

**PRODUCT  
DATASHEET**



**SMFD1206 Series Surface Mount Fuses Devices**

## SMFD1206 Series Surface Mount Fuses Devices

### Description

Polytronics SMFD1206 series surface mount slow-blow fuse utilizes thick film process with extremely stable fusing element. The glass over coating can tolerate higher temperature profile, and the non-flammable ceramic substrate offers better heat conductivity and safety. SMFD1206 series is also RoHS compliant and halogen-free to meet global environmental standard.






### Features

- Slow-blow
- Compact size
- Thick film manufacturing method
- Ceramic substrate with silver fusing element
- Excellent environmental integrity


### Application

- Battery packs
- LED driver
- Car charger
- Game equipments
- LCD monitors and modules
- Wireless base station
- Portable device (battery charger, etc.)

### Agency Approval and Environmental Compliance

Agency	File Number	Regulation	Standard
	UL/CSA:E331807		2011/65/EU
			IEC 61249-2-21:2003

### Electrical Characteristics

Part Number	Marking	Current Rating (A)	Voltage Rating	Interrupting Rating	Max Cold DCR† (Ω)	Typical I <sup>2</sup> T‡ (A <sup>2</sup> S)	Agency Approval
							
SMFD1206P100	H	1.00	63V	50A 63V DC 63V AC	0.380	0.245	✓
SMFD1206P150	K	1.50			0.200	0.294	✓
SMFD1206P200	N	2.00			0.105	0.788	✓
SMFD1206P250	O	2.50			0.078	1.149	✓
SMFD1206P300	P	3.00			0.045	2.300	✓
SMFD1206P350	R	3.50			0.037	2.563	✓
SMFD1206P400	S	4.00			0.028	3.667	✓
SMFD1206P500	T	5.00			0.020	4.260	✓
SMFD1206P600	6	6.00			0.016	9.848	✓
SMFD1206P700	U	7.00			0.009	11.176	✓

† Measured at ≤10% rated current and 25°C

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

## SMFD1206 Series Surface Mount Fuses Devices

### Electrical Specification

Ampere Rating	% of Current Rating	Opening Time
1A~7A	100%	4 Hours Min.
	200%	60 Seconds Max.
	1000%	1.0mSec. Min.

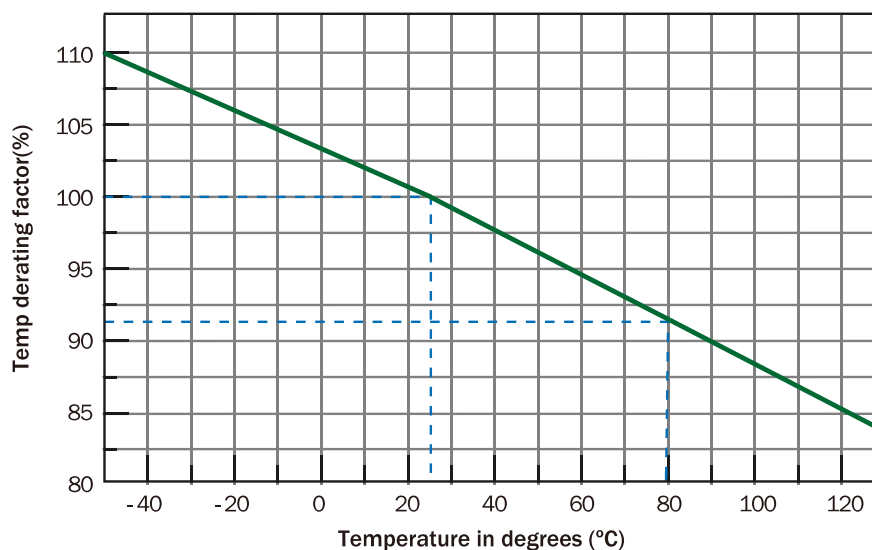
### Physical Specifications

<b>Materials</b>	Substrate: Ceramic Terminations: Silver over-plated with 100% tin Element: Silver or Silver/palladium
<b>Solderability</b>	MIL-STD-202
<b>Soldering Parameters</b>	Wave Solder: 260°C, 10 seconds max. Reflow Solder: 260°C, 5 seconds max. Hand Solder: 350°C, 5 seconds max.

