

# PTSLR0603

## Low resistance SMD PTC fuses



### Product features

- Positive temperature coefficient (PTC)
- Surface mount resettable fuse
- Low resistance
- Compact 0603 (1608 metric) footprint
- Voltage rating 6 V to 8 V
- Current rating from 0.5 A to 3.0 A
- Fast time-to-trip

### Applications

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

### Agency information

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



### Environmental compliance



### Part number system/ordering:

#### PTSLR06038V050

- PT= PTC resettable fuse
- S= Surface mount
- LR = Low resistance
- 0603= Dimension code
- 8V= Maximum voltage
- 050= Ihold current rating (050= 0.5 A)



Powering Business Worldwide

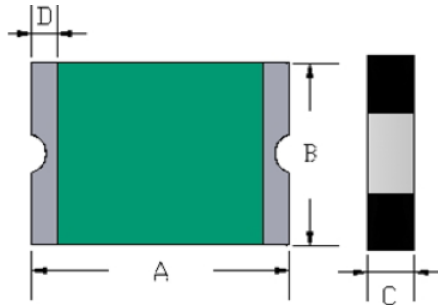
**Product specifications**

Part number	Vmax <sup>1</sup>	I <sub>max</sub> <sup>2</sup>	I <sub>hold</sub> <sup>3</sup>	I <sub>trip</sub> <sup>4</sup>	Pd <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)	cURIs	TUV
PTSLR06038V050	8	25	0.50	1.0	0.5	8	0.6	0.050	0.40	√	-
PTSLR06038V075	8	25	0.75	1.5	0.5	8	1	0.030	0.165	√	-
PTSLR06038V100	8	25	1.00	2.0	0.5	8	2	0.030	0.15	√	-
PTSLR06036V125	6	50	1.25	2.5	0.5	8	3	0.025	0.14	√	√
PTSLR06036V150	6	50	1.50	3.0	0.5	8	4	0.020	0.12	√	√
PTSLR06036V175	6	50	1.75	3.5	0.5	8	5	0.008	0.07	√	√
PTSLR06036V200	6	50	2.00	4.0	0.5	8	5	0.008	0.065	√	√
PTSLR06036V250	6	50	2.50	5.0	0.5	8	5	0.008	0.06	√	√
PTSLR06036V300	6	50	3.00	6.0	0.5	8	5	0.008	0.05	√	√

- V<sub>max</sub>: Maximum continuous voltage the device can withstand without damage at rated current
- I<sub>max</sub>: Maximum fault current the device can withstand without damage at rated voltage
- I<sub>hold</sub>: Maximum current the device will pass without interruption at +23 °C still air
- I<sub>trip</sub>: Minimum current that will transition the device from low resistance to high resistance at +23 °C still air
- Pd: Power dissipated from the device when in tripped state at +23 °C still air

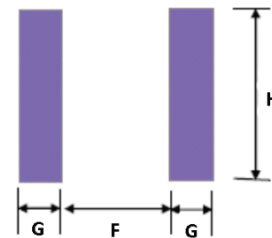
- R<sub>i</sub>: Minimum resistance of the device at +23 °C
- R<sub>t</sub>: Maximum resistance of the device one hour after tripping at +23 °C

