POLYTRONICS
POLYTRONICS TECHNOLOGY CORP.

PRODUCT
DATASHEET

SMFMH2410 Series Surface Mount Fuses Devices

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Description

Polytronics SMFMH2410 series square shape surface mount High inrush fuses adopt Wire-in-Air (WIR) construction. Small footprint with wide range of available current rating makes the fuse ideal for over-current protection applications, in both AC and DC circuits using surface mount technology. SMFMH2410 series is also RoHS compliant and halogen-free to meet global environmental standard.

Features

- High Inrush withstand capability
- Wide range of current rating available
- Wire-In-Air performance
- Higher temperature profiles
- Wide operating temperature rang
- Excellent environmental integrity

Application

- Battery pack
- LCD monitor and modules
- Industrial equipment
- PC related equipment / peripherals
- Telecom system
- Power supply
- Medical equipment
- Wireless base station

Agency Approval and Environmental Compliance

Agency	File Number
c UL us	UL/CSA: E331807
TÜV	TÜV: J50563733

Agency	File Number
KC	KC: SU05049-15001A (1~2.5A) KC: SU05049-15002A (3~5A)

Regulation	Standard
RoHS	2011/65/EU
Halogen Free	IEC 61249-2-21:2003

Electrical Characteristics

Part Number	Current Rating (A)	Voltage Rating	Interrupting Rating	Typical Cold DCR† (mΩ)	Nominal Melting I²T‡ (A²S)	Agency Approval		
						c UL us		KC
SMFMH2410P100	1	250V	1A-5A 50A / 250V AC 50A / 125V DC	110	3.00	✓	✓	✓
SMFMH2410P125	1.25			82	4.10	✓	✓	✓
SMFMH2410P150	1.5			78	4.85	✓	✓	✓
SMFMH2410P160	1.6			65	5.78	✓	✓	✓
SMFMH2410P200	2			55	6.41	✓	✓	✓
SMFMH2410P250	2.5			38	13.75	✓	✓	✓
SMFMH2410P300	3			27	14.51	✓	✓	✓
SMFMH2410P315	3.15			24	17.36	✓	✓	✓
SMFMH2410P350	3.5			23	21.88	✓	✓	✓
SMFMH2410P400	4			18	25.21	✓	✓	✓
SMFMH2410P500	5			12	30.00	✓	✓	✓

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

‡ Melting I²T at 10 times of rated current

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Electrical Specification

Ampere Rating	% of Current Rating	Opening Time
1A~5A	100%	4 Hours Min.
1A~5A	125%	1 Hours Min.
1A~5A	200%	120 Seconds Max.

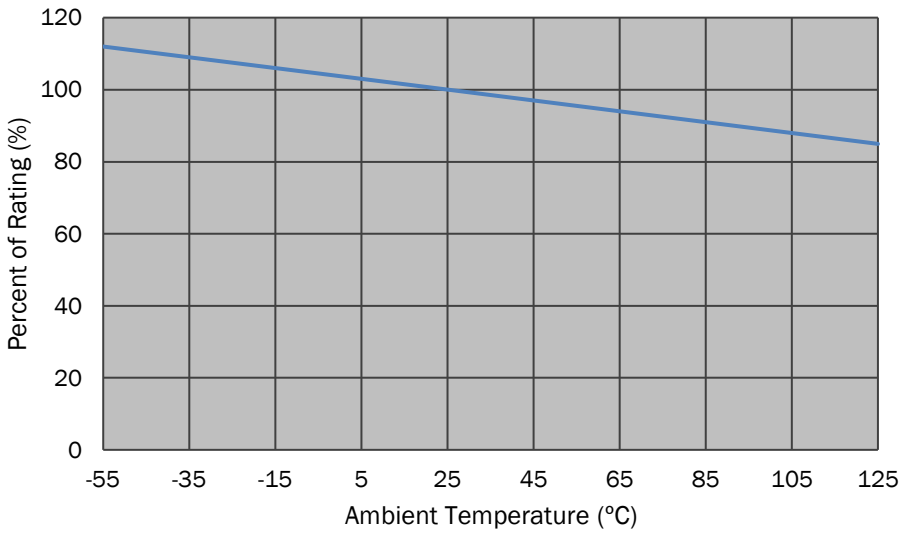
Physical Specifications

Materials	Substrate: Ceramic Terminations: Au Plated Brass Cap Element: Nickel alloy or Copper alloy
Solderability	MIL-STD-202
Soldering Parameters	Wave Solder: 260°C, 10 seconds max. Reflow Solder: 260°C, 5 seconds max. (Thickness of solder paste: 0.2mm Max) Hand Solder: 300°C, 2 seconds max. (Soldering iron avoid touch Brass Cap.)