### Environmental Specifications

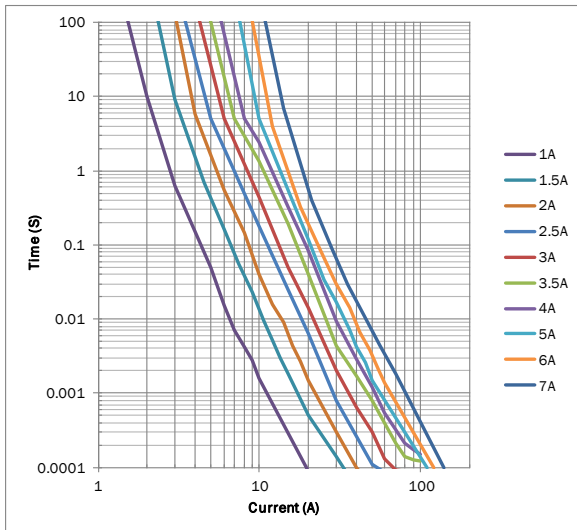
<b>Operating Temperature</b>	-50°C to 125 °C
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### Thermal Derating Curve

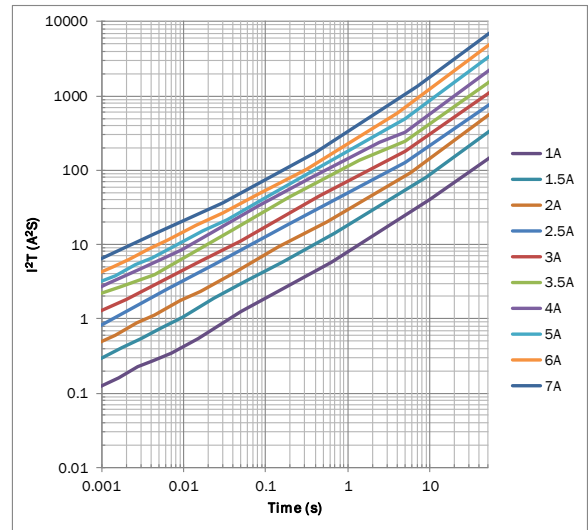


## SMFD1206 Series Surface Mount Fuses Devices

**Time-Current Curve**



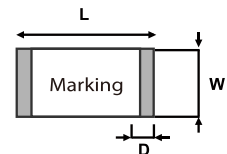
**I<sup>2</sup>T vs Time Curve**



### Physical Dimensions (mm.)

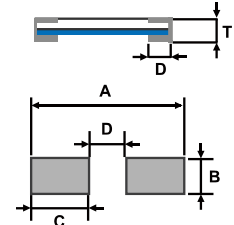
Dimensions (mm)

L	W	T	D
3.10±0.2	1.55±0.20	0.55±0.20	0.50±0.20



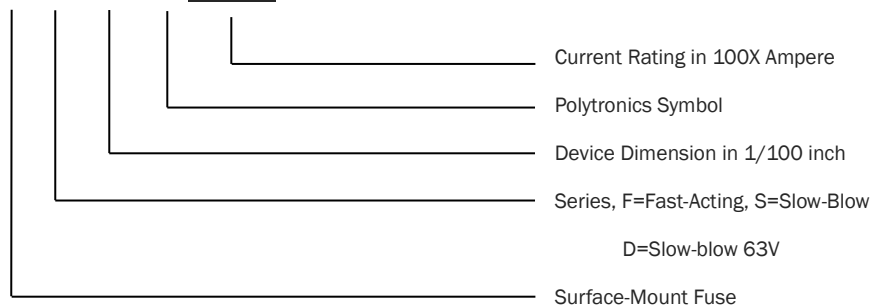
Recommended Solder Pad Dimension (mm)

A	B	C	D
4.4±0.5	2.4±0.3	1.2±0.3	2.0±0.3



### Part Number

SMF D 1206 P □□□



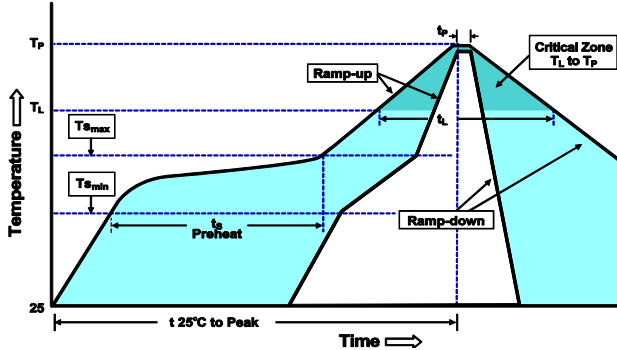
## SMFD1206 Series Surface Mount Fuses Devices

