

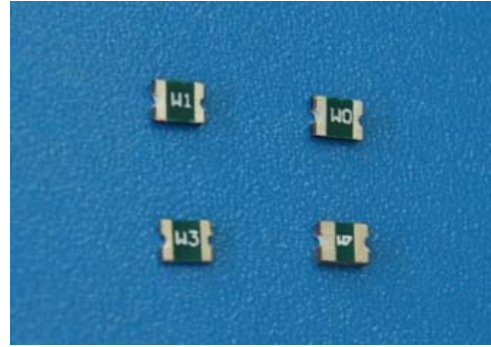
# LP-USM(L) Series

Surface-mount devices

## Features

- ◇ Small size of 1210
- ◇ Fast tripping resettable circuit protection
- ◇ Surface mount packaging for automated assembly
- ◇ Agency recognition: UL、CSA、TUV

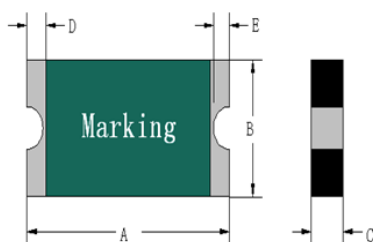
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## Product Dimensions

Size 3225mm/1210mils

Part number	A	B	C	D	E
	Max.	Max.	Max.	Min.	Min.
LP-USM005	3.43	2.80	1.25	0.25	0.10
LP-USM010	3.43	2.80	1.25	0.25	0.10
LP-USM020	3.43	2.80	1.25	0.25	0.10
LP-USM035	3.43	2.80	0.85	0.25	0.10
LP-USM050	3.43	2.80	0.85	0.25	0.10
LP-USM075	3.43	2.80	1.30	0.25	0.10
LP-USM110	3.43	2.80	1.30	0.25	0.10
LP-USM150	3.43	2.80	1.80	0.25	0.10
LP-USML190	3.43	2.80	0.80	0.25	0.10
LP-USML200	3.43	2.80	0.80	0.25	0.10
LP-USML210	3.43	2.80	0.80	0.25	0.10
LP-USML230	3.43	2.80	0.80	0.25	0.10
LP-USML250	3.43	2.80	0.80	0.25	0.10
LP-USML260	3.43	2.80	0.80	0.25	0.10
LP-USML350	3.43	2.80	1.00	0.25	0.10
LP-USML400	3.43	2.80	1.40	0.25	0.10

