

Surface-Mount PTC Devices

Description

MicroPoly surface-mount PTC Devices can save the board space and is suitable for automated assembly. So they are the preferred over-current protection method for computer, consumer, multimedia, portable, and automotive electronics applications.

Many product choices give engineers more design flexibility:

- Size(mils): 0603, 0805, 1206, 1210, 1812, 2016, 2920
- Rated hold current: 0.05~4.0A
- Maximum operating voltage: 6~60V

Features

Surface-mount Devices

Compatible with high-volume electronics assembly

RoHS compliant and lead-free

Halogen-free

Agency recognition: UL

Applications

Motherboard USB&IEEE 1394 protection

USB hubs, ports and peripherals

Set-top-box and HDMI

Battery PCM

Mobile Internet Device(MID)

Portable MP3 and media player

IC VCC protection

Game console port protection

Optical electronics

Security system

Industrial control

Electrical Characteristics

Part number	I_H	I_T	V_{max}	I_{max}	T_{trip}		$P_{d\ typ}$	R_{min}	R_{1max}
	(A)	(A)	(V)	(A)	Current (A)	Time (S)	(W)	(Ω)	(Ω)
MPS-G Series/ Size 0603									
MPS005G	0.05	0.15	15	40	0.5	0.80	0.5	1.500	30.00
MPS010G	0.10	0.30	15	40	0.5	1.00	0.5	0.900	6.000
MPS020G	0.20	0.50	9	40	1.0	0.60	0.5	0.550	3.500
MPS025G	0.25	0.55	9	40	8.0	0.08	0.5	0.500	3.000
MPS035G	0.35	0.75	6	40	8.0	0.10	0.5	0.200	1.000
MPS050G	0.50	1.00	6	40	8.0	0.10	0.5	0.100	0.680

MPS075GL	0.75	1.50	6	40	8.0	0.20	0.5	0.006	0.032
MPS110GL	1.10	2.20	6	40	8.0	0.10	0.6	0.004	0.028
MPS-F Series/ Size 0805									
MPS005F	0.05	0.15	15	100	0.5	2.00	0.5	3.000	50.00
MPS010F	0.10	0.30	15	100	0.5	1.50	0.5	1.000	6.000
MPS020F	0.20	0.50	9	100	8.0	0.02	0.5	0.650	3.500
MPS035F	0.35	0.75	6	100	8.0	0.10	0.5	0.250	1.200
MPS050F	0.50	1.00	6	100	8.0	0.10	0.5	0.150	0.850
MPS075F	0.75	1.50	6	100	8.0	0.20	0.5	0.090	0.350
MPS110F	1.10	2.20	6	100	8.0	0.30	0.5	0.050	0.160
MPS150FL	1.50	3.00	8	50	8.0	0.30	0.8	0.008	0.030
MPS175FL	1.75	3.50	6	50	8.0	0.50	0.8	0.005	0.024
MPS200FL	2.00	4.00	6	50	8.00	1.50	0.8	0.002	0.018
MPS-E Series/ Size 1206									
MPS005E	0.05	0.15	60	20	0.25	1.50	0.6	2.000	50.000
MPS012E	0.125	0.37	30	100	1.0	0.20	0.6	1.500	6.000
MPS016E	0.16	0.37	30	100	1.0	0.30	0.6	1.200	4.500
MPS020E	0.20	0.40	24	100	8.0	0.10	0.6	0.600	2.600
MPS035E	0.35	0.75	16	100	8.0	0.10	0.6	0.300	1.200
MPS050E	0.50	1.00	16	100	8.0	0.10	0.6	0.150	0.700
MPS075E	0.75	1.50	16	100	8.0	0.20	0.6	0.090	0.350
MPS110E	1.10	2.20	8	100	8.0	0.10	0.6	0.040	0.210
MPS150E	1.50	3.00	8	100	8.0	0.30	0.6	0.040	0.120
MPS175E	1.75	3.50	6	100	8.00	0.50	0.8	0.020	0.090
MPS200EL	2.00	4.00	6	50	8.00	1.50	0.8	0.015	0.080
MPS260EL	2.60	5.20	6	50	8.00	5.00	1.0	0.004	0.024
MPS300EL	3.00	6.00	6	50	8.00	5.00	1.0	0.003	0.018
MPS350EL	3.50	7.00	6	50	8.00	5.00	1.0	0.002	0.014
MPS-D Series/ Size 1210									
MPS005D	0.05	0.15	30	10	0.25	1.50	0.6	3.500	50.000
MPS010D	0.10	0.30	30	10	0.50	1.50	0.6	1.500	15.000
MPS020D	0.20	0.40	30	10	8.00	0.02	0.6	0.600	5.000
MPS035D	0.35	0.70	16	100	8.00	0.20	0.6	0.320	1.300
MPS050D	0.50	1.00	16	100	8.00	0.05	0.6	0.130	0.900
MPS075D	0.75	1.50	6	100	8.00	0.10	0.6	0.100	0.400
MPS075DH	0.75	1.50	24	100	8.00	0.10	0.6	0.100	0.400
MPS110D	1.10	2.20	8	100	8.00	0.10	0.6	0.040	0.210
MPS150D	1.50	3.00	6	100	8.00	0.30	0.8	0.040	0.110
MPS175D	1.75	3.50	6	100	8.00	0.60	0.8	0.020	0.080
MPS200D	2.00	4.00	6	100	8.00	1.00	0.8	0.015	0.070
MPS190DL	1.90	4.80	6	50	8.00	5.00	1.2	0.004	0.028

