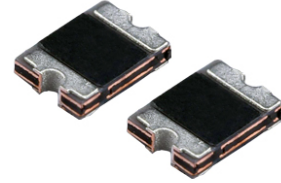




Features

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



◇

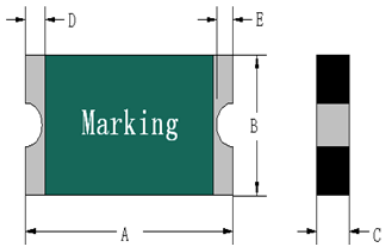


Product Dimensions

Size 3225mm/1210mils

Part number	A	B	C	D	E
	Max.	Max.	Max.	Min.	Min.
DW-USM005	3.43	2.80	1.25	0.25	0.10
DW-USM010	3.43	2.80	1.25	0.25	0.10
DW-USM020	3.43	2.80	1.25	0.25	0.10
DW-USM035	3.43	2.80	0.85	0.25	0.10
DW-USM050	3.43	2.80	0.85	0.25	0.10
DW-USM075	3.43	2.80	0.85	0.25	0.10
DW-USM110	3.43	2.80	1.00	0.25	0.10
DW-USM150	3.43	2.80	1.30	0.25	0.10
DW-USML150	3.43	2.80	0.80	0.25	0.10
DW-USM175	3.43	2.80	1.30	0.25	0.10
DW-USML175	3.43	2.80	0.80	0.25	0.10
DW-USML175/12	3.43	2.80	0.80	0.25	0.10
DW-USML190	3.43	2.80	0.80	0.25	0.10
DW-USML200	3.43	2.80	0.80	0.25	0.10
DW-USML200/12	3.43	2.80	0.80	0.25	0.10
DW-USML210	3.43	2.80	0.80	0.25	0.10
DW-USML230	3.43	2.80	0.80	0.25	0.10
DW-USML250	3.43	2.80	0.80	0.25	0.10
DW-USML260	3.43	2.80	0.80	0.25	0.10
DW-USML260/12	3.43	2.80	0.80	0.25	0.10
DW-USML300	3.43	2.80	1.00	0.25	0.10
DW-USML300/12	3.43	2.80	1.00	0.25	0.10
DW-USML350	3.43	2.80	1.00	0.25	0.10
DW-USML350/12	3.43	2.80	1.00	0.25	0.10

Part number	A	B	C	D	E
	Max.	Max.	Max.	Min.	Min.
DW-USML380	3.43	2.80	1.00	0.25	0.10
DW-USML380/12	3.43	2.80	1.00	0.25	0.10
DW-USML400	3.43	2.80	1.00	0.25	0.10
DW-USML400/12	3.43	2.80	1.00	0.25	0.10
DW-USML450	3.43	2.80	1.00	0.25	0.10
DW-USML450/12	3.43	2.80	1.00	0.25	0.10
DW-USML500	3.43	2.80	1.00	0.25	0.10
DW-USML550	3.43	2.80	1.00	0.25	0.10
DW-USML600	3.43	2.80	1.00	0.25	0.10
DW-USML650	3.43	2.80	1.00	0.25	0.10
DW-USML700	3.43	2.80	1.40	0.25	0.10
DW-USML750	3.43	2.80	1.40	0.25	0.10



Thermal Derating Chart-IH(A)