**Dimensions—mm**



No part marking

**Recommended pad layout**

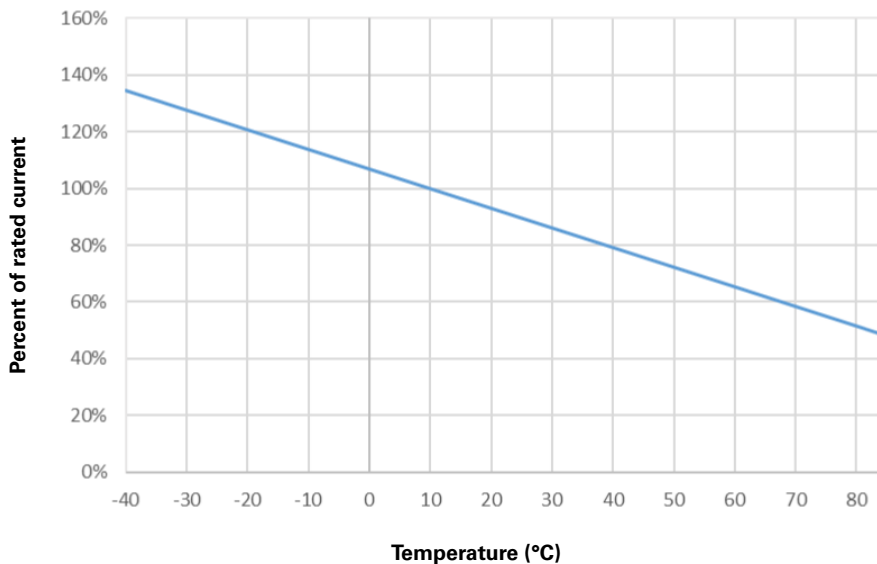


Part number	A max	B max	C max	D min	F	G	H
PTSLR06038V050	1.80	1.00	0.75	0.15	0.8	0.6	0.8
PTSLR06038V075	1.80	1.00	1.00	0.15	0.8	0.6	0.8
PTSLR06038V100	1.80	1.00	1.00	0.15	0.8	0.6	0.8
PTSLR06036V125	1.80	1.00	1.00	0.15	0.8	0.6	0.8
PTSLR06036V150	1.80	1.00	1.00	0.15	0.8	0.6	0.8
PTSLR06036V175	1.80	1.00	1.00	0.15	0.8	0.6	0.8
PTSLR06036V200	1.80	1.00	1.10	0.15	0.8	0.6	0.8
PTSLR06036V250	1.80	1.00	1.10	0.15	0.8	0.6	0.8
PTSLR06036V300	1.80	1.00	1.10	0.15	0.8	0.6	0.8

**General specifications**

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, I <sub>max</sub> , 100 cycles, no arcing or burning
Trip endurance: UL1434, Vmax, I <sub>trip</sub> ≤ I ≤ I <sub>max</sub> , 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

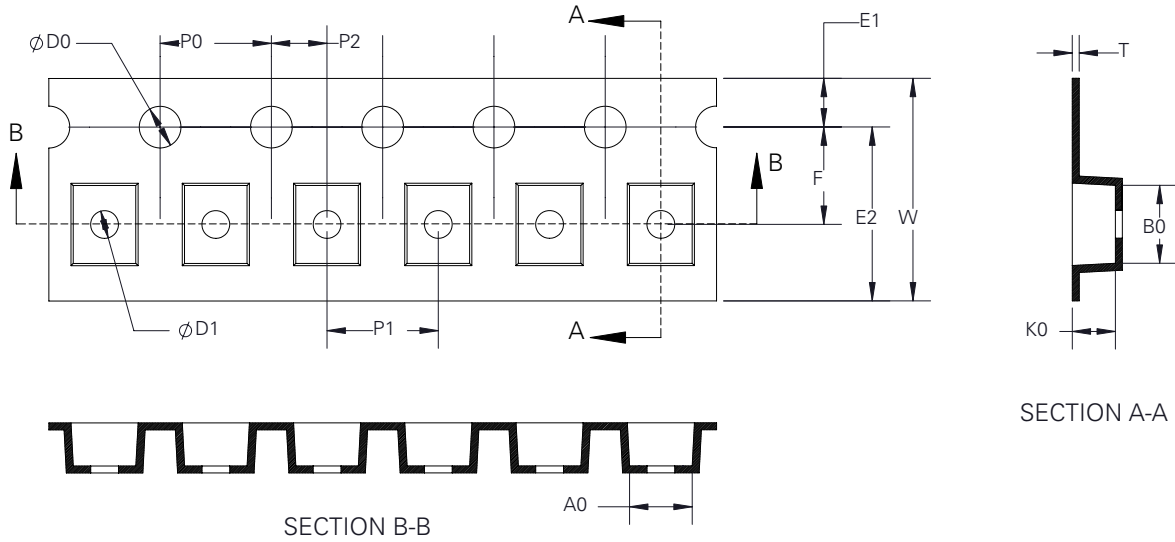
**Thermal derating curve  
PTSLR0603**



**Packaging information**

PTSLR06038V050, PTSLR06038V075, PTSLR06038V100, PTSLR06036V125, PTSLR06036V150  
Supplied in tape and reel packaging, 5000 parts per 7.0" (178 mm) diameter reel (EIA-481 compliant)