Environmental Specifications

Operating Temperature	-55°C to 125°C

Thermal Derating Curve



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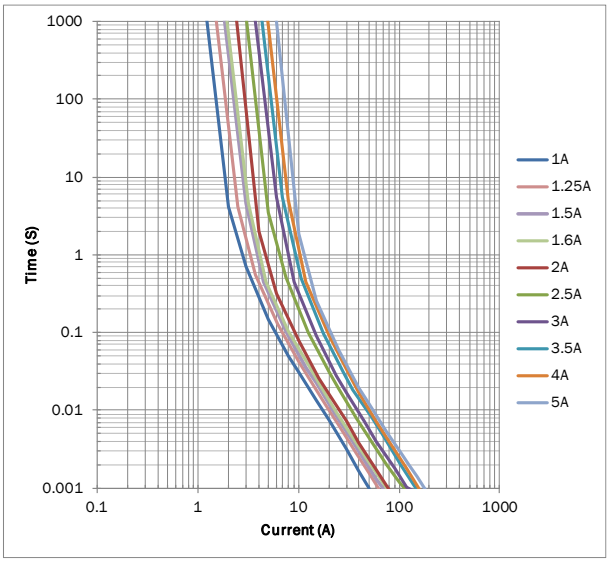
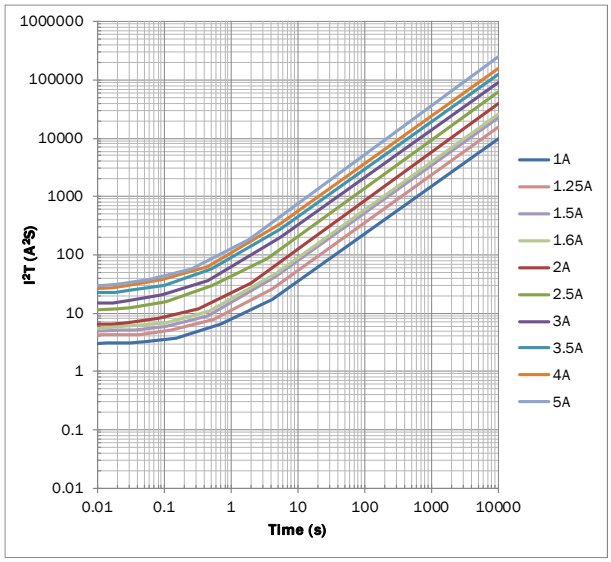
Time-Current Curve



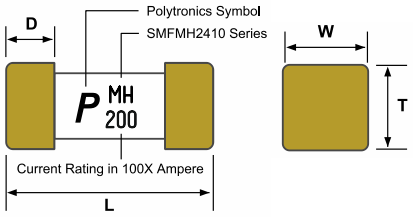
I²T VS Time Curve



Physical Dimensions (mm.)

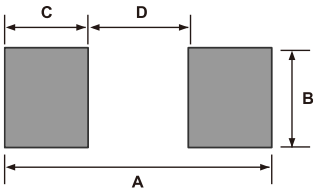
Dimensions (mm)

L	W	T	D
6.10±0.20	2.5±0.10	2.5±0.10	1.4±0.10



Recommended Solder Pad Dimension (mm)

A	B	C	D
8.0±0.3	3.0±0.3	2.5±0.3	3.0±0.3



Dimensionsof Standard Test Board (mm)

Ampere Rating	Board Thickness	Copper Layer Thickness	Copper Trace Width
1A~5A	1.6	0.035	5

Part Number

SMF MH 2410 P □□□

- Current Rating in 100X Ampere
- Polytronics Symbol
- Device Dimension in 1/100 inch
- High Inrush (250V)
- Surface-Mount Fuse

