

# PTSLR1210

## Low resistance SMD PTC fuses



### 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

### 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 5.00 A
- Fast time-to-trip

### Agency information

- cULRus Recognized file no. E343021
- TUV: File R 50455924

### 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**

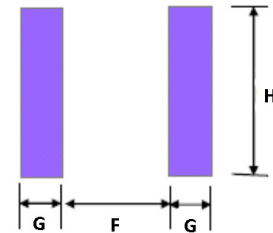
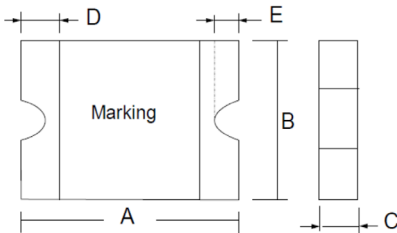
Part number	V <sub>max</sub> <sup>1</sup>	I <sub>max</sub> <sup>2</sup>	I <sub>hold</sub> <sup>3</sup>	I <sub>trip</sub> <sup>4</sup>	P <sub>d</sub> <sup>5</sup>	Time-to-trip (maximum)		Resistance <sup>6</sup>		Safety approvals		
	(V <sub>dc</sub> )	(A)	(A)	(A)	typical (W)	(A)	(seconds)	Initial (R <sub>i</sub> ) minimum (Ω)	Post trip (R <sub>t</sub> ) maximum (Ω)	Part marking	cURus	TÜV
PTSLR12106V175	6	50	1.75	3.5	0.8	8.0	2.5	0.006	0.040	LA	√	√
PTSLR12106V200	6	50	2.00	4.0	0.8	8.0	3.0	0.005	0.024	LB	√	√
PTSLR12106V260	6	50	2.60	5.0	0.8	8.0	4.0	0.003	0.020	LE	√	√
PTSLR12106V300	6	50	3.00	6.0	0.8	15	2.0	0.003	0.020	LG	√	√
PTSLR12106V350	6	50	3.50	7.0	0.8	17.5	2.0	0.003	0.018	LN	√	√
PTSLR12106V380	6	50	3.80	8.0	0.8	19	2.0	0.003	0.016	LK	√	√
PTSLR12106V400	6	50	4.00	8.0	0.8	20	2.0	0.002	0.014	LM	√	√
PTSLR12106V450	6	50	4.50	9.0	0.8	22.5	2.0	0.002	0.014	LP	√	√
PTSLR12106V500	6	50	5.00	10	0.8	25	2.0	0.002	0.012	LQ	√	√

1. V<sub>max</sub>: Maximum continuous voltage the device can withstand without damage at rated current
2. I<sub>max</sub>: Maximum fault current the device can withstand without damage at rated voltage
3. I<sub>hold</sub>: Maximum current the device will pass without interruption at +23 °C still air unless otherwise specified
4. I<sub>trip</sub>: Minimum current that will transition the device from low resistance to high resistance at +23 °C still air, unless otherwise specified

5. P<sub>d</sub>: Power dissipated from the device when in tripped state at +23 °C still air, unless otherwise specified
6. R<sub>i</sub>: Minimum resistance of the device prior to tripping at +23 °C  
R<sub>t</sub>: Maximum resistance of the device one hour after tripping at +23 °C

**Dimensions—mm**

**Recommended pad layout**

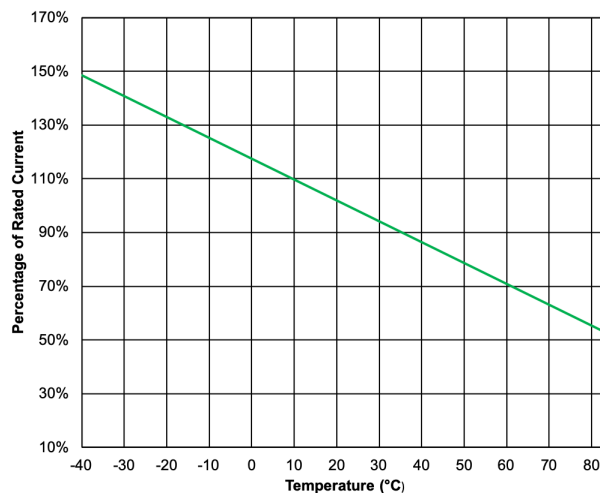


A min	A max	B min	B max	C min	C max	D min	D max	E max	E max	F	G	H
3.00	3.43	2.35	2.80	0.40*	0.70*	0.13	0.75	0.08	0.50	2.0	1.0	2.8
				0.60**	1.2**							