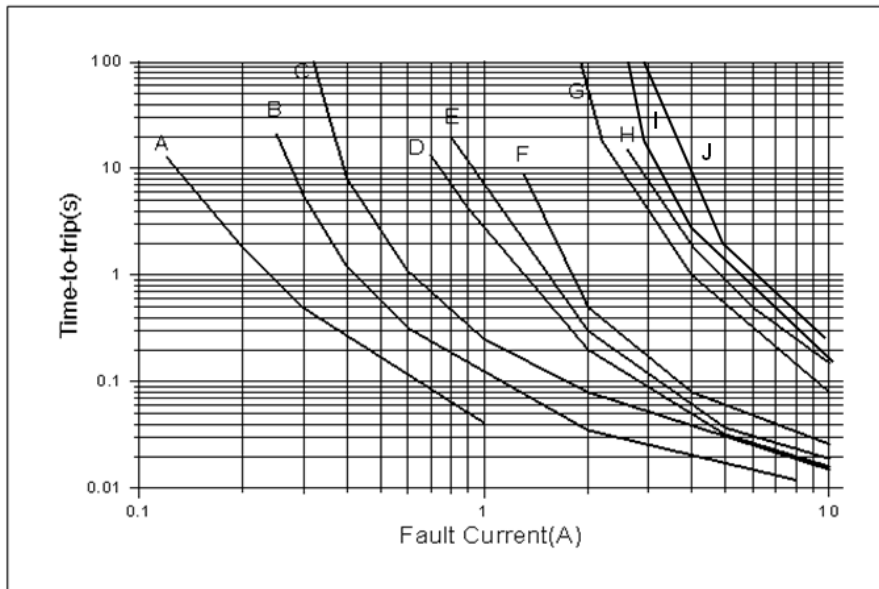
Size 3225mm/1210mils

Part number	Maximum ambient operating temperatures(°C)									
	-40	-20	0	20	25	40	50	60	70	85
DW-USM010	0.09	0.07	0.06	0.05	0.05	0.04	0.038	0.034	0.03	0.02
DW-USM020	0.16	0.14	0.13	0.11	0.10	0.09	0.07	0.07	0.06	0.05
DW-USM035	0.32	0.26	0.24	0.21	0.20	0.16	0.15	0.14	0.11	0.09
DW-USM050	0.52	0.48	0.41	0.38	0.35	0.32	0.27	0.26	0.23	0.17
DW-USM075	0.76	0.65	0.57	0.51	0.50	0.44	0.37	0.35	0.29	0.24
DW-USM110	1.11	1.00	0.87	0.77	0.75	0.66	0.58	0.53	0.46	0.36
DW-USM150	1.64	1.46	1.29	1.13	1.10	0.96	0.85	0.74	0.63	0.53
DW-USML150	2.25	2.02	1.76	1.54	1.50	1.29	1.10	1.00	0.87	0.67
DW-USML175	2.25	2.00	1.75	1.55	1.50	1.33	1.15	1.05	0.93	0.70
DW-USM175	2.55	2.30	2.01	1.82	1.75	1.52	1.31	1.18	0.98	0.82
DW-USML175	2.55	2.33	2.02	1.79	1.75	1.53	1.35	1.23	1.07	0.85
DW-USML175/12	2.55	2.33	2.02	1.79	1.75	1.53	1.35	1.23	1.07	0.85
DW-USML190	2.55	2.33	2.02	1.79	1.75	1.53	1.35	1.23	1.07	0.85
DW-USML190	2.81	2.53	2.20	1.95	1.90	1.67	1.47	1.34	1.17	0.91
DW-USML200	2.96	2.67	2.32	2.05	2.00	1.76	1.55	1.41	1.23	0.96
DW-USML200/12	2.96	2.67	2.32	2.05	2.00	1.76	1.55	1.41	1.23	0.96
DW-USML260	3.85	3.47	3.02	2.67	2.60	2.29	2.01	1.84	1.59	1.25
DW-USML260/12	3.85	3.47	3.02	2.67	2.60	2.29	2.01	1.84	1.59	1.25

