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PTS0603

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 15 V
- Current rating from 0.04 A to 0.35 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
- Battery charging & charging connections

Agency information

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

Environmental compliance

Part number system/ordering:

PTS060315V004

- PT= PTC resettable fuse
- S= Surface mount
- 0603= Dimension code
- 15V= Maximum voltage
- 004= Ihold current rating (004= 0.04 A)

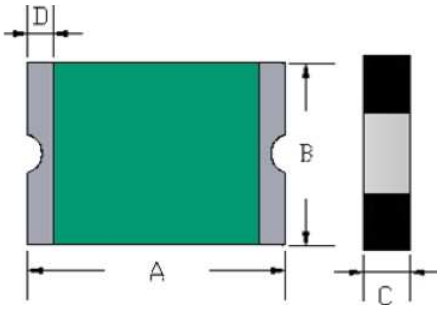
Powering Business Worldwide

Product specifications

	Vmax[1]	Imax[2]	Ihold[3]	Itrip[4]	Pd[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_1) maximum (Ω)**	**cURus**	**TUV**
PTS060315V004	15	1	0.04	0.12	0.5	0.2	1.0	1.5	40	√	√
PTS060315V005	15	1	0.05	0.15	0.5	0.25	1.0	1.0	40	√	√
PTS060315V010	15	3	0.10	0.25	0.5	0.5	1.0	0.5	6	√	√
PTS06039V016	9	4	0.16	0.40	0.5	1.0	1.0	0.4	5	√	√
PTS06039V020	9	4	0.20	0.50	0.5	1.0	0.6	0.3	4	√	√
PTS06036V035	6	8	0.35	0.75	0.5	8.0	0.1	0.09	1.5	√	√

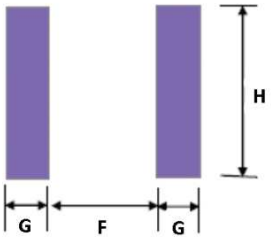
1. Vmax: Maximum continuous voltage the device can withstand without damage at rated current
2. Imax: Maximum fault current the device can withstand without damage at rated voltage
3. Ihold: Maximum current the device will pass without interruption at +23 °C still air
4. Itrip: Minimum current that will transition the device from low resistance to high resistance at +23 °C still air
5. Pd: Power dissipated from the device when in tripped state at +23 °C still air
6. R_i: Minimum resistance of the device at +23 °C
   R_1: Maximum resistance of the device one hour after tripping at +23 °C

Dimensions–mm



No marking

Recommended pad layout

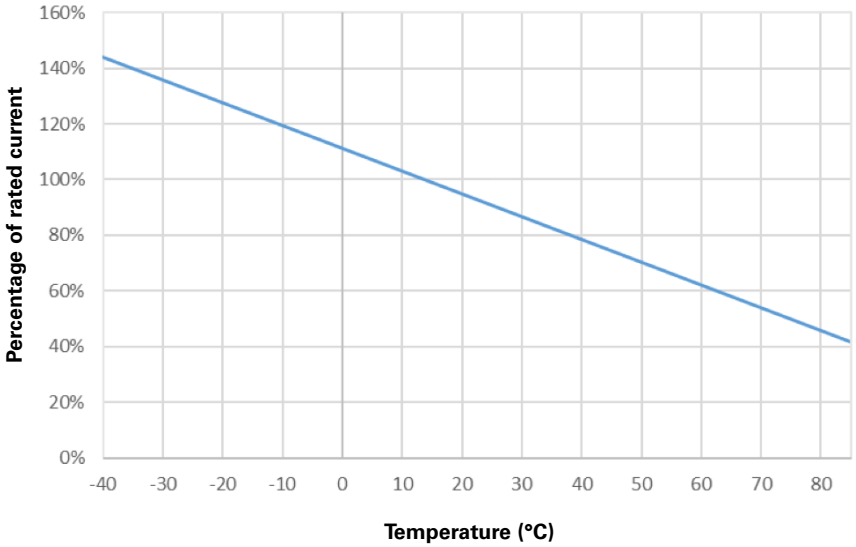


Part number	A typ	A max	B typ	B max	C typ	C max	D min	F	G	H
PTS060315V004	1.65	1.80	0.80	1.00	0.56	0.80	0.15	0.8	0.6	0.8
PTS060315V005	1.65	1.80	0.80	1.00	0.56	0.80	0.15	0.8	0.6	0.8
PTS060315V010	1.65	1.80	0.80	1.00	0.53	0.80	0.15	0.8	0.6	0.8
PTS06039V016	1.65	1.80	0.80	1.00	0.50	0.80	0.15	0.8	0.6	0.8
PTS06039V020	1.65	1.80	0.90	1.00	0.45	0.80	0.15	0.8	0.6	0.8
PTS06036V035	1.65	1.80	0.90	1.00	0.70	0.80	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 conditon: Keep away form corrosive atmosphere and sunlight
Passive aging: IEC60738-1, +85 °C, 1000 hours, ≤20%
Humidity aging: +85 °C, 85% RH, 100 hours, ≤20%
Thermal shock: IEC60738-1, +85 °C/ -40 °C, 20 cycles, ≤50%
Trip cycle life: UL1434, Vmax, Imax, 100 cycles, no arcing or burning
Trip endurance: UL1434, Vmax, Itrip ≤ I ≤ Imax, 2 hours, no arcing or burning
MSL test: J-STD-020, MSL=1, pass and no visible damage

