

PTSLR1210

Low resistance SMD PTC fuses



Product features

- Positive temperature coefficient (PTC)
- Surface mount resettable fuse
- Low resistance
- Compact 1210 (3225 metric) footprint
- Voltage rating 6 V
- Current rating from 1.75 A to 7.5 A
- Fast time-to-trip

Applications

- Data ports
- Micromotors and fans
- Low voltage test and measurement
- Low voltage hand held equipment
- PC-based medical equipment
- USB protection
- Secondary Li-ion battery protection
- Game consoles, set top boxes

Agency information

- cURus Recognized file no. E343021
- TUV: File R 50455924, R 50506608



Environmental compliance



Part number system/ordering:

PTSLR12106V175

- PT= PTC resettable fuse
- S= Surface mount
- LR= Low resistance
- 1210= Dimension code
- 6V= Maximum voltage
- 175= Ihold current rating (175= 1.75 A)

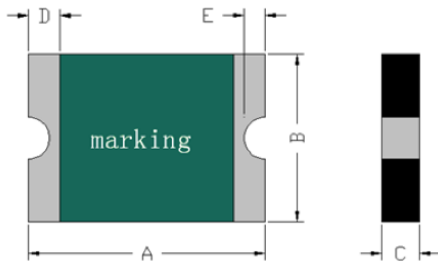
Product specifications

	V _{max} ¹	I _{max} ²	I _{hold} ³	I _{trip} ⁴	P _d ⁵	Time-to-trip (maximum)		Resistance ⁶		Safety approvals			
Part number	(V _{dc})	(A)	(A)	(A)	typical (W)	(A)	(seconds)	Initial (R _i) minimum (Ω)	Post trip (R _f) maximum (Ω)	Part marking	cULus	TÜV	
PTSLR12106V175	6	50	1.75	3.5	0.8	8.0	2.5	0.006	0.040	LA	✓	✓	
PTSLR12106V200	6	50	2.0	4	0.8	8.0	3	0.005	0.024	LB	✓	✓	
PTSLR12106V260	6	50	2.6	5	0.8	8.0	4	0.003	0.020	LE	✓	✓	
PTSLR12106V300	6	50	3.0	6	0.8	15.0	2	0.003	0.020	LG	✓	✓	
PTSLR12106V350	6	50	3.5	7	0.8	17.5	2	0.003	0.018	LN	✓	✓	
PTSLR12106V380	6	50	3.8	8	0.8	19.0	2	0.003	0.016	LK	✓	✓	
PTSLR12106V400	6	50	4.0	8	0.8	20.0	2	0.002	0.014	LM	✓	✓	
PTSLR12106V450	6	50	4.5	9	0.8	22.5	2	0.002	0.014	LP	✓	✓	
PTSLR12106V500	6	50	5.0	10	0.8	25.0	2	0.002	0.012	LQ	✓	✓	
PTSLR12106V550	6	50	5.5	11	1.5	27.5	5	0.001	0.010	D9	✓	✓	
PTSLR12106V600	6	50	6.0	12	1.5	30.0	5	0.001	0.010	B6	✓	✓	
PTSLR12106V650	6	50	6.5	13	1.5	32.5	5	0.001	0.009	B65	✓	✓	
PTSLR12106V700	6	50	7.0	14	1.5	35.0	5	0.001	0.008	B7	✓	✓	
PTSLR12106V750	6	50	7.5	15	1.5	37.5	5	0.001	0.007	B75	✓	✓	

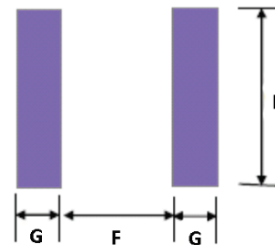
- V_{max}: Maximum continuous voltage the device can withstand without damage at rated current
- I_{max}: Maximum fault current the device can withstand without damage at rated voltage
- I_{hold}: Maximum current the device will pass without interruption at +23 °C still air unless otherwise specified
- I_{trip}: Minimum current that will transition the device from low resistance to high resistance at +23 °C still air, unless otherwise specified

- P_d: Power dissipated from the device when in tripped state at +23 °C still air, unless otherwise specified
- R_i: Minimum resistance of the device prior to tripping at +23 °C
R_f: Maximum resistance of the device one hour after tripping at +23 °C

