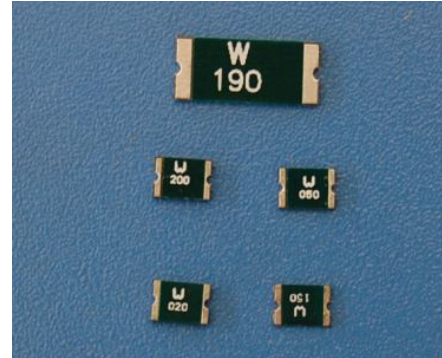
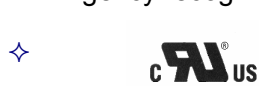


LP-MSM Series

Surface-mount devices

Features

- ◇ Small size of 1812/4420
- ◇ Fast tripping resettable circuit protection
- ◇ Surface mount packaging for automated assembly
- ◇ Agency recognition: UL、CSA、TUV



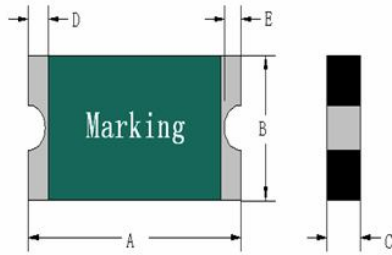
Product Dimensions

Size 4532mm/1812 mils

Part number	A	B	C	D	E
	Max.	Max.	Max.	Min.	Min.
LP-MSM010	4.73	3.41	1.00	0.30	0.30
LP-MSM014	4.73	3.41	1.00	0.30	0.30
LP-MSM020	4.73	3.41	1.00	0.30	0.30
LP-MSM050	4.73	3.41	0.83	0.30	0.30
LP-MSM075	4.73	3.41	0.83	0.30	0.30
LP-MSM110	4.73	3.41	0.83	0.30	0.30
LP-MSM125	4.73	3.41	1.05	0.30	0.30
LP-MSM150	4.73	3.41	1.05	0.30	0.30
LP-MSM160	4.73	3.41	1.05	0.30	0.30
LP-MSM200	4.73	3.41	1.05	0.30	0.30
LP-MSM260	4.73	3.41	1.30	0.30	0.30
LP-MSM050/24	4.73	3.41	1.05	0.30	0.30
LP-MSM075/24	4.73	3.41	1.30	0.30	0.30
LP-MSM110/24	4.73	3.41	1.05	0.30	0.30
LP-MSM125/24	4.73	3.41	1.50	0.30	0.30
LP-MSM150/24	4.73	3.41	1.70	0.30	0.30
LP-MSM160/24	4.73	3.41	1.70	0.30	0.30
LP-MSM200/16	4.73	3.41	2.00	0.30	0.30
LP-MSM260/12	4.73	3.41	2.50	0.30	0.30
LP-MSML190	4.73	3.41	0.80	0.30	0.30
LP-MSML250	4.73	3.41	0.80	0.30	0.30
LP-MSML350	4.73	3.41	1.00	0.30	0.30

Size 11550mm/4420 mils

Part number	A	B	C	D	E
	Max.	Max.	Max.	Min.	Min.
LP-MSM190	12.00	5.33	1.00	0.30	0.30



Thermal Derating Chart-IH(A)