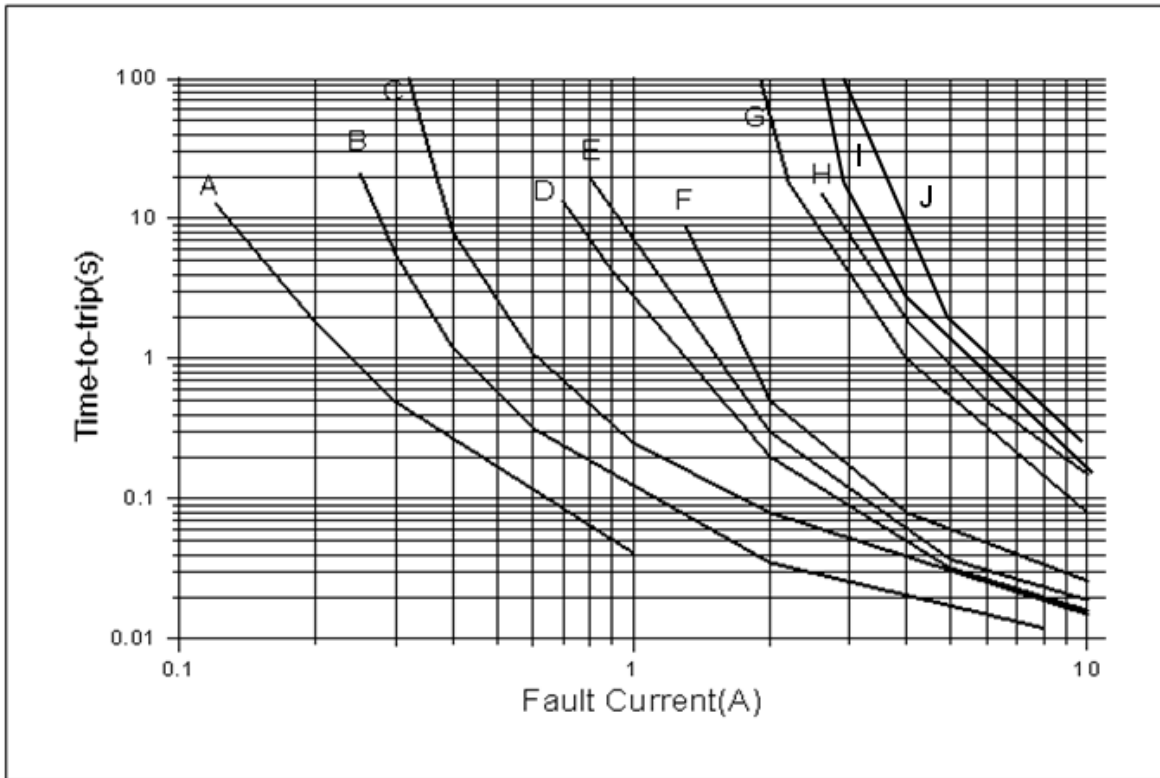


# Thermal Derating Chart-IH(A)

Size 3225mm/1210mils

Part number	Maximum ambient operating temperatures(°C)									
	-40	-20	0	20	25	40	50	60	70	85
LP-USM005	0.09	0.07	0.06	0.05	0.05	0.04	0.04	0.03	0.03	0.02
LP-USM010	0.16	0.14	0.13	0.11	0.10	0.09	0.07	0.07	0.06	0.05
LP-USM020	0.32	0.26	0.24	0.21	0.20	0.16	0.15	0.14	0.11	0.09
LP-USM035	0.52	0.48	0.41	0.38	0.35	0.32	0.27	0.26	0.23	0.17
LP-USM050	0.76	0.65	0.57	0.51	0.50	0.44	0.37	0.35	0.29	0.24
LP-USM075	1.11	1.00	0.87	0.77	0.75	0.66	0.58	0.53	0.46	0.36
LP-USM110	1.64	1.46	1.29	1.13	1.10	0.96	0.85	0.74	0.63	0.53
LP-USM150	2.25	2.02	1.76	1.54	1.50	1.29	1.10	1.00	0.87	0.67
LP-USML190	2.81	2.53	2.20	1.95	1.90	1.67	1.47	1.34	1.17	0.91
LP-USML200	2.96	2.67	2.32	2.05	2.00	1.76	1.55	1.41	1.23	0.96
LP-USML210	3.11	2.80	2.44	2.16	2.10	1.85	1.62	1.48	1.29	1.01
LP-USML230	3.40	3.07	2.67	2.36	2.30	2.02	1.78	1.63	1.41	1.10
LP-USML250	3.70	3.33	2.90	2.57	2.50	2.20	1.93	1.77	1.53	1.20
LP-USML260	3.85	3.47	3.02	2.67	2.60	2.29	2.01	1.84	1.59	1.25
LP-USML350	5.18	4.67	4.06	3.59	3.50	3.08	2.71	2.47	2.15	1.68
LP-USML400	5.92	5.33	4.64	4.11	4.00	3.52	3.09	2.83	2.45	1.92

## Typical Time-to-Trip Charts at 25°C



- LP-USM Series**
- A = USM005
  - B = USM010
  - C = USM020
  - D = USM035
  - E = USM050
  - F = USM075
  - G = USM110
  - H = USM150
  - I = USML190
  - J = USML200