Size 3225mm/1210mils

Part number	Maximum ambient operating temperatures(°C)									
	-40	-20	0	20	25	40	50	60	70	85
DW-USML300	4.40	3.98	3.45	3.07	3.00	2.64	2.30	2.15	1.83	1.42
DW-USML300/12	4.40	3.98	3.45	3.07	3.00	2.64	2.30	2.15	1.83	1.42
DW-USML350	5.18	4.67	4.06	3.59	3.50	3.08	2.71	2.47	2.15	1.68
DW-USML350/12	5.18	4.67	4.06	3.59	3.50	3.08	2.71	2.47	2.15	1.68
DW-USML380	5.55	5.02	4.35	3.89	3.80	3.32	2.92	2.65	2.30	1.81
DW-USML380/12	5.55	5.02	4.35	3.89	3.80	3.32	2.92	2.65	2.30	1.81
DW-USML400	5.92	5.33	4.64	4.11	4.00	3.52	3.09	2.83	2.45	1.92
DW-USML400/12	5.92	5.33	4.64	4.11	4.00	3.52	3.09	2.83	2.45	1.92
DW-USML450	6.12	5.39	5.16	4.71	4.50	3.85	3.35	3.00	2.36	1.56
DW-USML450/12	6.12	5.39	5.16	4.71	4.50	3.85	3.35	3.00	2.36	1.56
DW-USML500	7.40	6.67	5.80	5.13	5.00	4.40	3.87	3.53	3.07	2.40
DW-USML550	8.14	7.34	6.38	5.64	5.50	4.84	4.26	3.88	3.38	2.64
DW-USML600	8.65	7.91	6.93	6.14	6.00	5.23	4.45	4.00	3.63	2.85
DW-USML650	9.20	8.45	7.45	6.66	6.50	5.60	4.65	4.30	3.89	3.00
DW-USML700	9.84	9.00	7.95	7.12	7.00	5.96	4.95	4.50	4.16	3.20
DW-USML750	10.50	9.65	8.50	7.63	7.50	6.40	5.30	4.80	4.45	4.42

Typical Time-to-Trip Charts at 25°C



DW-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)	(Ω)	(Ω)
DW-USM005	0.05	0.15	30	10	0.25	1.50	1.0	3.600	50.000
DW-USM010	0.10	0.30	30	10	0.50	1.50	1.0	1.600	15.000
DW-USM020	0.20	0.40	30	10	8.00	0.02	1.0	0.800	5.000
DW-USM035	0.35	0.70	6	40	8.00	0.20	1.0	0.320	1.300
DW-USM050	0.50	1.00	6	40	8.00	0.10	1.0	0.250	0.900
DW-USM075	0.75	1.50	6	40	8.00	0.10	1.0	0.130	0.400
DW-USM110	1.10	2.20	6	40	8.00	0.30	1.0	0.060	0.210
DW-USM150	1.50	3.00	6	40	8.00	0.50	1.0	0.040	0.110
DW-USML150	1.50	3.00	6	50	8.00	0.50	1.2	0.010	0.060
DW-USM175	1.75	3.50	6	40	8.00	0.80	0.8	0.020	0.080
DW-USML175	1.75	3.50	6	50	8.00	0.80	1.2	0.005	0.040
DW-USML175/12	1.75	3.50	12	50	8.00	0.80	1.2	0.005	0.040
DW-USML190	1.90	4.90	6	50	9.50	5.00	1.2	0.004	0.018
DW-USML200	2.00	4.00	6	50	8.00	5.00	1.2	0.004	0.028
DW-USML200/12	2.00	4.00	12	50	8.00	5.00	1.2	0.004	0.028
DW-USML210	2.10	4.20	6	50	8.00	5.00	1.2	0.004	0.026
DW-USML230	2.30	4.60	6	50	8.00	5.00	1.2	0.004	0.024
DW-USML250	2.50	5.00	6	50	8.00	5.00	1.2	0.004	0.022
DW-USML260	2.60	8.10	6	50	8.00	5.00	1.2	0.004	0.020
DW-USML260/12	2.60	8.10	12	50	8.00	5.00	1.2	0.004	0.020
DW-USML300	3.00	6.00	6	50	15.00	5.00	1.5	0.003	0.020
DW-USML300/12	3.00	6.00	12	50	15.00	5.00	1.5	0.003	0.020
DW-USML350	3.50	7.00	6	50	17.50	2.00	1.5	0.002	0.014
DW-USML350/12	3.50	7.00	12	50	17.50	2.00	1.5	0.002	0.014
DW-USML380	3.80	7.60	6	50	19.00	2.00	1.5	0.002	0.016
DW-USML380/12	3.80	7.60	12	50	19.00	2.00	1.5	0.002	0.016
DW-USML400	4.00	8.00	6	50	20.00	2.00	1.5	0.002	0.012
DW-USML400/12	4.00	8.00	12	50	20.00	2.00	1.5	0.002	0.012
DW-USML450	4.50	9.00	6	50	22.50	5.00	1.5	0.002	0.013
DW-USML450/12	4.50	9.00	12	50	22.50	5.00	1.5	0.002	0.013
DW-USML500	5.00	10.00	6	50	25.00	5.00	1.5	0.002	0.012
DW-USML550	5.50	11.00	6	50	27.50	5.00	1.5	0.002	0.010
DW-USML600	6.00	12.00	6	50	30.00	5.00	1.5	0.001	0.010
DW-USML650	6.50	13.00	6	50	32.50	5.00	1.5	0.001	0.009
DW-USML700	7.00	14.00	6	50	35.00	5.00	1.5	0.001	0.008
DW-USML750	7.50	15.00	6	50	37.50	5.00	1.5	0.001	0.007