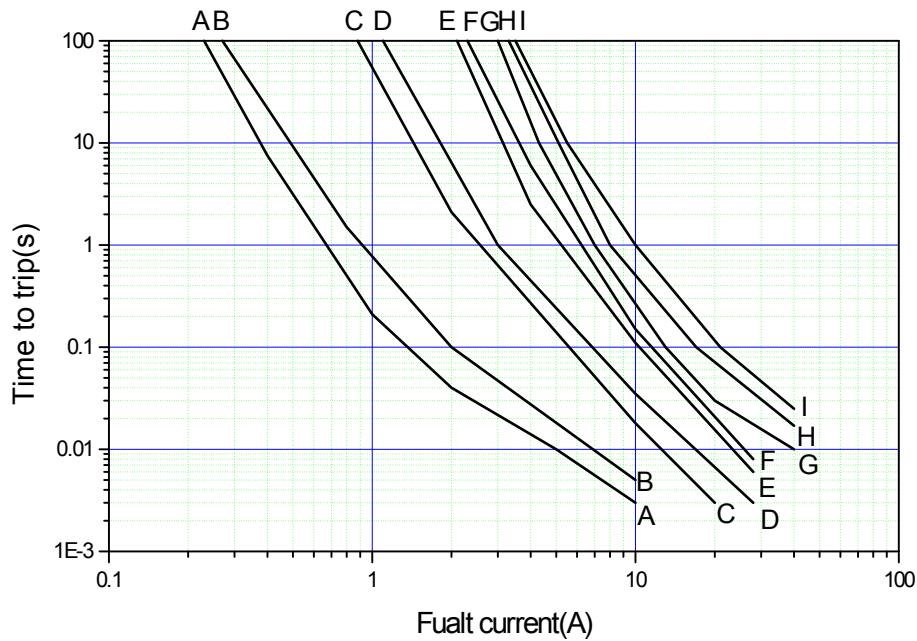
Size 4532mm/1812 mils

Part number	Maximum ambient operating temperatures(°C)									
	-40	-20	0	20	25	40	50	60	70	85
LP-MSM010	0.17	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.04
LP-MSM014	0.23	0.20	0.18	0.16	0.14	0.12	0.11	0.10	0.07	0.05
LP-MSM020	0.33	0.29	0.26	0.22	0.20	0.17	0.16	0.15	0.13	0.09
LP-MSM050	0.76	0.69	0.61	0.53	0.50	0.45	0.40	0.36	0.33	0.23
LP-MSM075	1.11	1.02	0.89	0.80	0.75	0.65	0.59	0.54	0.47	0.38
LP-MSM110	1.65	1.50	1.32	1.15	1.10	0.99	0.85	0.78	0.68	0.52
LP-MSM125	1.89	1.64	1.41	1.28	1.25	1.09	0.98	0.86	0.74	0.56
LP-MSM150	2.28	2.05	1.85	1.55	1.50	1.26	1.14	1.05	0.92	0.73
LP-MSM160	2.45	2.15	1.89	1.64	1.60	1.34	1.25	1.15	0.96	0.79
LP-MSM200	2.90	2.61	2.40	2.05	2.00	1.70	1.51	1.41	1.21	0.95
LP-MSM260	3.80	3.61	3.12	2.64	2.60	2.28	2.10	1.85	1.61	1.29
LP-MSM050/24	0.78	0.69	0.59	0.52	0.50	0.48	0.41	0.37	0.33	0.23
LP-MSM075/24	1.12	1.02	0.89	0.79	0.75	0.66	0.58	0.53	0.47	0.39
LP-MSM110/24	1.65	1.49	1.29	1.15	1.10	0.95	0.85	0.79	0.66	0.53
LP-MSM125/24	1.89	1.69	1.46	1.29	1.25	1.09	0.95	0.89	0.76	0.59
LP-MSM150/24	2.25	2.04	1.80	1.55	1.50	1.30	1.15	1.03	0.92	0.73
LP-MSM160/24	2.50	2.20	1.89	1.64	1.60	1.40	1.25	1.13	0.99	0.79
LP-MSM200/16	2.91	2.65	2.41	2.08	2.00	1.75	1.65	1.45	1.28	1.05
LP-MSM260/12	3.75	3.45	3.08	2.68	2.60	2.35	2.10	1.84	1.62	1.26
LP-MSML190	2.80	2.52	2.20	1.94	1.90	1.66	1.48	1.33	1.18	0.91
LP-MSML250	3.71	3.33	2.92	2.58	2.50	2.21	1.95	1.78	1.53	1.19
LP-MSML350	5.17	4.66	4.07	3.59	3.50	3.09	2.73	2.47	2.16	1.69

Size 11550mm/4420 mils

Part number	Maximum ambient operating temperatures(°C)									
	-40	-20	0	20	25	40	50	60	70	85
LP-MSM190	3.15	2.75	2.21	1.92	1.90	1.50	1.25	1.12	0.82	0.37

