PTSA1206

Automotive SMD PTC fuses

Product features

- AEC-Q200 qualified
- Positive temperature coefficient (PTC)
- Surface mount resettable fuse
- Compact 1206 (3216 metric) footprint
- Low resistance
- Fast time-to-trip
- Current rating from 0.10 to 0.50 A
- Voltage rating from 13.2 V to 60 V

Applications

- Infotainment
- In-vehicle navigation
- Telematics
- Car lighting
- Power window and seat control
- Instrument clusters
- PCB trace protection

Environmental compliance

Pb HALOGEN HF FREE RoHS

Part number system/ordering:

PTSA120660V010

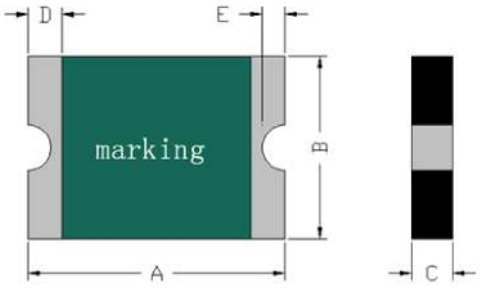
- PT= PTC resettable fuse
- S= Surface mount
- A= Automotive
- 1206= Dimension code
- 60V= Maximum voltage
- 010= Ihold current rating (010= 0.10 A)

Product specifications

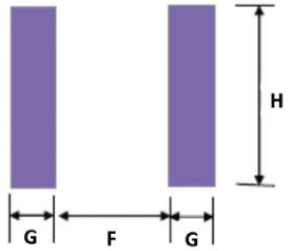
Part number	Vmax[1] (V_{dc})	Imax[2] (A)	Ihold[3] (A)	Itrip[4] (A)	Pd[5] typical (W)	Time-to-trip (maximum) (A)	Time-to-trip (maximum) (seconds)	Resistance[6] Initial (R_i) minimum (Ω)	Resistance[6] Post trip (R_1) maximum (Ω)	Part marking
PTSA120660V010	60	10	0.10	0.25	0.6	1.0	0.2	1.6	15	U
PTSA120648V012	48	10	0.12	0.39	0.6	1.0	0.3	1.2	15	P
PTSA120648V016	48	10	0.16	0.45	0.6	1.0	0.4	1.1	5.0	T
PTSA120624V020	24	40	0.20	0.42	0.6	8.0	0.1	0.3	3.1	C
PTSA120616V025	16	40	0.25	0.58	0.6	8.0	0.1	0.2	2.3	C
PTSA120616V035	16	40	0.35	0.75	0.6	8.0	0.1	0.1	1.35	W
PTSA120613V050	13.2	40	0.50	1.10	0.6	8.0	0.1	0.08	0.75	A

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



Recommended pad layout



Part number	A typ	A max	B typ	B max	C typ	C max	D min	E min	F	G	H
PTSA120660V010	3.35	3.50	1.70	1.80	0.85	1.00	0.25	0.10	1.8	1.0	1.8
PTSA120648V012	3.35	3.50	1.70	1.80	0.85	1.00	0.25	0.10	1.8	1.0	1.8
PTSA120648V016	3.35	3.50	1.70	1.80	0.85	1.00	0.25	0.10	1.8	1.0	1.8
PTSA120624V020	3.35	3.50	1.70	1.80	0.55	1.00	0.25	0.10	1.8	1.0	1.8
PTSA120616V025	3.35	3.50	1.70	1.80	0.60	1.00	0.25	0.10	1.8	1.0	1.8
PTSA120616V035	3.35	3.50	1.70	1.80	0.55	1.00	0.25	0.10	1.8	1.0	1.8
PTSA120613V050	3.35	3.50	1.70	1.80	0.55	1.00	0.25	0.10	1.8	1.0	1.8

Thermal derating chart - Ihold (A)

