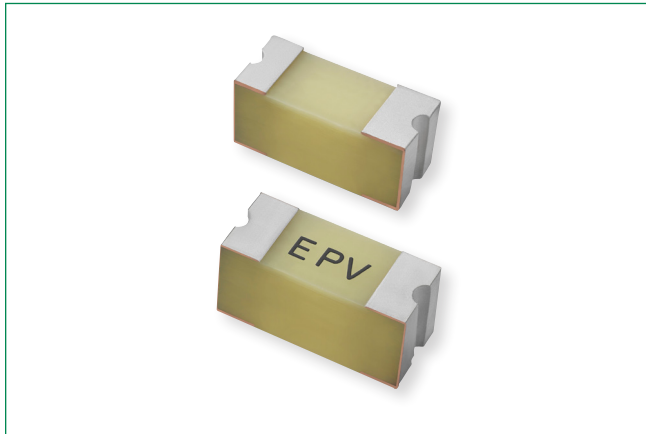


# Surface Mount Fuse

## 400PV Series > 2410 Photovoltaic Fuse



### Description

Littelfuse 400PV Series is a 2410 size Surface Mount Fuse which offers relatively low resistance. It provides UL 248-19 compliant overcurrent protection for photovoltaic (PV) cells.

The 400PV series meets environment standards and is able to operate at high temperatures.

### Features & Benefits

- Wide operating temperature range
- 100% lead-free, halogen-free, and RoHS compliant
- Reliable overcurrent performance in high temperature environments
- Small and compact
- Surface mountable
- Compatible with common soldering assembly processes
- Recognized to UL/CSA 248-1 and UL/CSA 248-19

### Agency Approvals

Agency	Agency File Number	Ampere Rating
c UL US	E339112	0.375 A

### Applications

- Photovoltaic shingles
- Photovoltaic cells

### Electrical Characteristics

% of Ampere Rating	Ampere Rating	Opening Time
100%	0.375 A	4 hours, Minimum
135%	0.375 A	3600 seconds Maximum
200%	0.375 A	240 seconds Maximum

### Electrical Specifications

Ampere Rating (A)	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I <sup>2</sup> t (A <sup>2</sup> Sec.) <sup>1</sup>	Agency Approvals
0.375	86	10,000 A @ 86 VDC	0.31	0.010	c UL US
					X

#### Note

1. Nominal Melting I<sup>2</sup>t measured at 1 msec. opening time

### Additional Information



Resources



Accessories

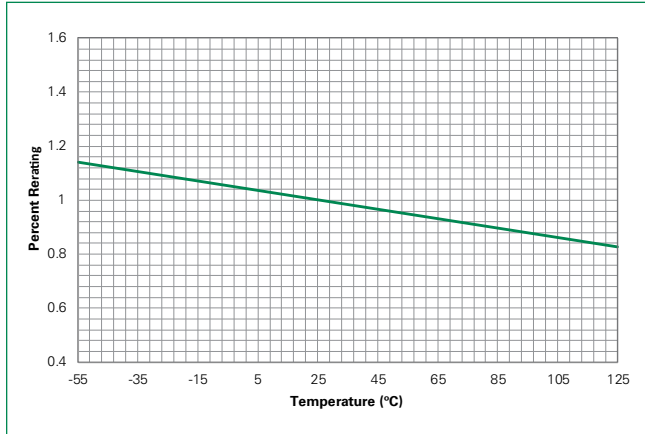


Samples

# Surface Mount Fuse

## 400PV Series > 2410 Photovoltaic Fuse

### Temperature Re-rating Curve



#### Note

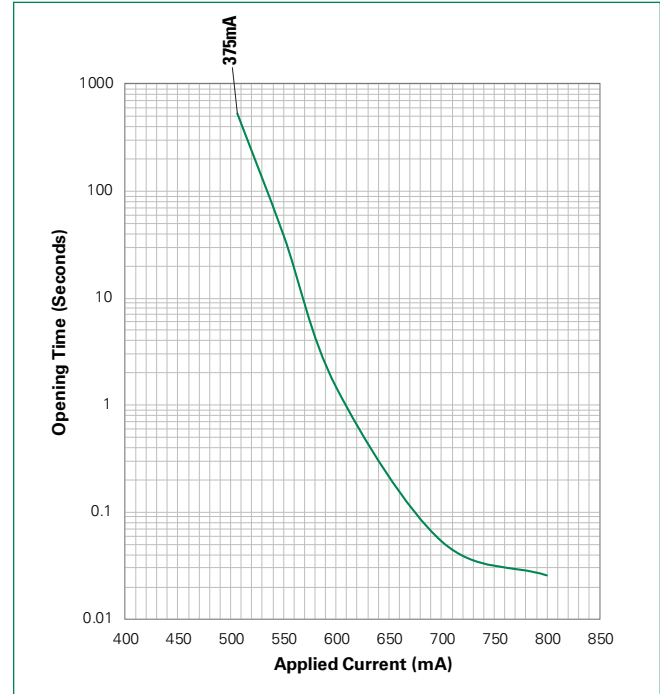
Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