MPS250DL	2.50	5.00	6	50	8.00	5.00	1.2	0.004	0.026
MPS270DL	2.70	7.00	6	50	8.00	5.00	1.2	0.004	0.024
MPS300DL	3.00	8.00	6	50	8.00	5.00	1.2	0.004	0.020
MPS350DL	3.50	8.00	6	50	13.00	5.00	1.2	0.002	0.016
MPS400DL	4.00	8.00	6	50	15.00	5.00	1.2	0.002	0.012

MPS-C Series/

Size 1812

MPS010C	0.10	0.20	60	10	1.5	0.15	0.8	1.500	15.000
MPS014C	0.14	0.34	60	10	1.5	0.15	0.8	1.000	6.000
MPS020C	0.20	0.40	30	100	6.0	0.02	0.8	0.600	5.000
MPS035C	0.35	0.70	30	100	8.0	0.15	0.8	0.350	1.700
MPS050C	0.50	1.00	30	100	8.0	0.15	0.8	0.130	1.000
MPS075C	0.75	1.50	16	100	8.0	0.20	0.8	0.100	0.450
MPS075CH	0.75	1.50	35	20	8.0	0.20	0.8	0.100	0.400
MPS110C	1.10	2.20	16	100	8.0	0.30	0.8	0.040	0.210
MPS110CH	1.10	2.20	35	20	8.0	0.50	0.8	0.040	0.200
MPS125C	1.25	2.50	16	100	8.0	0.40	0.8	0.040	0.140
MPS150C	1.50	3.00	8	100	8.0	0.50	0.8	0.040	0.110
MPS150CH	1.50	3.00	24	20	8.0	1.50	0.8	0.040	0.110
MPS160C	1.60	3.20	8	100	8.0	1.00	0.8	0.030	0.100
MPS200C	2.00	3.50	8	100	8.0	2.00	0.8	0.020	0.070
MPS260C	2.60	5.00	8	100	8.0	2.50	0.8	0.015	0.047
MPS260CH	2.60	5.00	16	100	8.0	5.00	0.8	0.015	0.055
MPS300C	3.00	5.00	6	100	8.0	5.00	0.8	0.010	0.040
MPS190CL	1.90	4.90	6	50	8.0	5.00	0.8	0.004	0.024
MPS250CL	2.50	7.50	6	50	8.0	5.00	0.8	0.004	0.020
MPS350CL	3.50	9.00	6	50	15.0	5.00	0.8	0.004	0.015
MPS400CL									
MPS450CL									

MPS-B Series/

Size 2016

MPS030B	0.30	0.60	60	20	1.5	3.00	1.4	0.500	2.300
MPS050B	0.50	1.00	60	20	2.5	4.00	1.4	0.200	1.000
MPS110B	1.10	2.20	33	40	8.0	0.50	1.4	0.100	0.400
MPS150B	1.50	3.00	15	40	8.0	1.00	1.4	0.070	0.180
MPS200B	2.00	4.00	6	40	8.0	3.00	1.4	0.048	0.100

MPS-A Series/

Size 2920

MPS030A	0.30	0.60	60	10	1.5	3.00	1.5	0.700	4.800
MPS050A	0.50	1.00	60	10	2.5	4.00	1.5	0.350	1.400
MPS075A	0.75	1.50	60	40	8.0	0.30	1.5	0.290	0.950
MPS110A	1.10	2.20	33	40	8.0	0.50	1.5	0.100	0.410
MPS125A	1.25	2.50	33	40	8.0	2.00	1.5	0.070	0.250
MPS150A	1.50	3.00	33	40	8.0	2.00	1.5	0.060	0.230