## Electrical Characteristics at 25°C

Size 3225mm/1210 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)	(W)	( $\Omega$ )	( $\Omega$ )
LP-USM005	0.05	0.15	30	10	0.25	1.50	1	3.600	50.00
LP-USM010	0.10	0.30	30	10	0.5	1.50	1	1.600	15.00
LP-USM020	0.20	0.40	30	10	8.0	0.02	1	0.800	5.000
LP-USM035	0.35	0.70	6	40	8.0	0.20	1	0.320	1.300
LP-USM050	0.50	1.00	13.2	40	8.0	0.10	1	0.250	0.900
LP-USM075	0.75	1.50	6	40	8.0	0.10	1	0.130	0.400
LP-USM110	1.10	2.20	6	40	8.0	0.30	1	0.060	0.210
LP-USM150	1.50	3.00	6	40	8.0	0.50	1	0.040	0.110
LP-USML190	1.90	4.90	6	50	9.50	5.00	1.2	0.004	0.018
LP-USML200	2.00	4.00	6	50	8.00	5.00	1.2	0.004	0.028
LP-USML210	2.10	4.20	6	50	8.00	5.00	1.2	0.004	0.026
LP-USML230	2.30	4.60	6	50	8.00	5.00	1.2	0.004	0.024
LP-USML250	2.50	5.00	6	50	8.00	5.00	1.2	0.004	0.022
LP-USML260	2.60	8.10	6	50	8.00	5.00	1.2	0.004	0.020
LP-USML350	3.50	7.00	6	50	17.50	2.00	1.5	0.002	0.014
LP-USML400	4.00	8.00	6	50	20.00	2.00	1.5	0.002	0.012

$I_H$ =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.

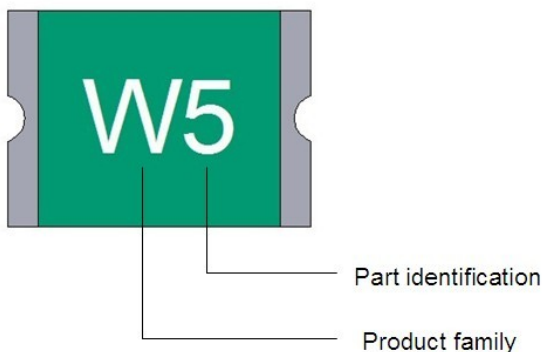
$T_{trip}$ =Maximum time to trip at assigned current.

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

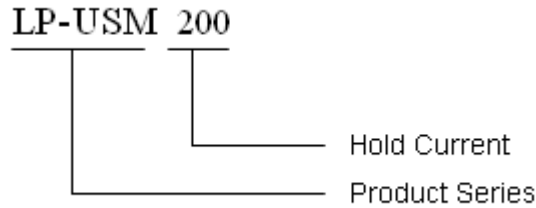
$R_{min}$ =Minimum device resistance at 25°C prior to tripping.

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

## Marking System



## Part Numbering System



## Test Procedures And Requirements

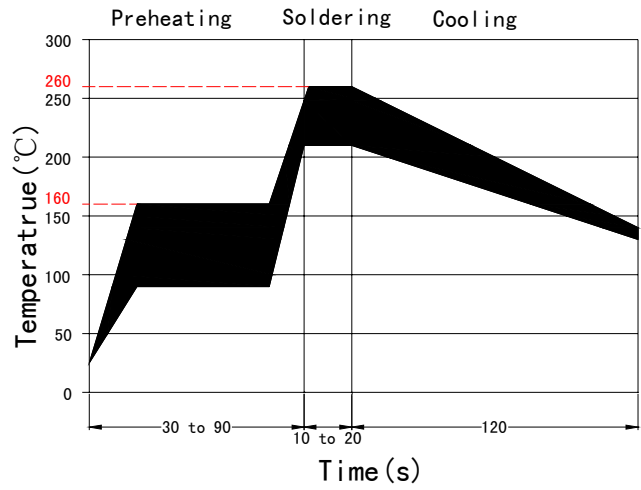
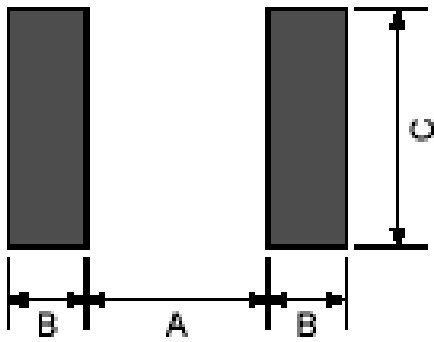
Test	Test Conditions	Accept/Reject Criteria
Resistance	In still air @ 25°C	$R_{min} \leq R \leq R_{max}$
Time to Trip	Specified current, $V_{max}$ , 25°C	$T \leq$ maximum Time to Trip
Hold Current	30min, at $I_H$	No trip
Trip Cycle Life	$V_{max}$ , $I_{max}$ , 100cycles	No arcing or burning
Trip Endurance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