Dimensions—mm



Recommended pad layout



Part number	A min	A max	B min	B max	C min	C max	D min	D max	E min	E max	F	G	H
PTSLR12106V175	3.00	3.43	2.35	2.80	0.40	0.70	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V200	3.00	3.43	2.35	2.80	0.40	0.70	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V260	3.00	3.43	2.35	2.80	0.40	0.70	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V300	3.00	3.43	2.35	2.80	0.60	1.20	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V350	3.00	3.43	2.35	2.80	0.60	1.20	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V380	3.00	3.43	2.35	2.80	0.60	1.20	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V400	3.00	3.43	2.35	2.80	0.60	1.20	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V450	3.00	3.43	2.35	2.80	0.60	1.20	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V500	3.00	3.43	2.35	2.80	0.60	1.20	0.13	0.75	0.08	0.50	2.0	1.0	2.8
PTSLR12106V550		3.43		2.80		1	0.25		0.1		2.0	1.0	2.5
PTSLR12106V600		3.43		2.80		1	0.25		0.1		2.0	1.0	2.5
PTSLR12106V650		3.50		2.85		1	0.25		0.1		2.0	1.0	2.5
PTSLR12106V700		3.50		2.85		1	0.25		0.1		2.0	1.0	2.5
PTSLR12106V750		3.43		2.80		1	0.25		0.1		2.0	1.0	2.5

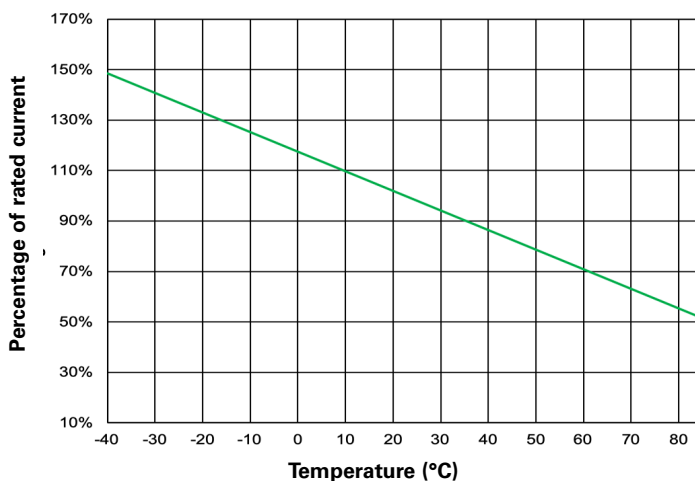
General specifications (PTSLR12106V175-V500)

Operating temperature: -40 °C to +85 °C (with derating)
Storage temperature: -10 °C to +40 °C
Storage relative humidity: ≤75%
Storage condition: Keep away from corrosive atmosphere and sunlight
Passive aging: IEC60738-1, +85 °C, 1000 hours
Humidity aging: +85 °C, 80 to 85% relative humidity, 100 hours
Rapid change of temperature: IEC60738-1, +85 °C to -40 °C, 20 cycles, 30 minutes each
Overload endurance: UL1434, Vmax, 120% Imax, 50 cycles Vmax, 300% Itrip, 6000 cycles
Trip endurance: UL1434, Vmax, Itrip ≤ Imax, 1000 hours
Solderability: IEC60068-2-58, +245 °C, 3 seconds
Moisture sensitivity test: J-STD-020, MSL=2a

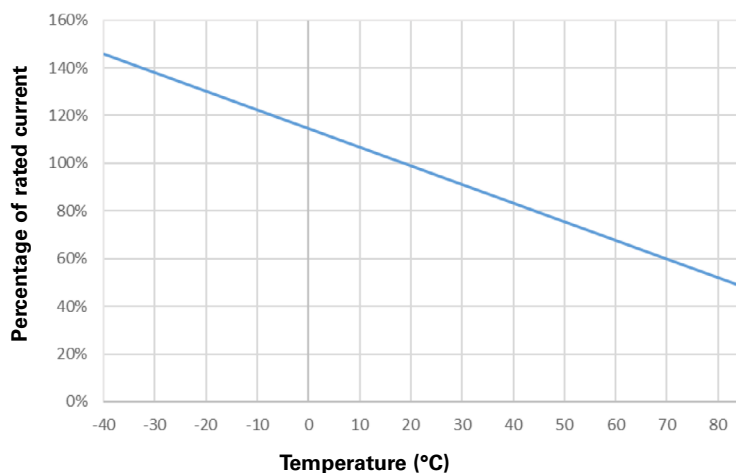
General specifications (PTSLR12106V550-V750)

Operating temperature: -40 °C to +85 °C (with derating)
Storage temperature: -10 °C to +40 °C
Storage relative humidity: ≤70%
Storage condition: Keep away from corrosive atmosphere and sunlight
Passive aging: IEC60738-1, +60 °C/90% RH, 168 hours, ≤3*R1max
Humidity aging: +85 °C, 85% RH, 96 hours, ≤3*R1max
Thermal shock: IEC60738-1, +85 °C/ -40 °C, 20 cycles, ≤3*R1max
Trip cycle life: UL1434, Vmax, Imax, 100 cycles, no arcing or burning
Trip endurance: UL1434, Vmax, Itrip ≤ Imax, 2 hours, no arcing or burning
Solvent resistance: Freon, Trichloroethane, Hydrocarbons: no change
MSL test: J-STD-020, MSL=2, pass and no visible damage

