

**PRODUCT  
DATASHEET**



**SMFF3024 Series Surface Mount Fuses Devices**

## SMFF3024 Series Surface Mount Fuses Devices

### Description

Polytronics SMFF3024 series surface mount fuse is in a compact miniature rectangular shape, offering up to 125A/85V rating with high interrupt of 1500A to meet various applications. The fusing element and the terminals are integrally stamped and formed for utmost reliability. Thermosetting adhesive filling design ensures that the product is completely lead-free to meets RoHS and REACH requirements.







### Features

- Fast Acting
- Compact rectangular size
- Enhanced thermal cycling endurance
- Ceramic body design
- Excellent environmental integrity
- MSL 1



### Application

- AI, blade, and edge servers
- High-end power supplies
- Power Distribution Units
- Industrial power tools
- Battery Management System
- Energy Storage System
- Cooling fan system
- Voltage regulator module

### Agency Approval and Environmental Compliance

Agency	File Number	Regulation	Standard
	UL/CSA: Pending		2011/65/EU
	TÜV: Pending		IEC 61249-2-21:2003

### Electrical Characteristics

Part Number	Marking	Current Rating (A)	Voltage Rating	Interrupting Rating	Typical Cold DCR <sup>†</sup> (mΩ)	Typical I <sup>2</sup> T <sup>‡</sup> (A <sup>2</sup> S)	Agency Approval	
								
SMFF3024P020	20	20	85V	1500A 85V DC	2.40	231	Pending	Pending
SMFF3024P030	30	30			1.23	400	Pending	Pending
SMFF3024P040	40	40			0.88	812	Pending	Pending
SMFF3024P050	50	50			0.72	1180	Pending	Pending
SMFF3024P060	60	60			0.60	1700	Pending	Pending
SMFF3024P080	80	80			0.50	3000	Pending	Pending
SMFF3024P100	100	100			0.45	4400	Pending	Pending
SMFF3024P125	125	125			0.35	8200	Pending	Pending

<sup>†</sup> Measured at ≤ 10% rated current and 25°C

<sup>‡</sup> Melting I<sup>2</sup>T at 10 times of rated current

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### Electrical Specification

Ampere Rating	% of Current Rating	Opening Time
20A~125A	100%	4 Hours Min.
	250%	60 Seconds Max.
	1000%	1 mSec. Min.

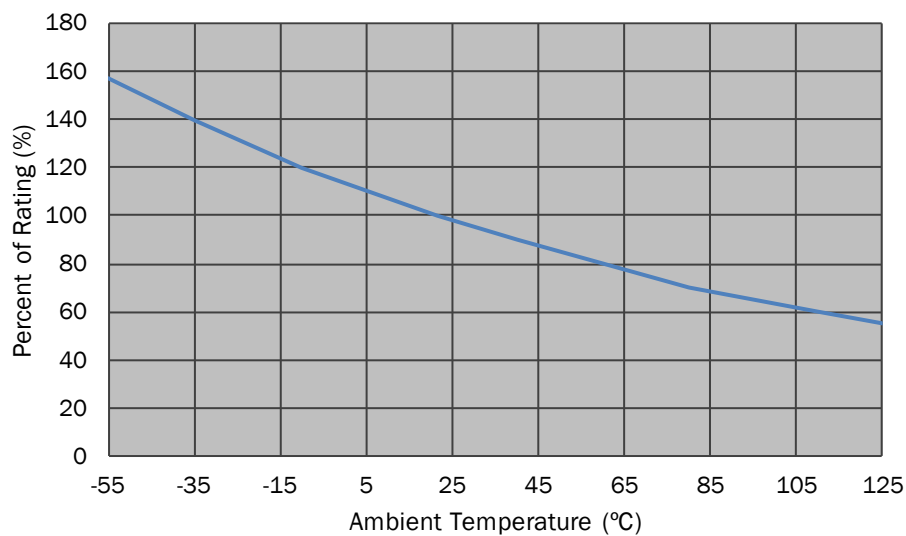
### Physical Specifications

Materials	Body: Ceramic Element: Copper over-plated with 100% tin
Solderability	MIL-STD-202
Soldering Parameters	Wave Solder: 260°C, 10 seconds max. Reflow Solder: 260°C, 20 seconds max. Hand Solder: 350°C, 5 seconds max.