## Packaging and Marking Information

Size 3225mm/1210 mils

Part number	Tape & Reel Quantity	Tape spc code	Part Marking	Recommended Pad Layout Figures[mm(In.)]						Agency Recognition
				Dimension		Dimension		Dimension		
				A(Nom.)		B(Nom.)		C(Nom.)		
LP-USM005	4000	1210A	W0	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USM010	4000	1210A	W1	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USM020	4000	1210A	W2	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USM035	4000	1210A	W3	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USM050	4000	1210A	W4	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USM075	4000	1210A	W5	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USM110	4000	1210A	W6	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USM150	3000	1210B	W7	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USML190	4000	1210A	D	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USML200	4000	1210A	D1	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USML210	4000	1210A	D2	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USML230	4000	1210A	D3	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USML250	4000	1210A	D4	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USML260	4000	1210A	D6	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USML350	4000	1210A	D5	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
LP-USML400	4000	1210A	D7	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV

**Solder Pad Layouts**



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

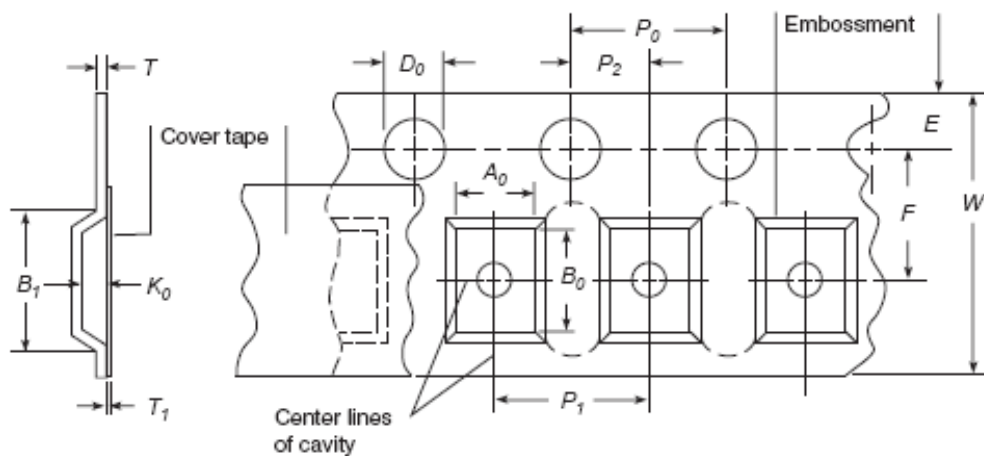
\* Devices can be cleaned using standard industry methods and solvents.

**Notes:**

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

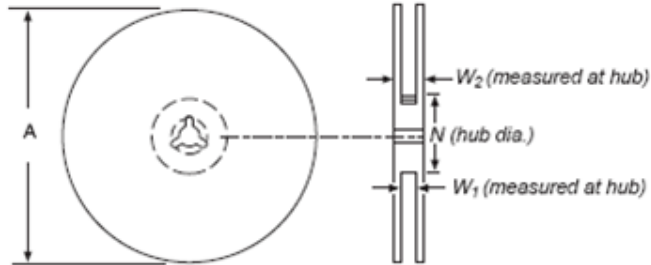
**Tape Specification And Reel Dimensions**

Tape spc code	W	P0	P1	P2	A		D	F	E	T	K
1210(A)	8.00± 0.10	4.00± 0.10	4.00± 0.10	2.00± 0.05	2.82± 0.10	3.46± 0.10	1.55± 0.05	3.50± 0.10	1.75± 0.10	0.22± 0.05	1.00± 0.10
1210(B)	8.00± 0.10	4.00± 0.10	4.00± 0.10	2.00± 0.05	2.82± 0.10	3.46± 0.10	1.55± 0.05	3.50± 0.10	1.75± 0.10	0.22± 0.05	1.25± 0.10



## Reel Dimensions

Tape spc code	A	N	W1	W2
1210(A)	180+0/-1.5	60+1/-0	9.0+1/-0	13.0+1/-0
1210(B)	180+0/-1.5	60+1/-0	9.0+1/-0	13.0+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 production 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.