

477 Series, 5x20 mm, Time-Lag Fuse



**Description**

400Vdc/500Vac rated, 5x20mm, time-lag, surge withstand ceramic body cartridge fuse.

**Features**

- Designed to International (IEC) Standard for use globally.
- Follow the IEC 60127-2, Sheet 5 specification for time-lag fuses
- Available in cartridge and axial lead form
- RoHS compliant and lead-free

**Applications**

High energy and power efficient applications.

**Agency Approvals**

Agency	Agency File Number	Ampere Range
	Cartridge: NBK040609-JP1021A NBK040609-JP1021C NBK100408-JP1021A	1A – 5A 6.3A – 12A 16A
	Leaded: NBK040609-JP1021B NBK040609-JP1021D NBK100408-JP1021B	1A – 5A 6.3A – 12A 16A
	1620077	0.500A – 8A
	E10480	0.500A - 16A
	40025413	1A, 3.15A
	J50248089	10A, 12A, 16A
	N/A	0.500A – 16A

**Electrical Characteristics for Series**

% of Ampere Rating	Ampere Rating	Opening Time
150%	.5 - .8	60 minutes, Minimum
	1 - 3.15	60 minutes, Minimum
	4 - 6.3	60 minutes, Minimum
	8 - 16	30 minutes, Minimum
210%	.5 - .8	30 minutes, Maximum
	1 - 3.15	30 minutes, Maximum
	4 - 6.3	30 minutes, Maximum
	8 - 16	30 minutes, Maximum
275%	.5 - .8	.25 sec., Min.; 80 sec. Max.
	1 - 3.15	.75 sec., Min.; 80 sec. Max.
	4 - 6.3	.75 sec., Min.; 80 sec. Max.
	8 - 16	.75 sec., Min.; 80 sec. Max.
400%	.5 - .8	.05 sec., Min.; 5 sec. Max.
	1 - 3.15	.095 sec., Min.; 5 sec. Max.
	4 - 6.3	.15 sec., Min.; 5 sec. Max.
	8 - 16	.15 sec., Min.; 5 sec. Max.
1000%	.5 - .8	.005 sec., Min.; .15 sec. Max.
	1 - 3.15	.01 sec., Min.; .15 sec. Max.
	4 - 6.3	.01 sec., Min.; .15 sec. Max.
	8 - 16	.01 sec., Min.; .15 sec. Max.

**Additional Information**



Datasheet



Resources



Samples

### Electrical Characteristic

Amp Code	Amp Rating	Max Voltage Rating (V)		Interrupting Rating	Nominal Cold Resistance (Milli-ohms)	Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec.) <sup>†</sup>	Agency Approvals				
		AC	DC				PS E	UL US	S	△	VDE
.500	0.5	500	400	100A@500VAC 1500A@400VDC	1055.900	0.300		X*	X**		
.800	0.8	500	400		430.000	0.909		X*	X**		
001.	1	500	400		139.400	1.800	X	X*	X**		X
002.	2	500	400		55.200	9.120	X	X*	X**		
3.15	3.15	500	400		27.700	50.109	X	X*	X**		X
004.	4	500	400	100A@500VAC 500A@400VDC	17.200	52.480	X	X*	X**		
005.	5	500	400		13.700	76.500	X	X*	X**		
06.3	6.3	500	400		10.970	121.451	X	X	X**		
008.	8	500	400		8.305	203.520	X	X	X**		
010.	10	500	400		4.950	509.000	X	X		X	
012.	12	500	400		4.730	576.000	X	X		X	
016.	16	500	400		100A@500VAC 400A@400VDC	3.100	1331.200	X	X		X***

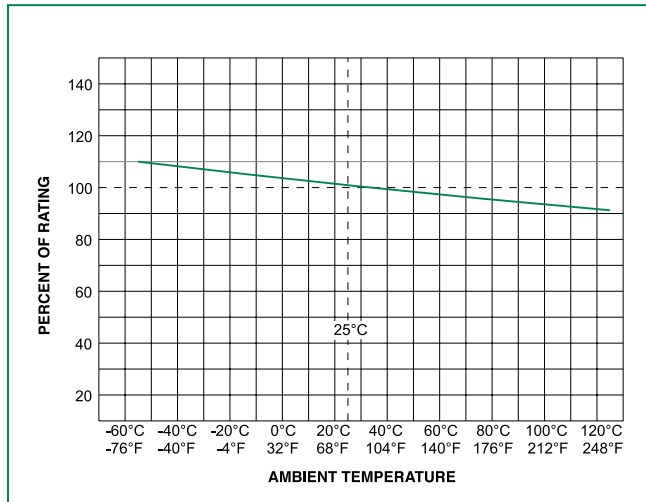
\*100A @ 600Vac also available. Add suffix "MXE6P". Example: 0477004.MXE6P.

\*\*Semko approval for 100A@500Vac and 200A@400Vdc.

