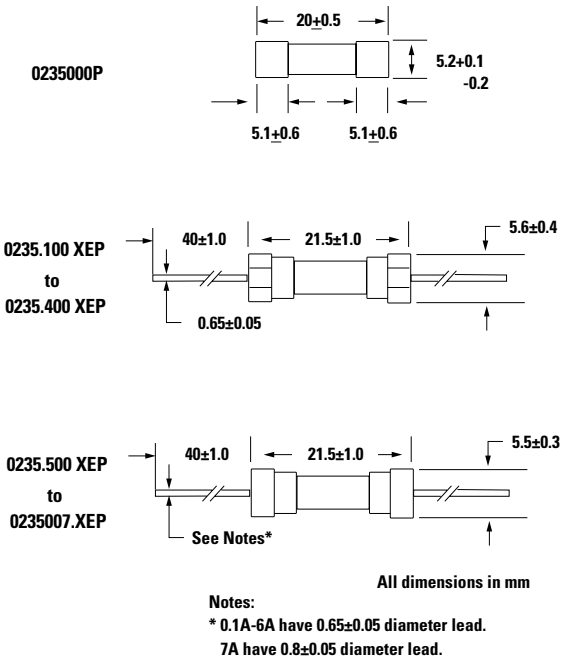
Materials	Body: Glass Cap: Nickel–plated brass Leads: Tin–plated Copper
Terminal Strength	MIL-STD-202, Method 211. Test Condition A
Solderability	MIL-STD-202 Method 208
Product Marking	Cap 1: Brand logo, current and voltage rating Cap 2: Series and agency approval markings
Packaging	Available in Bulk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

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

0235 xxxx M X E P

- **Series**
- **Amp Code**
  Refer to Amp Code column of Electrical Characteristics Table
- **Quantity Code**
  M = 1000
- **Packaging Code**
  X = Filler
- **Option Code**
  E = Axial Leaded
- **Lead-free**

Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code	Taping Width
		235 Series		
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	345_ISF	Panel Mount Shock-Safe Fuseholder	250	20
	345	Shock-Safe Fuseholder with PC Mount, Solder Mount and Panel Mount options		20
	830	PC Mount Shock-Safe Miniature Fuseholder		16
Block	520	Metric OMNI-BLOK® Fuse Block		10
	646	PC Mount Miniature Fuse Block		6.3
	658	Surface Mount Miniature Fuse Block		10
Clip	520_W	PC Mount Miniature Fuse Clip		6.3
	111	PC Board Mount Fuse Clip		10
	445	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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