SMD0603 Series Surface Mount PPTC Devices

Features	Applications
compact design saves board space	USB port protection - USB 2.0, 3.0&OTG
RoHS compliant and lead-free	HDMI 1.4 Source protection
Halogen-free	PDAs / digital cameras
Fast reponse to flault current	Game console port protection
Symmetrical design	PC motherboards-plug and play protection

HF RoHS REACH Pb Free

1.Electrical Characteristics

Model	I-hold	I-trip	Vmax	Imax	Pd typ	Max. Time to trip		R0 min	R1max
						Current	Time		
	(A)	(A)	(Vdc)	(A)	(W)	(A)	(Sec.)	(Ohm)	(Ohm)
MF-FSMF010X-2	0.10	0.30	15.00	40.00	0.50	0.50	1.00	0.90	6.00
MF-FSMF020X-2	0.20	0.50	9.00	40.00	0.50	1.00	0.60	0.55	3.50
MF-FSMF025X-2	0.25	0.50	9.00	40.00	0.50	1.00	0.60	0.50	3.00
MF-FSMF035X-2	0.35	0.70	6.00	40.00	0.50	8.00	0.10	0.20	1.40
MF-FSMF050X-2	0.50	1.00	6.00	40.00	0.50	8.00	0.10	0.10	0.80

I-hold: Holding Current: maximum current at which the device will not trip in 25℃ still air.

I-trip: Tripping Current: minimum current at which the device will trip in 25℃ still air.

Vmax: Maximum voltage device can withstand without damage at rated current(Imax).

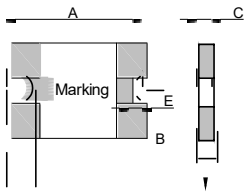
I max: Maximum fault current device can withstand without damage at rated voltage(Vmax).

Pd typ:Typical power dissipated from device when in the tripped state at 25℃ still air.

R0 min:Minimum resistance of device in initial (un-soldered) state.

R1 max:Maximum resistance of device at 25℃ measured one hour after tripping or reflow soldering of 260℃ for 20 sec.

2.Product Dimensions(mm)&Marking



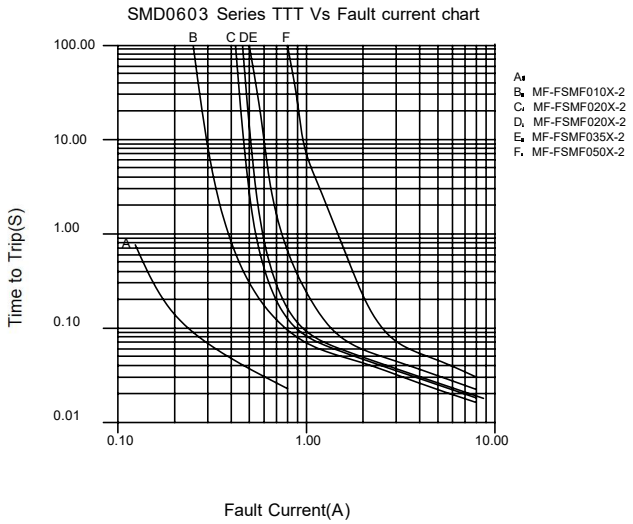
Model	A		B		C		D		E	Marking
	Min	Max	Min	Max	Min	Max	Min	Max	Min	
MF-FSMF010X-2	1.45	1.85	0.65	1.05	0.40	0.80	0.15	0.50	0.05	1
MF-FSMF020X-2	1.45	1.85	0.65	1.05	0.40	0.80	0.15	0.50	0.05	2
MF-FSMF025X-2	1.45	1.85	0.65	1.05	0.40	0.80	0.15	0.50	0.05	2
MF-FSMF035X-2	1.45	1.85	0.65	1.05	0.40	0.80	0.15	0.50	0.05	3
MF-FSMF050X-2	1.45	1.85	0.65	1.05	0.60	1.00	0.15	0.50	0.05	5