### Environmental Specifications

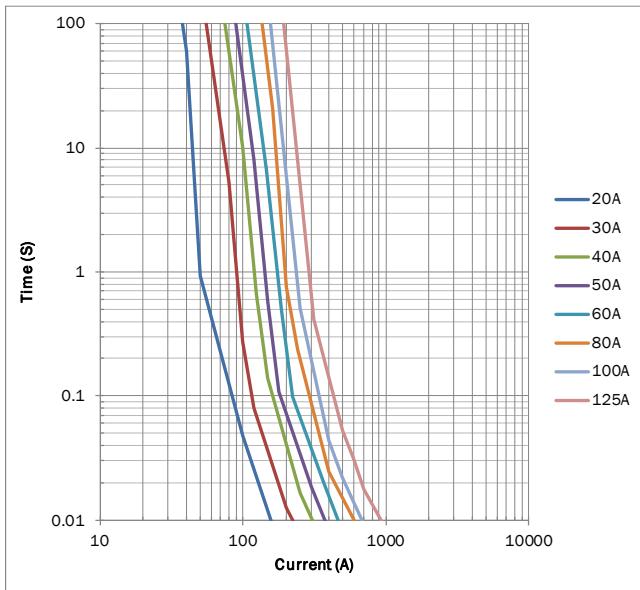
Operating Temperature	-55°C to 125°C
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### Thermal Derating Curve

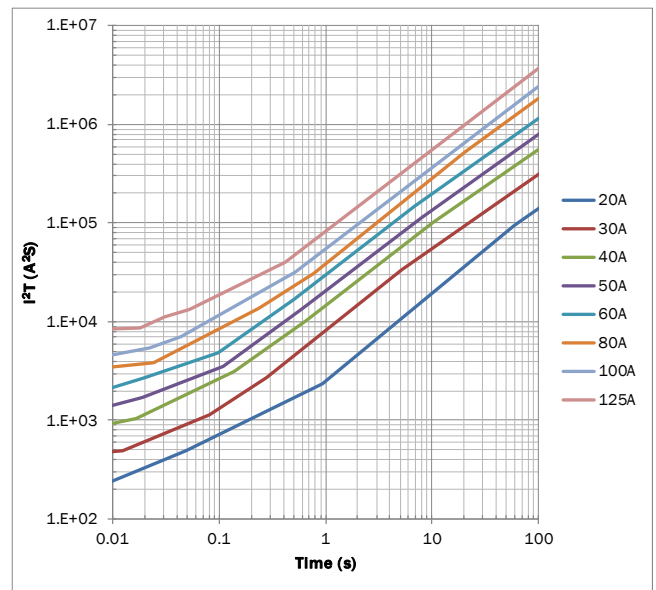


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Time-Current Curve



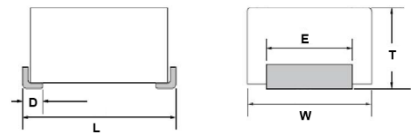
I<sup>2</sup>T vs Time Curve



### Physical Dimensions (mm.)

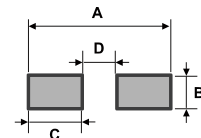
Dimensions (mm)

L	W	T	D	E
7.30±0.50	5.80±0.30	4.20±0.30	1.30±0.30	4.00±0.30



Recommended Solder Pad Dimension (mm)

A	B	C	D
9.80±0.30	5.80±0.30	2.70±0.30	4.40±0.30



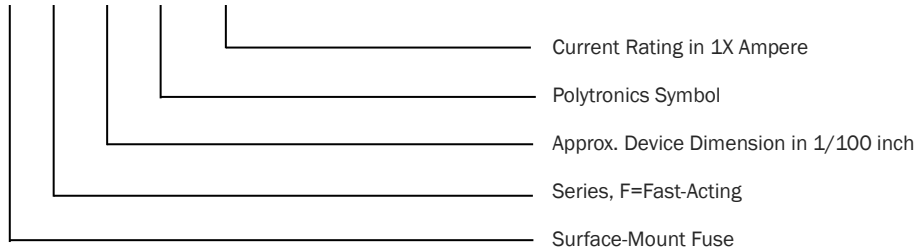
Dimensions of Standard Test Board (mm)

Ampere Rating	Board Thickness	Copper Layer Thickness	Copper Trace Width
20A~50A	1.6	0.105	22
60A~125A	1.6	0.210	33