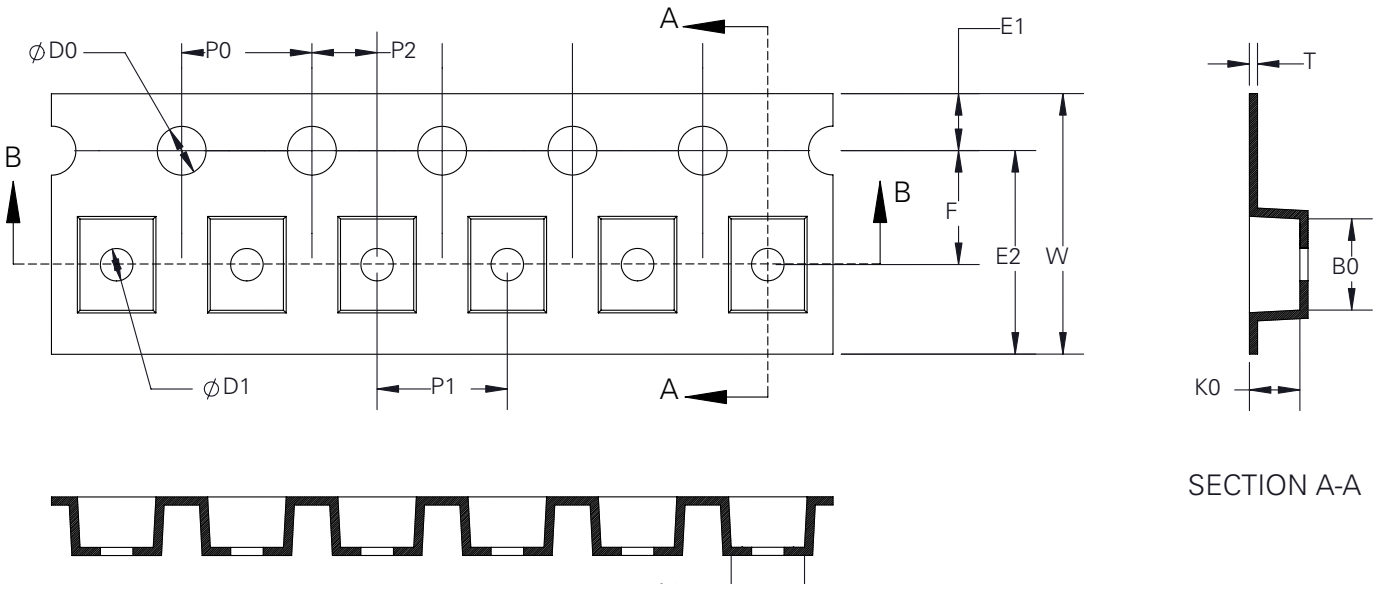
Part number	Maximum ambient temperature (°C)								
	-40	-20	0	25	40	50	60	70	85
PTSA120660V010	0.17	0.15	0.13	0.10	0.09	0.08	0.07	0.06	0.04
PTSA120648V012	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.05
PTSA120648V016	0.25	0.20	0.18	0.16	0.14	0.12	0.11	0.09	0.06
PTSA120624V020	0.31	0.26	0.22	0.20	0.18	0.16	0.15	0.13	0.07
PTSA120616V025	0.38	0.33	0.28	0.25	0.23	0.20	0.19	0.16	0.10
PTSA120616V035	0.51	0.46	0.39	0.35	0.30	0.27	0.24	0.20	0.16
PTSA120613V050	0.77	0.64	0.56	0.50	0.45	0.40	0.35	0.32	0.23

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 , +60 °C, 1000 hours, ≤ 20% 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

Packaging information

Supplied in tape and reel packaging, 4000 parts per 7.0" (178 mm) diameter reel (EIA-481 compliant)



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	1.55 + 0.10/-0	-	1.77 ± 0.10	3.40 ± 0.10	1.04 ± 0.10	0.22 ± 0.05

Solder reflow profile

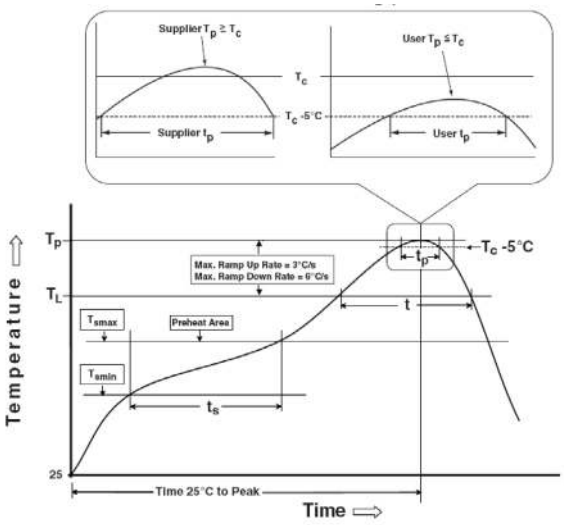


Table 1 - Standard SnPb solder (T_C)

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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