3.Thermal Derating Chart

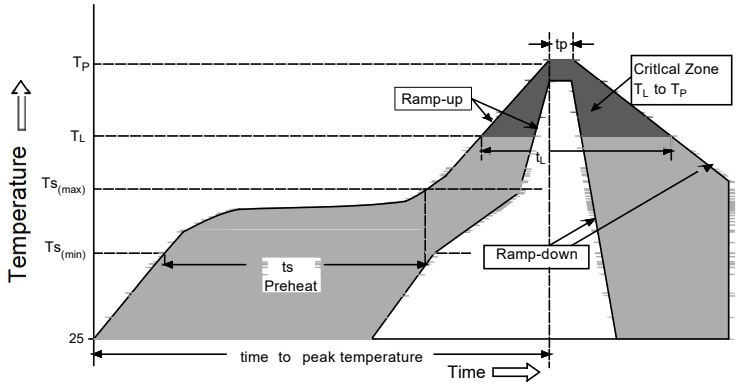
Recommended hold current(A) at am bient Temperature(℃)

Model	Ambient Operating Temperature								
	-40℃	-20℃	0℃	25℃	40℃	50℃	60℃	70℃	85℃
MF-FSMF010X-2	0.13	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
MF-FSMF020X-2	0.27	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
MF-FSMF025X-2	0.32	0.29	0.27	0.25	0.21	0.18	0.16	0.14	0.10
MF-FSMF035X-2	0.47	0.41	0.38	0.35	0.29	0.26	0.24	0.20	0.14
MF-FSMF050X-2	0.67	0.59	0.54	0.50	0.41	0.37	0.34	0.29	0.20

4. Typical time to trip at 25℃



5.Soldering parameters



Profile Feature		Pb-Free Assembly
Average Ramp-Up Rate ($Ts_{(max)}$ to T_P)		3°C/second max
Pre Heat:	Temperature Min ($Ts_{(min)}$)	150°C
	Temperature Max ($Ts_{(max)}$)	200°C
	Time (Min to Max) (t_s)	60 – 180 secs
Time Maintained Above:	Temperature (T_L)	217°C
	Temperature (t_L)	60 – 150 seconds
Peak / Classification Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.

◆All temperature refer to topside of thepackage, measured on the package body surface

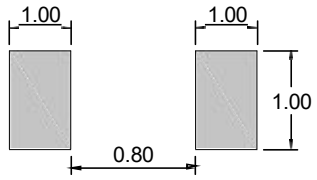
◆If reflow temperature exceeds the recommended profile,devices may not meet the performance requirements

◆Recommended reflow methods: IR,vapor phase oven,hot air oven,N2 environment for lead

◆Recommended maximum paste thickness is 0.25mm (0.010inch)

◆Devices can be cleaned using standard industry methods and solvents

6.Recommended Pad Layout(mm) & Physical Specifications



Terminal Material	Tin-Plated Nickle-Copper (Solder Material: Matte Tin (Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/J-STD-002 Category 3.

7.Environmental Specifications

Operating Temperature	-40 °C to +85 °C
Maximum Device Surface Temperature in Tripped State	125°C
Passive Aging	+85 °C, 1000 hours ; ±5 % typical resistance change
Humidity Aging	+85 °C, 85 % R.H. 1000 hours; ±5 % typical resistance change
Thermal Shock	MIL–STD–202, Method 107; +85 °C to -40 °C, 20 times;-30 % typical resistance change
Solvent Resistance	MIL–STD–202, Method 215 ; No change
Vibration	MIL–STD–883, Method 2007, Condition A; No change
Moisture Sensivity Level	Level 1, J–STD–020
Storage Conditions	+40 °C Max. 70% RH Max. Packed in original packaging.