### Reliability Test

Characteristics	Test condition / Methods	Requirement	Test Reference
Voltage Drop	100% In; Temperature in fuse was stabilized	Deviation between the mean value: <15%	IEC 60127-1
Time/Curve	100% In	No fusing, 4 hours min.	Refer to Spec.
	200% In	Within 60 seconds	
	1000% In	> 1.0 ms	
Endurance Test	100% In, 1hour on, 15min off, 100cycles; followed by 1hour at 125% In	$\Delta R$   <10% Legible appearance	IEC60127-1
Maximum Sustained Dissipation	125% In, during the last 10min of the endurance test	Changed with current rating	IEC60127-1
Temperature Rise	100% In	$\Delta T$   <75 °C	UL248-14
Interrupting Ability	50A/63V DC 50A/63V AC	Without permanent arcing, ignition, and bursting of fuse link	UL 248-14
Solderability	240 °C $\pm$ 5 °C, 3sec $\pm$ 0.5sec	95% coverage min	IEC 60127-4 IEC 60068-2-20 MIL-STD-202
Resistance to Soldering	260 °C $\pm$ 5 °C, 10sec $\pm$ 0.5sec	$\Delta R$   : <10% Legible appearance	MIL-STD-202 IEC60127-4
Bending Test	Distance between holding points: 90mm Bending: 1 mm; Time: 10 seconds	$\Delta R$   : <10% No mechanical damages	IEC 60127-4
High Temperature Operating Life	70 °C $\pm$ 2 °C at 60% In for 96 hours	$\Delta R$   : <10%; no fusing	MIL-STD-202 Method 108
Low Temperature Storage	-55 °C $\pm$ 2 °C for 96 hours	$\Delta R$   : <10%	IEC60068-2-1
High Temperature Storage	125 °C $\pm$ 2 °C for 96 hours	$\Delta R$   : <10%	IEC60068-2-2
Humidity (Steady State)	40 °C $\pm$ 2 °C, 90~95%RH for 1000 hours	$\Delta R$   : <10%	MIL-STD-202 Method 103
Salt Spray	5% salt solution, 48 hours exposure	$\Delta R$   : <10% Legible appearance	MIL-STD-202 Method 101
Thermal Shock	5 cycles between -55 °C /+125 °C 60 minutes at each extreme zone	$\Delta R$   : <10% No mechanical damage	IEC 60068-2-14

## SMFD1206 Series Surface Mount Fuses Devices

### Soldering Parameters

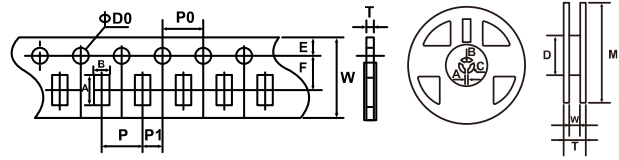


Average Ramp-Up Rate (T <sub>Smax</sub> to T <sub>P</sub> )	3°C/second max.
Preheat	
-Temperature Min (T <sub>Smin</sub> )	150°C
-Temperature Max (T <sub>Smax</sub> )	200°C
-Time (T <sub>Smin</sub> to T <sub>Smax</sub> )	60-120 seconds
Time maintained above:	
-Temperature (T <sub>L</sub> )	217°C
-Time (t <sub>L</sub> )	20-30 seconds
Peak Temperature (T <sub>P</sub> )	260°C
Time within 5°C of actual Peak Temperature (t <sub>P</sub> )	5 seconds
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	3.50 ± 0.20
B	1.90 ± 0.20
W	8.00 ± 0.20
F	3.50 ± 0.05
E	1.75 ± 0.10
P	4.00 ± 0.10
P0	4.00 ± 0.10
P1	2.00 ± 0.05
D0	Ø 1.50 ± 0.10
T	0.75 ± 0.10

M	Ø 178.0 ± 2.0
W	9.50 ± 1.0
T	12.5 ± 1.5
A	2.0 ± 0.5
B	Ø 13.0 ± 0.5
C	Ø 21.0 ± 0.5
D	Ø 58.0 ± 2.0

### Packaging Quantity

Part Number	Tape & Reel Quantity
SMFD1206PXXX	5000

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