Typical Time-to-Trip Charts at 25°C



LP-MSM Series

A=LP-MSM010,LP-MSM014

B = LP-MSM020

C=LP-MSM050,LP-MSM050/24

D = LP-MSM075,LP-MSM075/24

E = LP-MSM110,LP-MSM110/24,
LP-MSM125,LP-MSM125/24

F = LP-MSM150,LP-MSM150/24,
LP-MSM160,LP-MSM160/24

G = LP-MSM200,LP-MSM200/24

H = LP-MSM190

I= LP-MSM260,LP-MSM260/24

Electrical Characteristics at 25°C

Size 4532mm/1812 mils

Part number	I_H	I_T	V_{max}	I_{max}	Max.Time-to-trip		Pdtype	R_{min}	R_{1max}
	(A)	(A)	(V)	(A)	(A)	(S)			
LP-MSM010	0.10	0.20	60	10	1.5	0.15	1	1.600	15.000
LP-MSM014	0.14	0.34	60	10	1.5	0.15	1	1.500	6.000
LP-MSM020	0.20	0.40	30	10	8.0	0.02	1	0.600	5.000
LP-MSM050	0.50	1.00	15	40	8.0	0.15	1	0.150	1.000
LP-MSM075	0.75	1.50	13.2	40	8.0	0.20	1	0.100	0.480
LP-MSM110	1.10	2.20	6	40	8.0	0.30	1	0.040	0.260
LP-MSM125	1.25	2.50	6	40	8.0	0.40	1	0.070	0.250
LP-MSM150	1.50	3.00	6	40	8.0	0.50	1	0.040	0.110
LP-MSM160	1.60	3.20	6	40	8.0	1.00	1	0.030	0.100
LP-MSM200	2.00	3.50	6	40	8.0	2.00	1	0.020	0.075
LP-MSM260	2.60	5.20	6	40	8.0	2.50	1	0.015	0.047
LP-MSM050/24	0.50	1.00	24	40	8.0	0.15	1	0.150	1.000
LP-MSM075/24	0.75	1.50	24	40	8.0	0.20	1	0.100	0.480
LP-MSM110/24	1.10	2.20	24	40	8.0	0.30	1	0.040	0.260
LP-MSM125/24	1.25	2.50	24	40	8.0	0.40	1	0.070	0.250
LP-MSM150/24	1.50	3.00	24	40	8.0	0.50	1	0.040	0.110
LP-MSM160/24	1.60	3.20	24	40	8.0	1.00	1	0.030	0.100
LP-MSM200/16	2.00	3.50	16	40	8.0	2.00	1	0.020	0.075
LP-MSM260/12	2.60	5.20	12	40	8.0	2.50	1	0.015	0.047
LP-MSML190	1.90	4.90	6	50	8.0	5.00	1.5	0.004	0.024
LP-MSML250	2.50	8.00	6	50	8.0	5	1.5	0.004	0.020
LP-MSML350	3.50	9.00	6	50	17.5	5	1.5	0.004	0.015

Size 11550mm/4420 mils

Part number	I_H	I_T	V_{max}	I_{max}	Max.Time-to-trip	P_{dtyp}	R_{min}	R_{1max}	
	(A)	(A)	(V)	(A)	(A)	(S)	(Ω)	(Ω)	
LP-MSM190	1.90	3.80	16	100	10.0	2.00	1.5	0.024	0.080

I_H =Hold current: maximum current at which the device will not trip at 25°C still air.

I_T =Trip current: minimum current at which the device will always trip at 25°C still air.

V_{max} =Maximum voltage device can withstand without damage at rated current.

I_{max} =Maximum fault current device can withstand without damage at rated voltage.

T_{trip} =Maximum time to trip at assigned current.

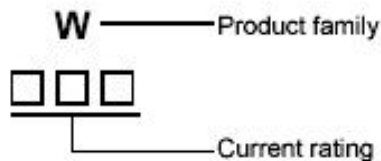
P_{dtyp} =Typical power dissipation: typical amount of power dissipated by the device when in state air environment.

R_{min} =Minimum device resistance at 25°C prior to tripping.

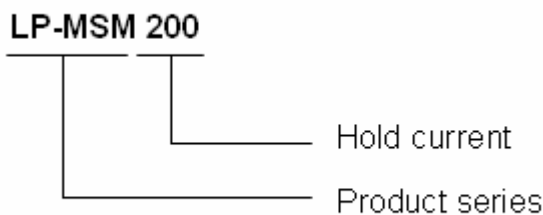
R_{1max} =Maximum device resistance measured in the nontripped state 1 hour post reflow.