\* PTSLR12106V175, PTSLR12106V200, PTSLR12106V260

\*\* PTSLR12106V300, PTSLR12106V350, PTSLR12106V380, PTSLR12106V400, PTSLR12106V450, PTSLR12106V500

**Thermal derating curve**



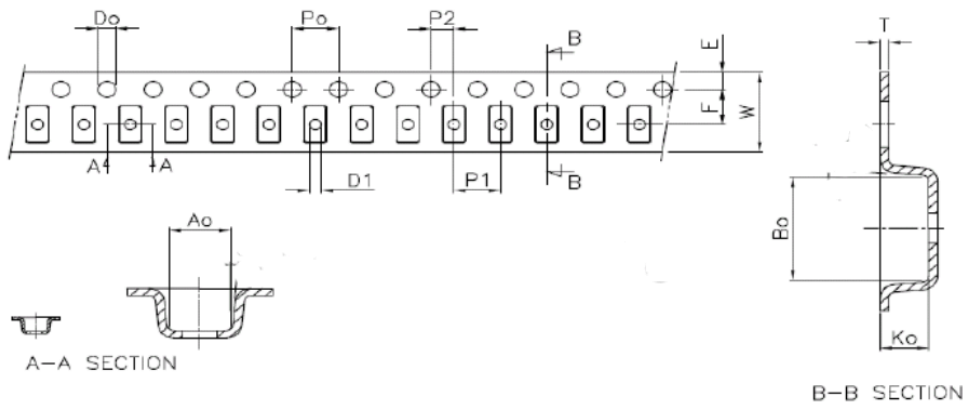
**General specifications**

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

**Packaging information**

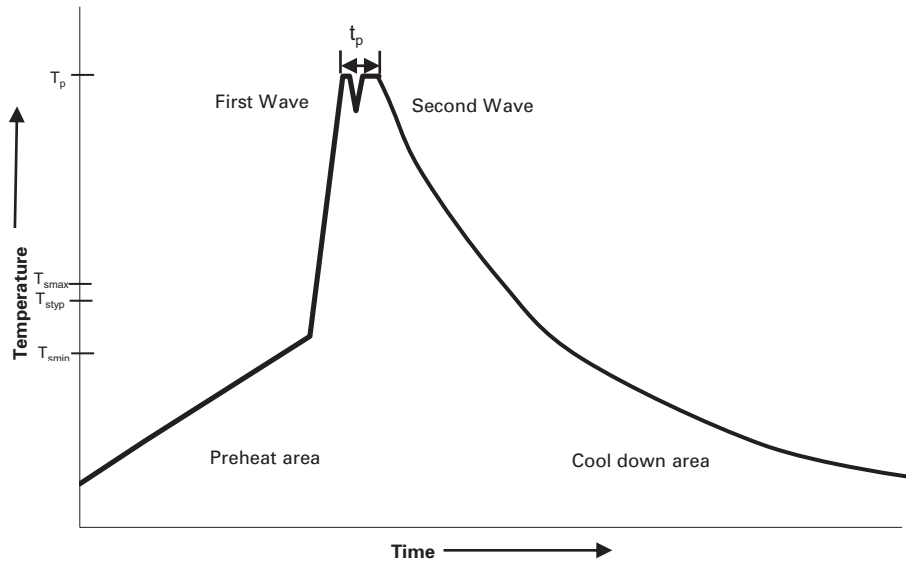
Supplied in tape and reel packaging, 3000 parts per 7.0" (178 mm) diameter reel

**Taping specification**



$A_0$	$B_0$	$K_0$	$P_0$	$P_1$	$P_2$	$T$	$E$	$F$	$D_0$	$D_1$	$W$	$10P_0$
± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.05	min	± 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

### 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
$\Delta$ 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

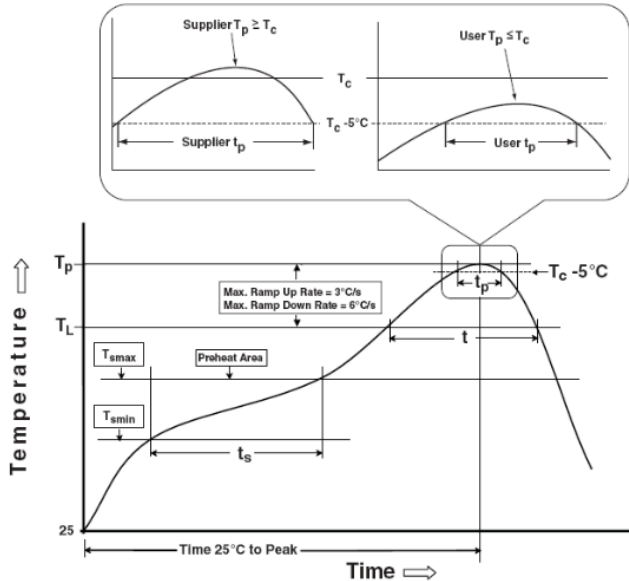


Table 1 - Standard SnPb solder ( $T_c$ )

Package thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ $\geq$ 350
<2.5 mm)	235 °C	220 °C
$\geq$ 2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder ( $T_c$ )

Package thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ 350 - 2000	Volume $\text{mm}^3$ >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 ( $T_p$ )*	235 °C	260 °C
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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