MPS185A	1.85	3.70	33	40	8.0	2.50	1.5	0.045	0.150
MPS200A	2.00	4.00	24	40	8.0	5.00	1.5	0.045	0.125
MPS250A	2.50	5.00	16	40	8.0	5.00	1.5	0.025	0.085
MPS260A	2.60	5.20	16	40	8.0	10.00	1.5	0.025	0.075
MPS300A	3.00	6.00	16	40	8.0	20.00	1.5	0.015	0.048
MPS400A	4.00	8.00	16	40	8.0	40.00	1.5	0.010	0.040

Dimensions(mm) and Recommended Pad Layout

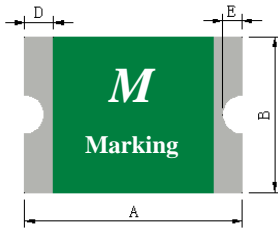


Fig 1

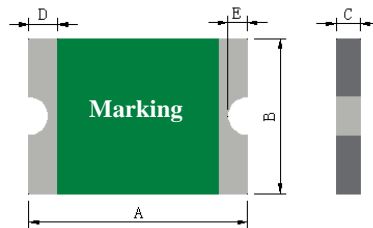
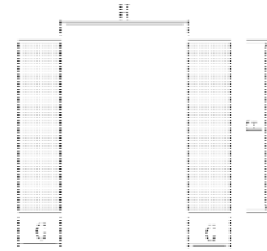


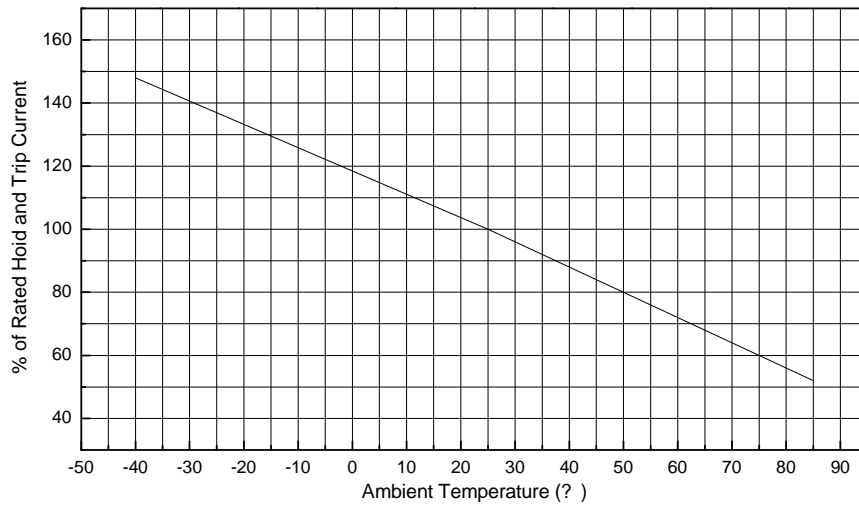
Fig 2



Recommended Pad Layout

Series	Size	Fig	A		B		C	D		E		F	G	H
			Min.	Max.	Min.	Max.	Typ.	Min.	Max.	Min.	Max.	Nom.	Nom.	Nom.
MPS-G	0603	2	1.40	1.80	0.60	1.00	1.00	0.15	0.50	--	0.40	1.00	1.00	0.80
MPS-F	0805	2	2.00	2.20	1.20	1.50	1.00	0.20	0.55	0.05	0.45	1.50	1.00	1.20
MPS-E	1206	2	3.00	3.40	1.50	1.80	1.00	0.25	0.75	0.05	0.45	1.80	1.00	1.80
MPS-D	1210	1	3.00	3.43	2.35	2.80	1.00	0.25	0.75	0.10	0.50	2.50	1.00	2.00
MPS-C	1812	1	4.37	4.73	3.07	3.41	1.00	0.30	1.20	0.15	0.65	3.15	1.78	3.45
MPS-B	2016	1	4.72	5.44	3.70	4.43	1.00	0.30	1.50	0.25	0.65	4.60	1.50	3.40
MPS-A	2920	1	6.73	7.98	4.80	5.44	1.00	0.30	2.50	0.25	2.00	5.30	2.00	4.60

Thermal Derating Chart-I_H(% of Rated Hold Current at Ambient Temperature)



Series	Maximum ambient operating temperatures(°C)								
	-40	-20	0	25	40	50	60	70	85
MBS	148.0	133.2	118.5	100.0	88.0	80.0	72.0	64.0	52.0

