

## 233 Series, 5×20 mm, Medium-Acting Fuse



### Description

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

### Features

- Designed to UL/CSA/ ANCE 248-1 and 248-14 Standards
- 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.

### Agency Approvals

Agency	Agency File Number	Ampere Range
	Cartridge: NBK190609-JP1021A NBK030609-JP1021B	1A – 5A 6A – 10A
	Leaded: NBK190609-JP1021B NBK030609-JP1021D	1A – 5A 6A – 10A
	N/A	1A – 10A
	E10480	1A – 10A
	SU05001 - 2010	1A – 6.3A
	29862	1A – 6A 8A – 10A

### Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time
100%	1A – 3.5A	4 hours, Minimum
	4A – 7A	1 hour, Minimum
	8A – 10A	1 hour, Minimum
135%	1A – 3.5A	15 sec., Min; 1500 sec., Max.
	4A – 7A	15 sec., Min; 1500 sec., Max.
	8A – 10A	3 sec., Min; 3600 sec., Max.
200%	1A – 3.5A	.60 sec., Min; 3 sec., Max.
	4A – 7A	.60 sec., Min; 3 sec., Max.
	8A – 10A	0.4 sec., Min; 2.25 sec., Max.

### Additional Information



Datashheet



Resources



Samples



Accessories

For recommended fuse accessories for this product series, see '[Recommended Accessories](#)' section.

### 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				
001.	1	125	10 kA @ 125VAC	0.1750	1.97500	x	x	x	x	x
1.25	1.25	125		0.1263	3.39000	x	x	x	x	x
01.6	1.6	125		0.0880	6.14000	x	x	x	x	x
002.	2	125		0.0684	9.97000	x	x	x	x	x
02.5	2.5	125		0.0521	17.04500	x	x	x	x	x
003.	3	125		0.0431	26.24000	x	x	x	x	x
3.15	3.15	125		0.0380	29.79500	x	x	x	x	x
03.5	3.5	125		0.0322	36.27500	x	x	x	x	x
004.	4	125		0.0293	51.61000	x	x	x	x	x
005.	5	125		0.0217	89.97500	x	x	x	x	x
006.	6	125		0.0179	131.45500	x	x	x	x	x
06.3	6.3	125		0.0166	151.90500	x	x	x	x	x
007.	7	125		0.0137	157.31000	x	x		x	
008.	8	125		0.0084	169.43500	x	x	x	x	
010.	10	125		0.0066	274.11500	x	x	x	x	

### Temperature Re-rating Curve

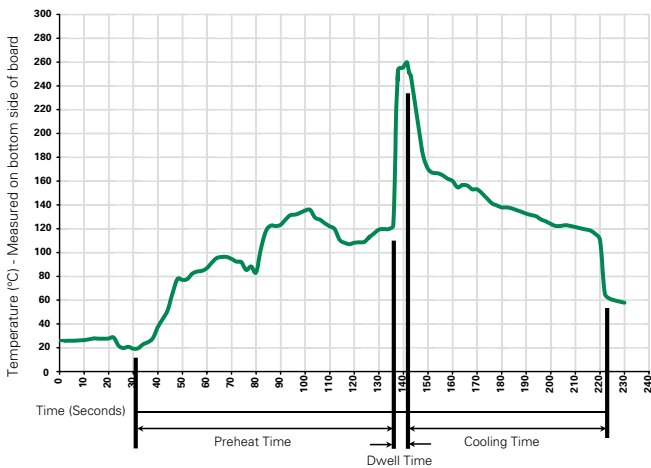


Note:  
Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

### Average Time Current Curves



### Soldering Parameters - Wave Soldering



### Recommended Process Parameters:

Wave Parameter	Lead-Free Recommendation
<b>Preheat:</b> (Depends on Flux Activation Temperature)	(Typical Industry Recommendation)
Temperature Minimum:	100°C
Temperature Maximum:	150°C
Preheat Time:	60-180 seconds
<b>Solder Pot Temperature:</b>	260°C Maximum
<b>Solder Dwell Time:</b>	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.**

### Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code	Taping Width
<b>233 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")
Bulk	N/A	1000	MXB	N/A

## 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 to +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 temp (40°C) for 240 hours
<b>Salt Spray</b>	MIL-STD-202, Method 101, Test Condition B

## Dimensions



## Part Numbering System



## Recommended Accessories

Accessory Type	Series	Description	Max Application Voltage	Max Application Amperage
Holder	<a href="#">345_ISF</a>	Panel Mount Shock-Safe Fuseholder	250	10
	<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:
- Do not use in applications above rating.
  - Please refer to fuseholder data sheet for specific re-rating information.
  - Please contact factory for applications greater than the max voltage and amperage shown.

**Disclaimer Notice** - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at: [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.