8.Test Procedures And Requirements

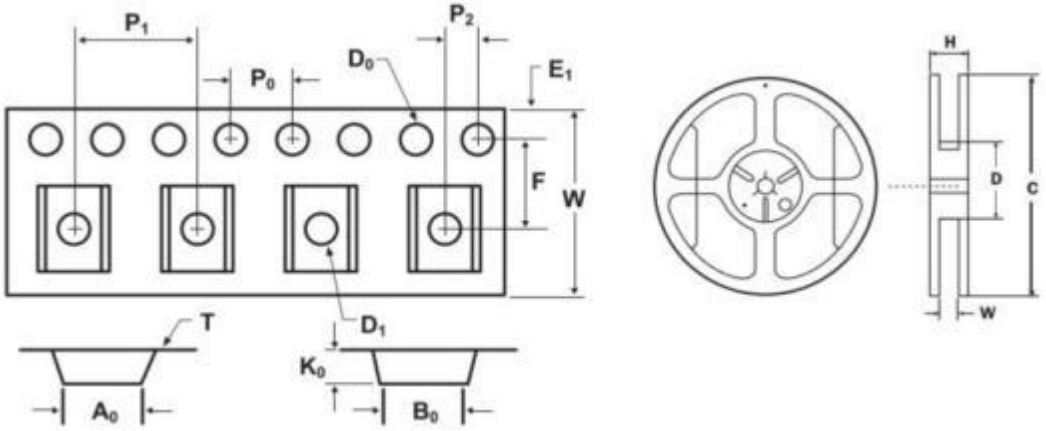
No.	Test	Test Conditions	Accept/Reject Criteria
1	R0 min	Resistance measurement at 25℃	R0min ≤ R ≤ R1max
2	R1 max	Resistance measurement one hour after post trip	R0min ≤ R ≤ R1max
3	I-hold	Hold rated current 1800 second without trip, @ 25℃	No trip
4	I-trip	Device must trip within 900 second under rated current, @25℃	Trip
5	Max. time to trip	At specified current, 25 °C	T ≤ max. time to trip (seconds)
6	Trip Cycle Life	Vmax, Imax, 100 cycles	No arcing or burning
7	Trip Endurance	Vmax,Imax 24 hours	No arcing or burning
8	Solderability	ANSI/J-STD-002	95 % min. coverage

9.Tape and Reel Specifications&Packaging quantity per Reel

TAPE SPECIFICATIONS: EIA-481-1 (mm)		
Item	MF-FSMF010X-2 MF-FSMF020X-2 MF-FSMF035X-2 MF-FSMF025X-2	MF-FSMF050X-2
W	8.00±0.30	8.00±0.30
F	3.50±0.10	3.50±0.10
E1	1.75±0.10	1.75±0.10
D0	1.55±0.05	1.55±0.05
D1	0.50±0.10	0.50±0.10
P0	4.00±0.10	4.00±0.10
P1	4.00±0.10	4.00±0.10
P2	2.00±0.05	2.00±0.05
A0	1.10±0.10	1.10±0.10
B0	1.85±0.10	1.90±0.10
T	0.20±0.10	0.20±0.10
K0	0.72±0.10	0.85±0.10
Leader	390mm	390mm

REEL DIMENSIONS: EIA-481-1 (mm)	
C	Ø178±1.0
D	Ø60.2±0.5
W	9.0±1.5
H	11.0±0.5

Trailer	160mm	160mm
Q'ty	5,000pcs/Reel	4,000pcs/Reel



△Warning:

-Users shall independently assess the suitability of these devices for each of their applications

-Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire

-These devices are intended to protect against the effects of temporary over-current or over-temperature conditions and are not intended to perform as protective devices where such conditions are expected to be repetitive or prolonged in duration

-Exposure to silicon-based oils, solvents, electrolytes, acids, and similar materials can adversely affect the performance of these PPTC devices

-These devices undergo thermal expansion under fault conditions, and thus shall be provided with adequate space and be protected against mechanical stresses

-Circuits with inductance may generate a voltage (L di/dt) above the rated voltage of the PPTC device.

单击下面可查看定价，库存，交付和生命周期等信息

>>JEMETE(晶美特)