Thermal derating curve PTSLR12106V175-V500

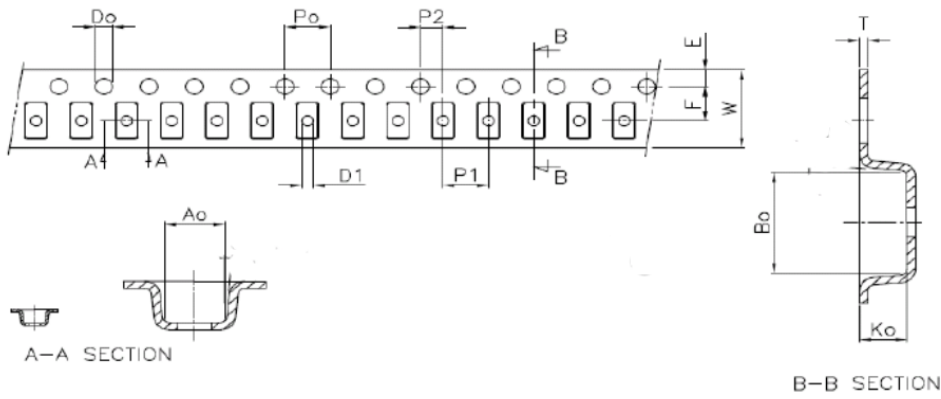


Thermal derating curve PTSLR12106V550-V750



Packaging information
PTSLR12106V175-500

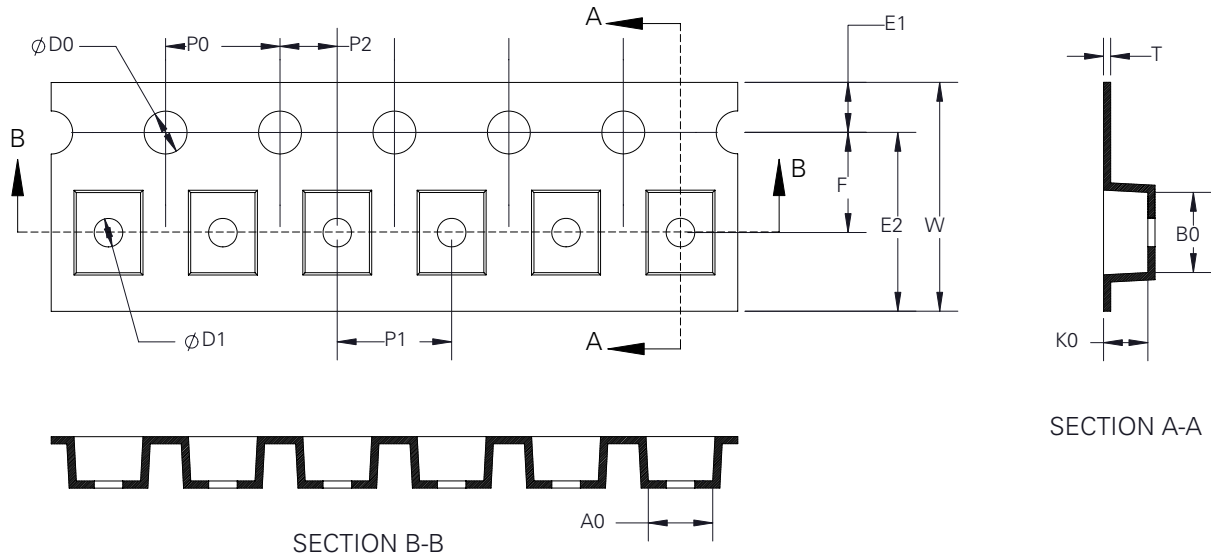
Supplied in tape and reel packaging, 3000 parts per 7.0" (178 mm) diameter reel



A_0	B_0	K_0	P_0	P_1	P_2	T	E	F	D_0	D_1 min	W	$10P_0$
± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.05		± 0.30	± 0.20
2.82	3.63	1.47	4.0	4.0	2.0	0.23	1.75	3.50	1.55	1.0	8.0	40