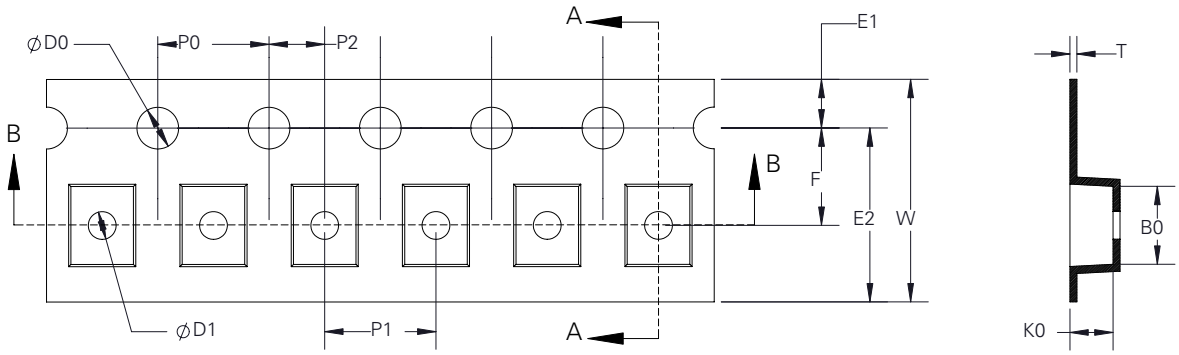
Thermal derating curve
PTS0603



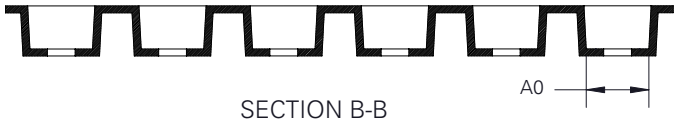
Packaging information

PTS0603xxV004-xxV020
Supplied in tape and reel packaging, 5000 parts per 7.0" (178 mm) diameter reel (EIA-481 compliant)

PTS06036V035
Supplied in tape and reel packaging, 5000 parts per 7.0" (178 mm) diameter reel (EIA-481 compliant)



SECTION A-A



SECTION B-B

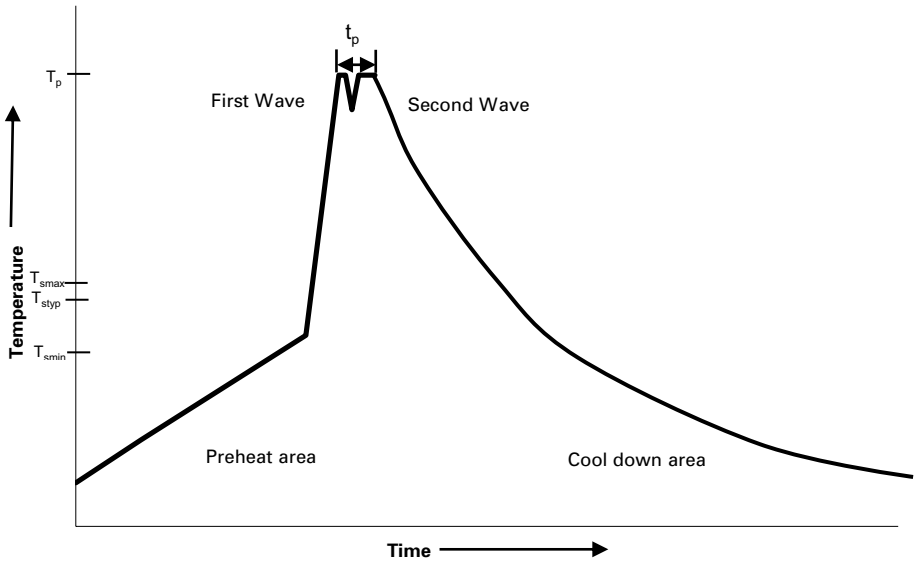
PTS0603xxV004-xxV020

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

PTS06036V035

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	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 (Tp)*		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

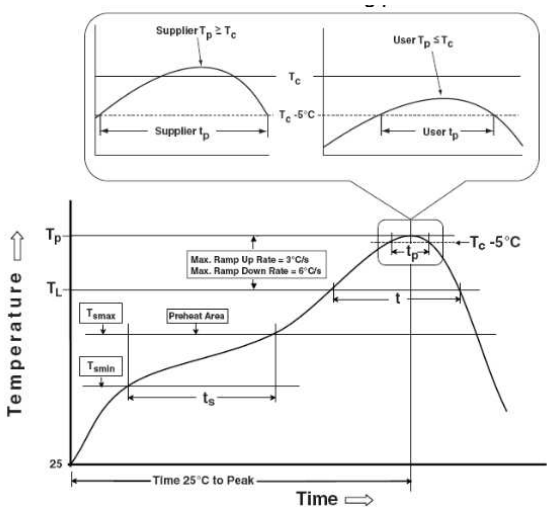


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm3 <350	Volume mm3 ≥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) Time (t_L) maintained above T_L		183 °C 60-150 seconds	217 °C 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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