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### Part Number System

**SMF F 3024 P** □□□

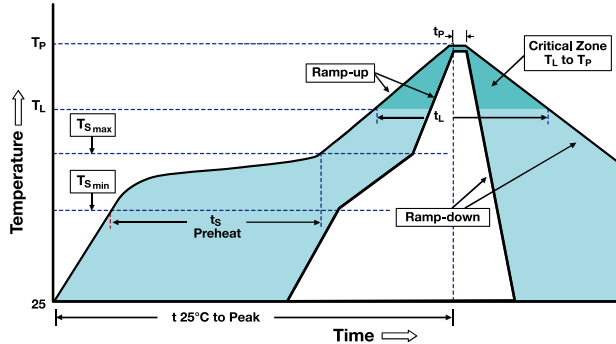


### Reliability Test

Characteristics	Test condition / Methods	Requirement	Test Reference
Time/Current	100% In	No Fusing; 4 hours min.	UL248-14
	250% In	≤ 60 sec	Refer to Spec
	1000% In	≥ 1 msec	IEC60127-4
Insulation Resistance	Test Condition A, 0.01MΩ Min.	0.01MΩ Min.	MIL-STD-202 Method 302
Interrupting Ability	1500A/85V DC	Without permanent arcing, ignition and bursting of fuse link	UL 248-14 IEC60127-4
Solderability	240°C ± 5°C, 3 sec ± 0.5sec	95% coverage min	IEC 60127-4 IEC 60068-2-20 MIL-STD-202
Resistance to Soldering	260°C ± 5°C, 10 sec ± 0.5sec	ΔR : <10%	MIL-STD-202 Method 210
Moisture Resistance	85°C ± 3°C, 85% ± 5% RH, 1000 hours	ΔR : <10%	MIL-STD-202 Method 106
Salt Spray	5% salt solution, 72 hours	ΔR : <10%	MIL-STD-202 Method 101
Thermal Shock	Test Condition B 300 cycles, 65°C / +125°C	ΔR : <10%	MIL-STD-202 Method 107
Vibration	Amplitude 10Hz ~ 55Hz in 1 min. 2 hours each XYZ, total 6 hours.	ΔR : <10%	MIL-STD-202 Method 201
Mechanical shock	Test Condition I (100 G's peak for 6 msec)	ΔR : <10%	MIL-STD-202 Method 213

## SMFF3024 Series Surface Mount Fuses Devices

### Soldering Parameters

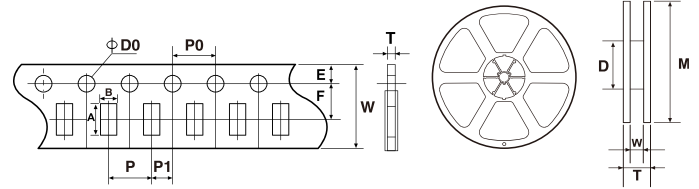


Average Ramp-Up Rate ( $T_{S_{max}}$ to $T_P$ )	3°C/second max.
Preheat	
-Temperature Min ( $T_{S_{min}}$ )	150°C
-Temperature Max ( $T_{S_{max}}$ )	200°C
-Time ( $T_{S_{min}}$ to $T_{S_{max}}$ )	60-120 seconds
Time maintained above:	
-Temperature ( $T_L$ )	217°C
-Time ( $t_L$ )	60-150 seconds
Peak Temperature ( $T_P$ )	260°C
Time within 5°C of actual Peak Temperature ( $t_P$ )	20 seconds max.
Ramp-Down Rate	6°C /second max.
Time 25°C to Peak Temperature	8 minutes max.

Note 1: All temperature refer to top side of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

### Tape & Reel Specification (mm.)



A		M	$\varnothing 330.0 \pm 2.0$
B		W	
W	$16.00 \pm 0.30$	T	
F		A	
E		B	
P		C	
P0		D	
P1			
D0			
T			

### Packaging Quantity

Part Number	Tape & Reel Quantity
SMFF3024PXXX	1000

### Storage

- The ambient temperature recommended for storage shall be between 5°C ~30°C.
- The relative humidity recommended for storage shall be between 25%RH~60%RH.
- Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use.
- The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.

### Warning

- Fuse product is not recommended for any type of coating. Polytronics is not responsible for any damage directly or indirectly related to the coating.
- For copper layer thickness or copper trace width different from the standard test board, fusing characteristics needs to be verified to ensure product performance meet user requirement.