Marking System

Part Marking System



Part Numbering System



Test Procedures And Requirements

Test	Test Conditions	Accept/Reject Criteria
Resistance	In still air @ 25°C	$R_{min} \leq R \leq R_{max}$
Time to Trip	Specified current, V_{max} , 25°C	$T \leq$ maximum Time to Trip
Hold Current	30min, at I_H	No trip
Trip Cycle Life	V_{max} , I_{max} , 100cycles	No arcing or burning
Trip Endurance	V_{max} , 24hours	No arcing or burning

Packaging and Marking Information

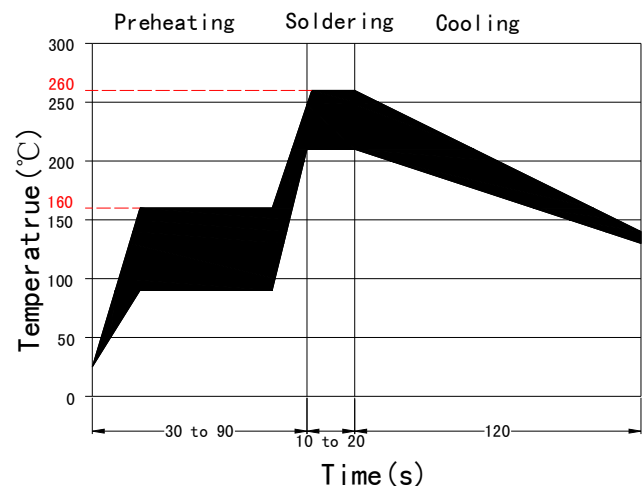
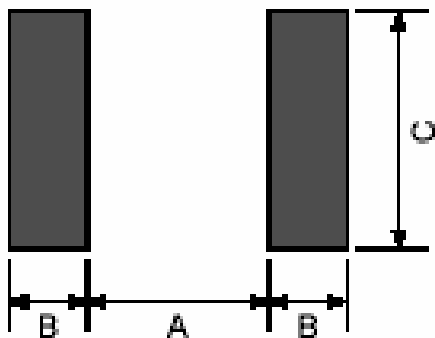
Size 4532mm/1812 mils

Part number	Tape & Reel Quantity	Tape spc code	Part Marking	Recommended Pad Layout Figures[mm(In.)]						Agency Recognition
				Dimension A(Nom.)		Dimension B(Nom.)		Dimension C(Nom.)		
LP-MSM010	2000	1812A	W010	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM014	2000	1812A	W014	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM020	2000	1812A	W020	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM050	2000	1812A	W050	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM075	2000	1812A	W075	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM110	2000	1812A	W110	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM125	2000	1812A	W125	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM150	2000	1812A	W150	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM160	2000	1812A	W160	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM200	2000	1812A	W200	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM260	1000	1812B	W260	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA,TUV
LP-MSM050/24	2000	1812A	W050	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	TUV
LP-MSM075/24	2000	1812A	W075	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	TUV
LP-MSM110/24	2000	1812A	W110	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	TUV
LP-MSM125/24	2000	1812A	W125	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	TUV
LP-MSM150/24	1000	1812B	W150	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	TUV
LP-MSM160/24	1000	1812B	W160	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	TUV
LP-MSM200/16	1000	1812B	W200	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	TUV
LP-MSM260/12	1000	1812B	W260	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	TUV
LP-MSML190	2000	1812A	W190	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA
LP-MSML250	2000	1812A	W250	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA
LP-MSML350	2000	1812A	W350	3.45	(0.141)	1.78	(0.071)	3.15	(0.121)	UL,CSA

Size 11550mm/4420 mils

Part number	Tape & Reel Quantity	Tape spc code	Part Marking	Recommended Pad Layout Figures[mm(In.)]						Agency Recognition
				Dimension A(Nom.)		Dimension B(Nom.)		Dimension C(Nom.)		
LP-MSM190	4000	4420A	W190	9.57	(0.381)	1.45	(0.061)	4.75	(0.191)	UL,CSA,TUV

Solder Pad Layouts



* Recommended reflow methods: IR, Vapor phase oven, hot air oven, wave solder.