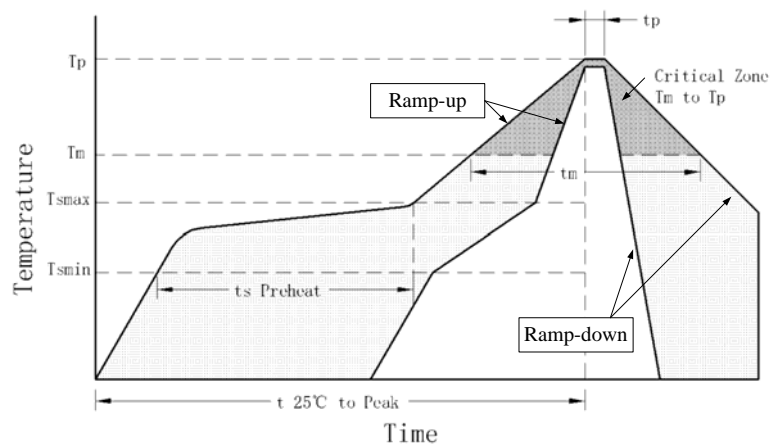
Packaging Quantity and Marking

Part number	Quantity	Marking	Part number	Quantity	Marking	Part number	Quantity	Marking
MPS-G			MPS-D			MPS-B		
Series/Size			Series/Size			Series/Size		
0603			1210			2016		
MPS005G	4000	A	MPS005D	4000	00	MPS030B	1500	030
MPS010G	4000	B	MPS010D	4000	01	MPS050B	1500	050
MPS020G	4000	C	MPS020D	4000	02	MPS110B	1500	075
MPS025G	4000	D	MPS035D	4000	03	MPS150B	1500	150
MPS035G	4000	E	MPS050D	4000	05	MPS200B	2000	200
MPS050G	4000	F	MPS075D	4000	07	MPS-A		
MPS075GL	4000	G	MPS075DH	3000	08	Series/Size		
MPS110GL	4000	H	MPS110D	4000	11	2920		
MPS-F			MPS150D	4000	15	MPS030A	2000	030
Series/Size			MPS175D	4000	17	MPS050A	2000	050
0805			MPS200D	3000	20	MPS075A	2000	075
MPS005F	4000	0	MPS190DL	4000	26	MPS110A	2000	110
MPS010F	4000	1	MPS250DL	4000	25	MPS125A	2000	125
MPS020F	4000	2	MPS270DL	4000	27	MPS150A	2000	150
MPS035F	4000	3				MPS185A	2000	185
MPS050F	4000	5				MPS200A	2000	200

MPS075F	4000	7	MPS300DL	4000	30	MPS250A	1500	250
MPS110F	3000	A	MPS350DL	4000	35	MPS260A	1500	260
MPS150FL	4000	B	MPS400DL	4000	40	MPS300A	1500	300
MPS-C								
MPS175FL	4000	C	Series/Size 1812			MPS400A	1500	400
MPS200FL	4000	D	MPS010C	2000	010			
MPS-E								
Series/Size 1206			MPS014C	2000	014			
MPS005E	4000	00	MPS020C	2000	020			
MPS012E	4000	12	MPS035C	2000	035			
MPS016E	4000	16	MPS050C	2000	050			
MPS020E	4000	02	MPS075C	2000	075			
MPS035E	4000	03	MPS075CH	1000	075H			
MPS050E	4000	05	MPS110C	2000	110			
MPS075E	3000	07	MPS110CH	1000	110H			
MPS110E	4000	11	MPS125C	2000	125			
MPS150E	4000	15	MPS150C	2000	150			
MPS175E	3000	17	MPS150CH	1000	150H			
MPS200EL	3000	20	MPS160C	2000	160			
MPS260EL	3000	26	MPS200C	2000	200			
MPS300EL	3000	30	MPS260C	2000	260			
MPS350EL	3000	35	MPS260CH	1000	260H			
			MPS300C	2000	300			
			MPS190CL	2000	190			
			MPS250CL	2000	250			
			MPS350CL	2000	350			

Solderin Parameters

Profile Feature	Pb-Free Assembly
Average Ramp-up Rate(Tsmin to Tp)	3°C/second max
Preheat	
-Temperature Min(Tsmin)	150°C
-Temperature Max(Tsmax)	200°C
-Time(Tsmin to Tsmax)	60-180 seconds
Time maintained above:	
-Temperature(Tm)	217°C
-Time(tm)	60-150 seconds
Peak Temperature(Tp)	260°C
Time within 5°C of Tp (tp)	20-40 seconds
Ramp-down Rate	6°C/second max
Time 25°C to Tp	8 minutes nax



Note:

- All temperatures refer to topside of the package, measured on the package body surface.
- Recommended reflow methods: IR, Vapor phase, hot air oven.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Devices can be cleaned using standard industry methods and solvents.
- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.