Remark:

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.

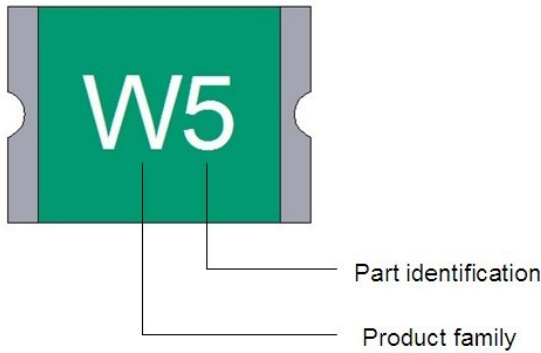
T_{trip} =Maximum time to trip at assigned current.

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

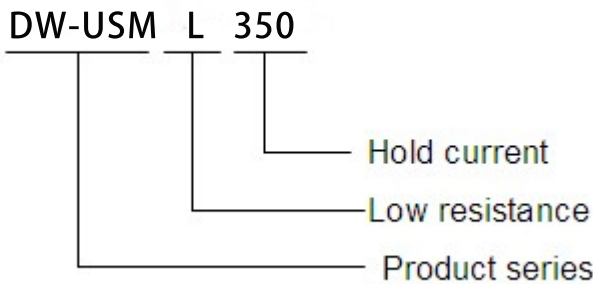
R_{min} =Minimum device resistance at 25°C prior to tripping.

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

Marking System



Part Numbering System



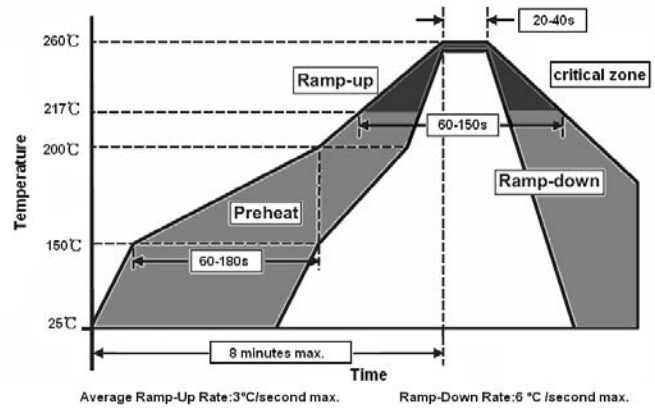
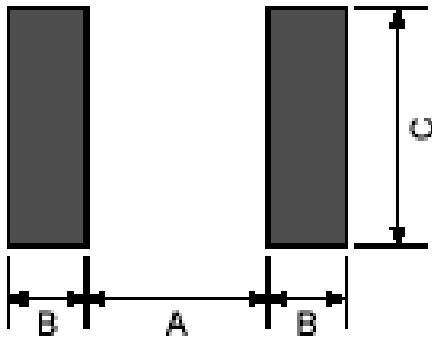
Test Procedures And Requirements