#### Example

For continuous operation at 85 degrees celsius, the fuse should be rerated as follows:

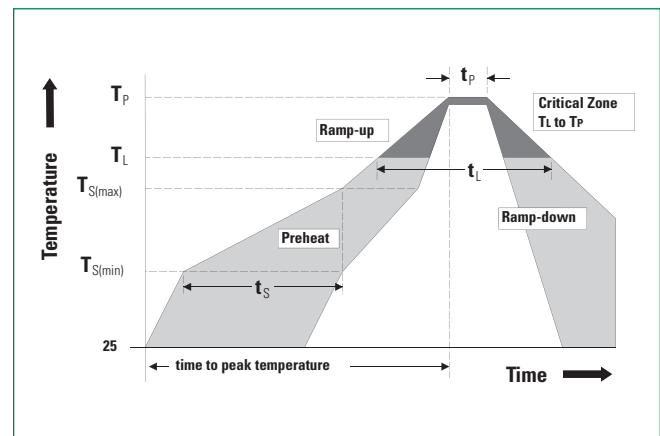
$$I = (0.75)(0.90)I_n = (0.675)I_n$$

### Average Time Current Curve



### Soldering Parameters – Reflow Soldering

<b>Reflow Condition</b>		Pb-free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150° C
	Temperature Max ( $T_{s(max)}$ )	200° C
	- Time (Min to Max) ( $t_s$ )	60–180 secs
<b>Average ramp up rate (Liquidus Temp (<math>T_L</math>) to peak)</b>		3° C/second max.
<b><math>T_{s(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>		5° C/second max.
<b>Reflow</b>	- Temperature ( $T_L$ ) (Liquidus)	217° C
	- Temperature ( $t_L$ )	60–150 seconds
<b>Peak Temperature (<math>T_p</math>)</b>		260 <sup>+0/-5</sup> °C
<b>Time within 5° C of actual peak Temperature (<math>t_p</math>)</b>		10–30 seconds
<b>Ramp-down Rate</b>		6° C/second max.
<b>Time 25° C to peak Temperature (<math>T_p</math>)</b>		8 minutes max.
<b>Do not exceed</b>		260° C
<b>Wave Soldering</b>	260° C, 10 seconds max.	



# Surface Mount Fuse

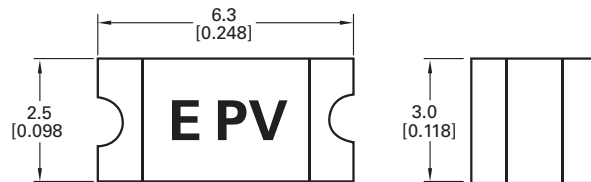
## 400PV Series > 2410 Photovoltaic Fuse

### Product Characteristics

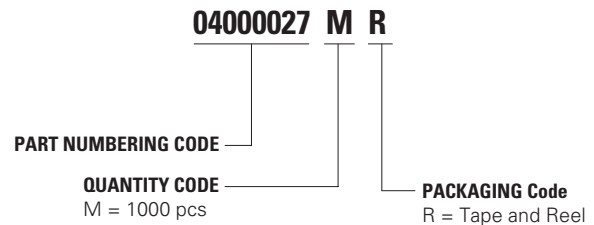
<b>Materials</b>	Body: Epoxy resin (UL 94 V-0 certified) Terminations: Cu/Ni/Sn (100% Pb-free)
<b>Moisture Sensitivity Level</b>	IPC/JEDEC J-STD-020C, Level 1
<b>Solderability</b>	IPC/EIC/JEDEC J-STD-002B, Condition B
<b>Humidity</b>	UL 248-19 Section 6.7.3
<b>Resistance to Soldering Heat</b>	MIL-STD-202, Method 210F, Condition B
<b>Thermally Induced Drift</b>	UL 248-19 Section 6.6.1
<b>Moisture Resistance</b>	MIL-STD-202, Method 106G

<b>Thermal Shock</b>	MIL-STD-202, Method 107G, Condition B-3
<b>Mechanical Shock</b>	MIL-STD-202, Method 213B, Condition A
<b>Vibration</b>	MIL-STD-202, Method 201A
<b>Vibration, High Frequency</b>	MIL-STD-202, Method 204D, Condition D
<b>Dissolution of Metallization</b>	IPC/EIC/JEDEC J-STD-002B, Condition D
<b>Terminal Strength</b>	IEC 60127-4
<b>Temperature Extremes</b>	UL 248-19 Section 6.6.2

### Dimensions



### Part Numbering System



### Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
12 mm Tape and Reel	EIA-481/IEC 60286-3	1000	MR

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