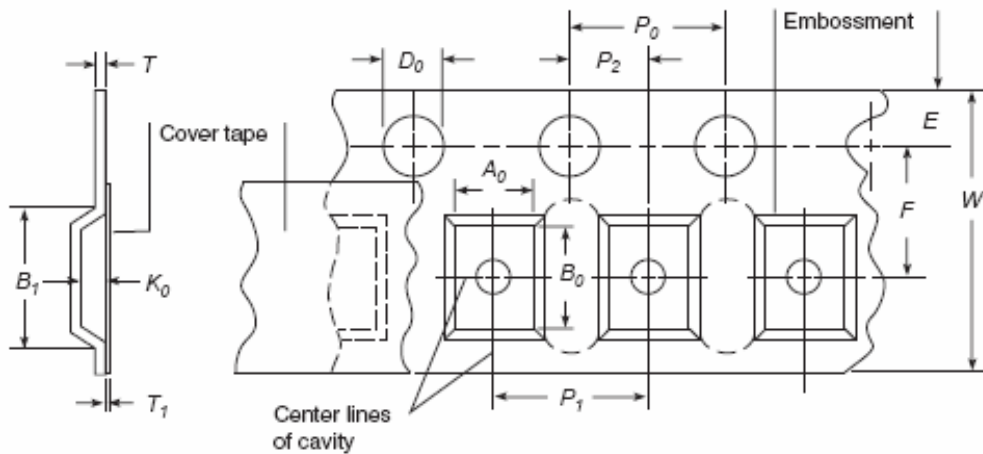
* Devices can be cleaned using standard industry methods and solvents.

Notes:

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

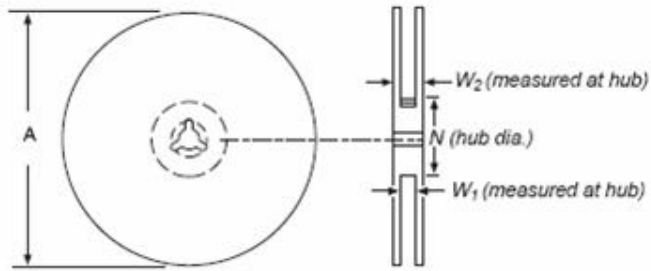
Tape Specification And Reel Dimensions

ape spc code	W	P0	P1	P2	A	B	D	F	E	T
1812(A)	12.0±0.30	4.00±0.10	8.00±0.10	2.00±0.05	3.55±0.10	4.90±0.10	1.55±0.05	5.50±0.10	1.75±0.10	0.25±0.05
1812(B)	12.0±0.30	4.00±0.10	8.00±0.10	2.00±0.05	3.55±0.10	4.90±0.10	1.55±0.05	5.50±0.10	1.75±0.10	0.25±0.05
4420 (A)	16.0±0.30	4.00±0.10	8.00±0.10	2.00±0.05	5.65±0.10	8.05±0.10	1.55±0.05	7.50±0.10	1.75±0.10	0.30±0.05



Reel Dimensions

Tape spc code	A	N	W1	W2
1812(A)	180+0/-1.5	60+1/-0	13.0+1/-0	15.4+1/-0
1812(B)	180+0/-1.5	60+1/-0	13.0+1/-0	15.4+1/-0
4420(A)	330+0/-1.5	100+1/-0	16.4+1/-0	24.2+1/-0



Storage

The maximum ambient temperature shall not exceed 40°C. Storage temperatures higher than 40°C could result in the deformation of packaging materials. The maximum relative humidity recommended for storage is 70%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components. 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:

PPTC devices are intended for protection against occasional over-current or over-temperature fault conditions, and should not be used when repeated fault conditions are anticipated. Operation beyond maximum ratings or improper use may result in device damage and possible electrical arcing and flame.

Notes:

The specification is intended to present application, product and technical data to assist the user in selecting PPTC circuit protection devices. However, users should independently evaluate and test the suitability of each product. Wayon makes no warranties as to the accuracy or completeness of the information and disclaims any liability resulting from its use. Wayon's only obligations are those in the Wayon Standard Terms and Conditions of Sale and in no case will Wayon be liable for any incidental, indirect, or consequential damages arising from the sale, resale, or misuse of its products. Wayon reserves the right to change or update, without notice, any information contained in this specification.