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 A(Nom.)		Dimension B(Nom.)		Dimension C(Nom.)		
DW-USM005	4000	1210A	W0	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USM010	4000	1210A	W1	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USM020	4000	1210A	W2	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USM035	4000	1210A	W3	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USM050	4000	1210A	W4	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USM075	4000	1210A	W5	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USM110	4000	1210A	W6	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USM150	4000	1210B	W7	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML150	4000	1210A	W7	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USM175	4000	1210B	W9	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	
DW-USML175	4000	1210A	W9	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML175/12	4000	1210A	W9	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA
DW-USML190	4000	1210A	D	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML200	4000	1210A	D1	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML200/12	4000	1210A	D1	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA
DW-USML210	4000	1210A	D2	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML230	4000	1210A	D3	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML250	4000	1210A	D4	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML260	4000	1210A	D6	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML260/12	4000	1210A	D6	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA
DW-USML300	4000	1210A	D30	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML300/12	4000	1210A	D30	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA
DW-USML350	4000	1210A	D5	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML350/12	4000	1210A	D5	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA
DW-USML380	4000	1210A	D38	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML380/12	4000	1210A	D38	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA
DW-USML400	4000	1210A	D7	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML400/12	4000	1210A	D7	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA
DW-USML450	4000	1210A	<u>D9</u>	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML450/12	4000	1210A	<u>D9</u>	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA
DW-USML500	4000	1210A	D-	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML550	4000	1210A	D9	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML600	4000	1210A	B6	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML650	4000	1210A	B65	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML700	4000	1210B	B7	2.00	(0.081)	1.00	(0.041)	2.50	(0.101)	UL,CSA,TUV
DW-USML750	4000	1210B	B75	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:

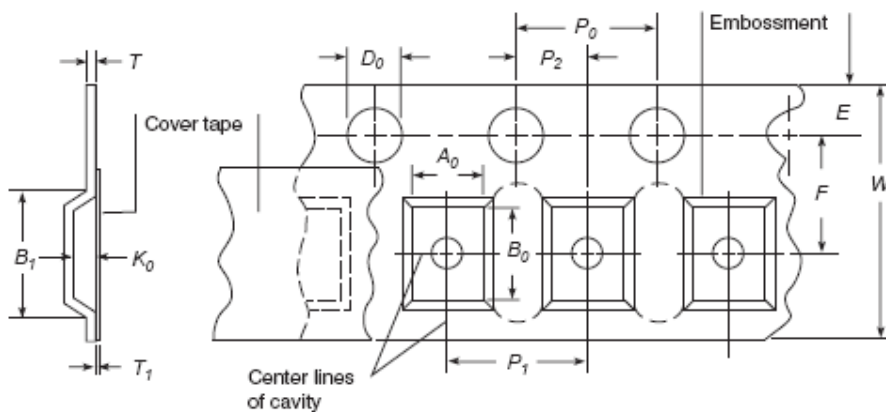
If reflow temperatures exceed the recommended profile,

Devices may not meet the performance requirements.

Contamination of the PPTC material with certain silicone-based oils or some aggressive solvents adversely impact the performance of the devices

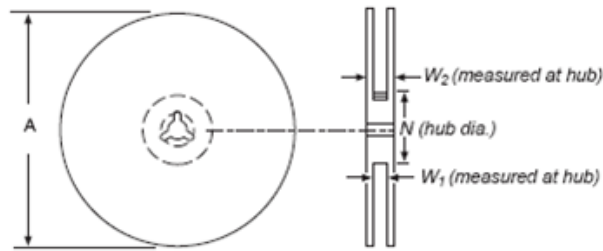
Tape Specification And Reel Dimensions

Tape spec code	W	P0	P1	P2	A	B	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.