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Reliability Test

Characteristics	Test condition / Methods	Requirement	Test Reference
Time/Current	100% In	No Fusing; 4hours min.	UL248-14
	200% In	<120 seconds	Refer to Spec
	1000% In	10ms~60ms	IEC60127-4
Voltage Drop	100% In	<300mv	IEC 60127-4
Endurance Test	Repeating 100 cycles of 1In for 1 h and switching off for 15min, following by 1 h at 1.25In and testing temperature rise	|ΔR|: <10% ΔT <75°C	IEC 60127-4
Interrupting Ability	50A@250V AC/125V DC	Without permanent arcing, ignition and bursting of fuse link	UL 248-14 IEC60127-4
Solder ability	240°C ± 5°C, 3sec ± 0.5sec	95% coverage min	IEC 60127-4 IEC 60068-2-20 MIL-STD-202
Resistance to Soldering	260°C ± 5°C, 10sec ± 0.5sec	|ΔR|: <10%	MIL-STD-202 Method210
High Temperature Operating Life	96 hours, 70°C ± 2°C at 0.6In.	|ΔR|: <10%	MIL-STD-202 Method 108
Humidity (Steady State)	1000 hours at 40°C ± 2°C 90~95%RH	|ΔR|: <10%	MIL-STD-202 Method 103
Low Temperature Storage	96 hours at -55°C ± 3°C.	|ΔR|: <10%	IEC60068-2-1
High temperature Storage	96 hours at 125°C ± 2°C	|ΔR|: <10%	IEC60068-2-2
Salt Spray	5% salt solution, 48 hours exposure	|ΔR|: <10%	MIL-STD-202 Method 101
Thermal Shock	100 cycles between -65°C /+125°C 30 minutes at each extreme zone	I ΔR I: <(10%R+0.005Ω)	IEC 60068-2-14

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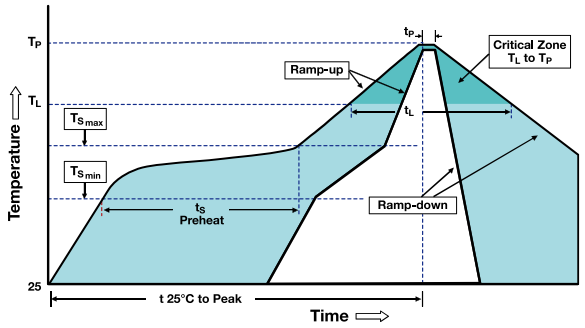
Soldering Parameters



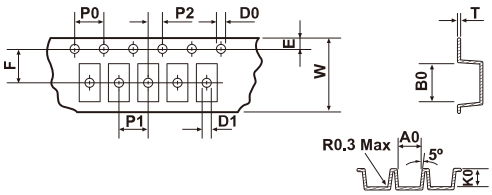
Average Ramp-Up Rate (Ts_{max} to T_P)	3°C/second max.
Preheat	
-Temperature Min (Ts_{min})	150°C
-Temperature Max (Ts_{max})	200°C
-Time (Ts_{min} to Ts_{max})	60-120 seconds
Time maintained above:	
-Temperature (T_L)	217°C
-Time (t_L)	60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual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

Note 1: All temperature refer to topside 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.

Packaging Quantity

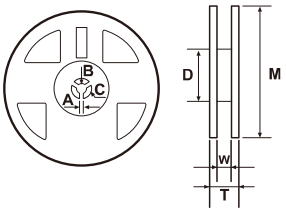
Part Number	Tape & Reel Quantity
SMFMH2410PXXX	1000

Tape & Reel Specification (mm.)



A0	2.70 ± 0.10
B0	6.40 ± 0.10
K0	2.70 ± 0.10
P0	4.00 ± 0.10
P1	4.00 ± 0.10
P2	2.00 ± 0.10

E	1.75 ± 0.10
F	5.50 ± 0.10
D0	Ø 1.50 ± 0.10
D1	1.50 ± 0.25
W	12.0 ± 0.15
T	0.25 ± 0.05



M	Ø 178.0 ± 2.0
W	12.5± 1.0
T	14.5 ± 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

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.
- 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.