Packaging information
PTSLR12106V550-750

Supplied in tape and reel packaging, 4000 parts per 7.0" (178 mm) diameter reel



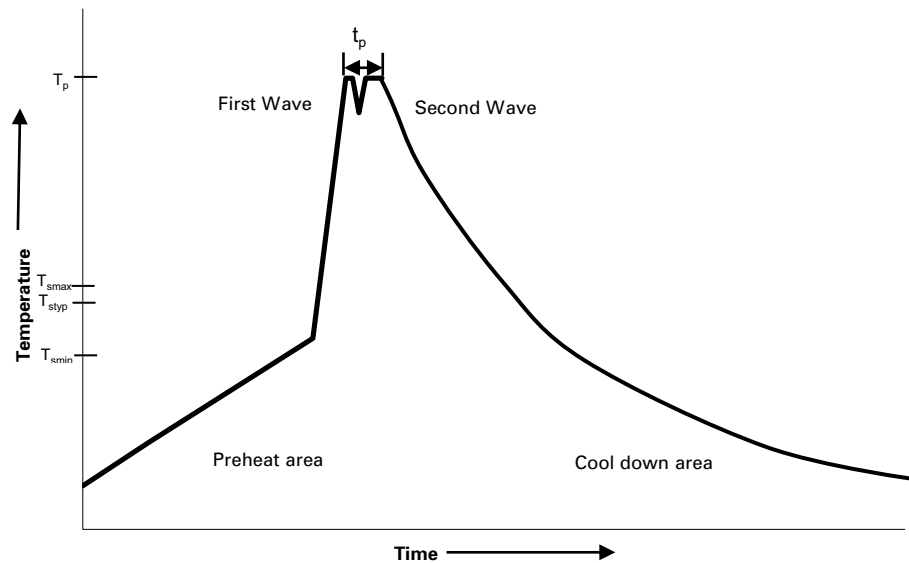
PTSLR12106V550, PTSLR12106V600, PTSLR12106V650

W	F	E_1	E_2	P_0	P_1	P_2	D_0	D_1	A_0	B_0	K_0	T
8.00 ± 0.30	3.50 ± 0.10	1.75 ± 0.10	-	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	$1.55 + 0.10/-0$	-	2.82 ± 0.30	3.46 ± 0.30	1.00 ± 0.10	0.22 ± 0.05

PTSLR12106V700, PTSLR12106V750

W	F	E_1	E_2	P_0	P_1	P_2	D_0	D_1	A_0	B_0	K_0	T
8.00 ± 0.30	3.50 ± 0.10	1.75 ± 0.10	-	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	$1.55 + 0.10/-0$	-	2.82 ± 0.30	3.46 ± 0.30	1.25 ± 0.10	0.22 ± 0.05

Wave solder profile



Reference EN 61760-1:2006

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat		
• Temperature min. (T_{smin})	100 °C	100 °C
• Temperature typ. (T_{styp})	120 °C	120 °C
• Temperature max. (T_{smax})	130 °C	130 °C
• Time (T_{smin} to T_{smax}) (t_s)	70 seconds	70 seconds
Δ preheat to max Temperature	150 °C max.	150 °C max.
Peak temperature (T_p)*	235 °C – 260 °C	250 °C – 260 °C
Time at peak temperature (t_p)	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate	~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25°C to 25°C	4 minutes	4 minutes

Manual solder

+350 °C (4-5 seconds by soldering iron), generally manual/hand soldering is not recommended

Solder reflow profile

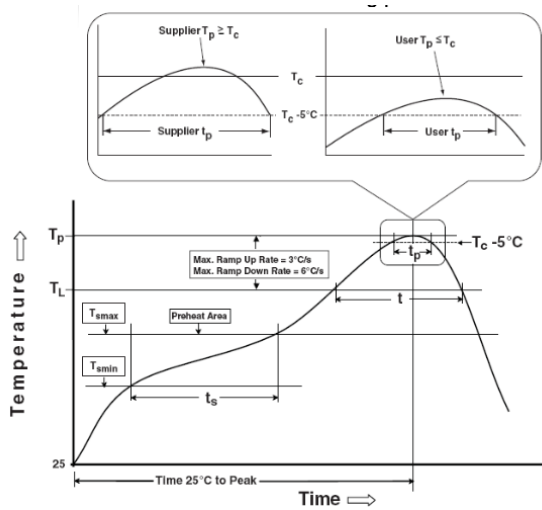


Table 1 - Standard SnPb solder (T_c)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm)	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) Free Solder (T_c)

Package thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. (T _{smin})	100 °C	150 °C
• Temperature max. (T _{smax})	150 °C	200 °C
• Time (T _{smin} to T _{smax}) (t _s)	60-120 seconds	60-120 seconds
Ramp up rate T _L to T _p	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T _L)	183 °C	217 °C
Time (t _L) maintained above T _L	60-150 seconds	60-150 seconds
Peak package body temperature (T _p)*	Table 1	Table 2
Time (t _p)* within 5 °C of the specified classification temperature (T _c)	20 seconds*	30 seconds*
Ramp-down rate (T _p to T _L)	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

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