PTSLR06036V175, PTSLR06036V200, PTSLR06036V250, PTSLR06036V300  
Supplied in tape and reel packaging, 3000 parts per 7.0" (178 mm) diameter reel (EIA-481 compliant)



SECTION A-A

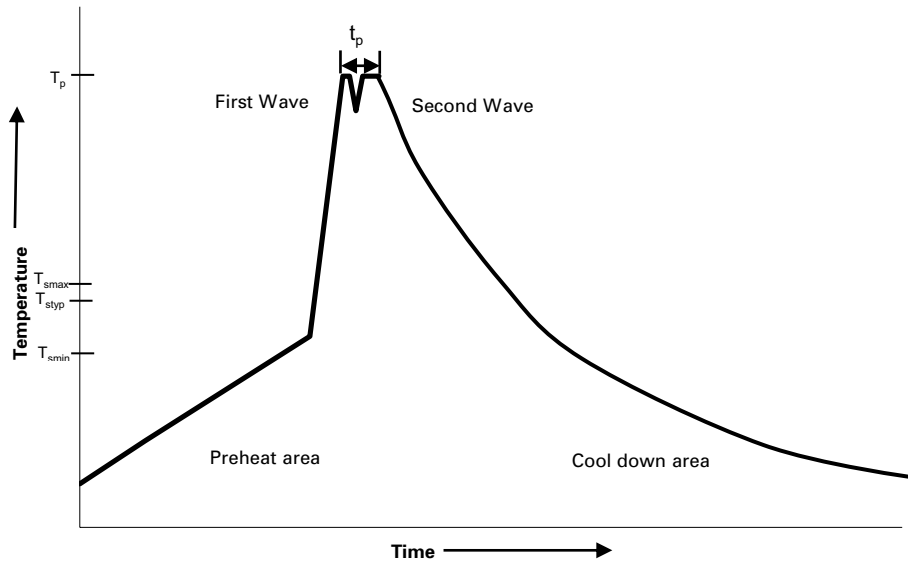
PTSLR06038V050, PTSLR06038V075, PTSLR06038V100, PTSLR06036V125,

W	F	E1	E2	P0	P1	P2	D0	D1	A0	B0	K0	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	1.50 + 0.10/-0	-	1.10 ± 0.10	1.85 ± 0.10	0.60 ± 0.10	0.20 ± 0.05

PTSLR06036V150, PTSLR06036V175, PTSLR06036V200, PTSLR06036V250, PTSLR06036V300

W	F	E1	E2	P0	P1	P2	D0	D1	A0	B0	K0	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	1.50 + 0.10/-0	-	1.10 ± 0.10	1.85 ± 0.10	0.85 ± 0.10	0.20 ± 0.05

**Wave solder profile**



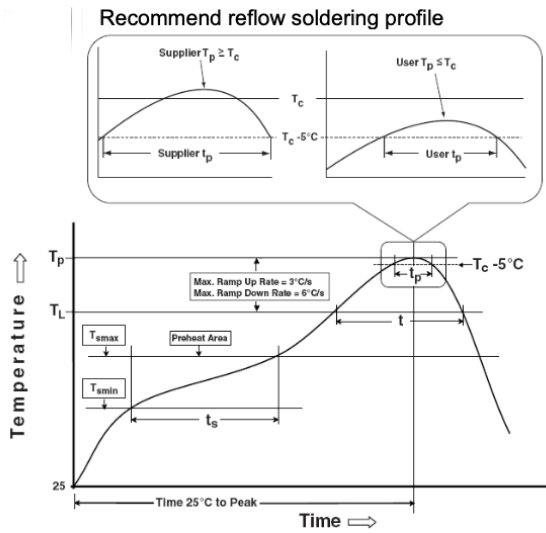
**Reference EN 61760-1:2006**

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat	• Temperature min. ( $T_{smin}$ )	100 °C
	• Temperature typ. ( $T_{styp}$ )	120 °C
	• Temperature max. ( $T_{smax}$ )	130 °C
	• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	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 ( $T_p$ )*	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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