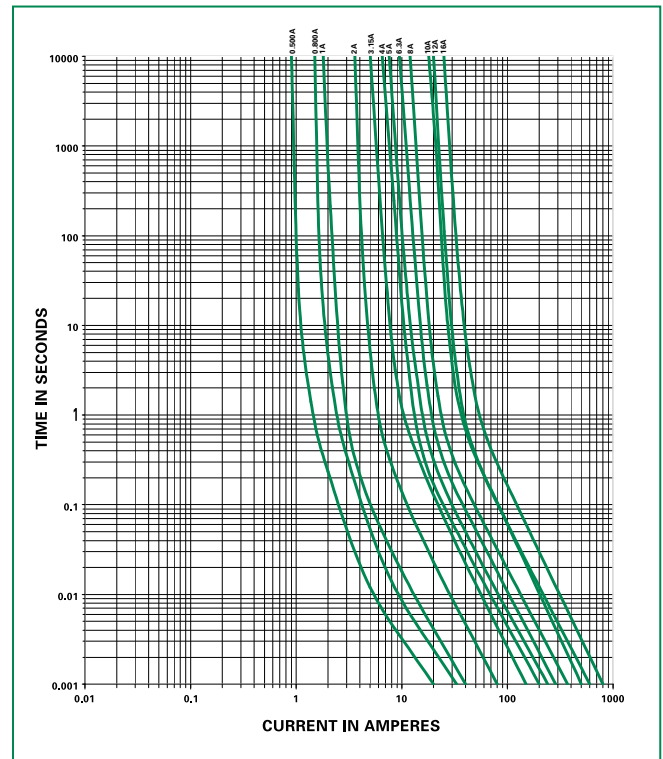
\*\*\*100A@ 500Vac and 300A@400Vdc for 16A

<sup>†</sup>I<sup>2</sup>t test at 10x rated current.

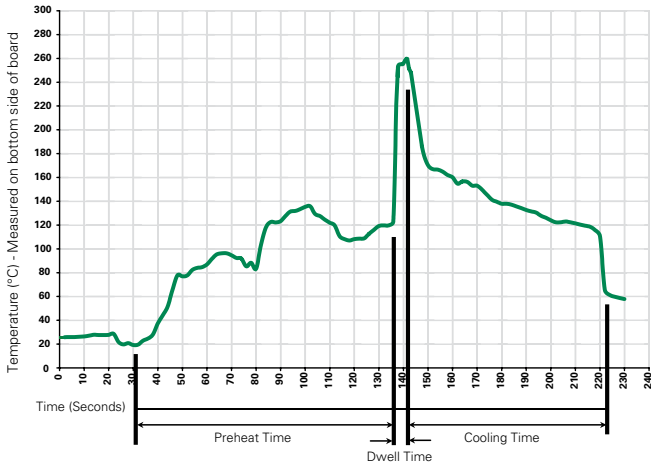
### Temperature Re-rating Curve



### 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.

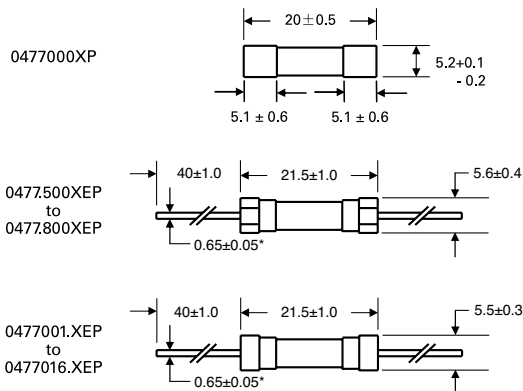
**Note: These devices are not recommended for IR or Convection Reflow process.**

### Product Characteristics

<b>Materials</b>	<b>Body:</b> Ceramic <b>Cap:</b> Nickel-plated Brass <b>Leads:</b> 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>	<b>Cap 1:</b> Brand logo, current and voltage ratings <b>Cap 2:</b> Series and agency approval markings
<b>Packaging</b>	Available in Bulk (M=1000 pcs/pkg)

<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

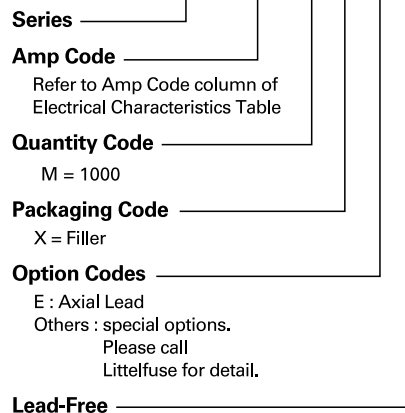


Notes:  
\* Ratings above 5A 1.0±0.05 diameter lead.

All dimensions in mm

### Part Numbering System

**0477 xxxx M X E P**



# Axial Lead & Cartridge Fuses

5×20 mm > Time-Lag > 477 Series

## Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code	Reel Size
<b>477 Series</b>				
Bulk	N/A	1000	MX	N/A
Bulk	N/A	1000	MXE	N/A
Reel and Tape	N/A	1000	MRET1	T1=53mm (2.087")

**Disclaimer Notice** - Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse. 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).