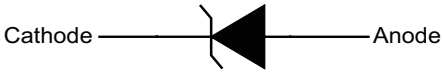
P6SMAL Series

600W Transient Voltage Suppressor

Rev.01 - 08 February 2021 Product data sheet

1. General description

600W transient voltage suppressor (TVS) in SMA package, designed to protect electronic circuit which induced by lightning surge or other transient voltage situation.



Uni-directional

2. Features and benefits

- Peak pulse power 600W @ 10/1000μs waveform
- SMA low profile package: less than 1.1 mm
- Excellent clamping capability
- Low incremental surge resistance
- Surface mount package for easy assembly and board space saving
- Typical I_R < 1μA When V_R > 12V
- Fast response time: Typically less than 1.0ps from 0V to BV min
- IEC 61000-4-2 ESD 30kV (Air), 30kV (Contact)
- EFT protection of data lines in accordance with IEC 61000-4-4
- High temperature to reflow soldering guaranteed: 260°C/10sec
- Meet UL94V-0 flammability classification which guaranteed by mold compound
- Meet MSL level1, per J-STD-020
- Lead free lead finish
- Halogen free and RoHS compliant

3. Applications

- Power supply protection
- Industrial application
- Power management
- I/O interface protection

4. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
P6SMALxxxXX	SMAL	P6SMALxxxXX	Tape and reel	3000	SMALH	18-Oct-2020
eg. P6SMAL5.0A	SMAL	P6SMAL5.0AX	Tape and reel	3000	SMALH	18-Oct-2020

5. Absolute maximum ratings

In accordance with the Absolute Maximum Rating System (IEC 60134).
T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Values	Unit
Absolute maximum rating				
P_{PPM}	peak pulse power	[1]	600	W
$P_{M(AV)}$	steady state power dissipation	on infinite heatsink at T_a = 50 °C	3	W
I_{FSM}	peak forward surge current	t_p = 8.3 ms; single half sine-wave pulse; duty cycle = 4 pulses per minute maximum; unidirectional units only	60	A
V_F	forward on-state voltage	I_F = 25 A; unidirectional units only	3.5	V
T_{stg}	storage temperature range		-65 to 150	°C
T_j	operating temperature range		-65 to 150	°C

[1] In accordance with IEC 61643-321 (10/1000 μs current waveform).

6. Characteristics

T_j = 25 °C unless otherwise specified.

PN	Reverse Stand off Voltage V_R (V)	Breakdown Voltage V_{BR} @ I_T (V)		Test current I_T (mA)	Max. Clamping Voltage V_C @ I_{pp} (V)	Max. Peak Pulse Current I_{pp} (A)	Maximum Reverse Leakage I_R @ V_R (µA)	Marking
		Min	Max					
P6SMAL5.0A	5	6.4	7	10	9.2	65.3	400	6A005H
P6SMAL6.0A	6	6.67	7.37	10	10.3	58.3	400	6A006H
P6SMAL6.5A	6.5	7.22	7.98	10	11.2	53.6	250	6A06FH
P6SMAL7.0A	7	7.78	8.6	10	12	50	100	6A007H
P6SMAL8.0A	8	8.89	9.83	1	13.6	44.2	50	6A008H
P6SMAL9.0A	9	10	11.1	1	15.4	39	10	6A009H
P6SMAL10A	10	11.1	12.3	1	17	35.3	5	6A010H
P6SMAL11A	11	12.2	13.5	1	18.2	33	1	6A011H
P6SMAL12A	12	13.3	14.7	1	19.9	30.2	1	6A012H
P6SMAL13A	13	14.4	15.9	1	21.5	28	1	6A013H
P6SMAL14A	14	15.6	17.2	1	23.2	25.9	1	6A014H
P6SMAL15A	15	16.7	18.5	1	24.4	24.6	1	6A015H
P6SMAL16A	16	17.8	19.7	1	26	23.1	1	6A016H
P6SMAL17A	17	18.9	20.9	1	27.6	21.8	1	6A017H
P6SMAL18A	18	20	22.1	1	29.2	20.6	1	6A018H
P6SMAL20A	20	22.2	24.5	1	32.4	18.6	1	6A020H
P6SMAL22A	22	24.4	26.9	1	35.5	16.9	1	6A022H
P6SMAL24A	24	26.7	29.5	1	38.9	15.5	1	6A024H
P6SMAL26A	26	28.9	31.9	1	42.1	14.3	1	6A026H
P6SMAL28A	28	31.1	34.4	1	45.4	13.3	1	6A028H
P6SMAL30A	30	33.3	36.8	1	48.4	12.4	1	6A030H
P6SMAL33A	33	36.7	40.6	1	53.3	11.3	1	6A033H
P6SMAL36A	36	40	44.2	1	58.1	10.4	1	6A036H
P6SMAL40A	40	44.4	49.1	1	64.5	9.3	1	6A040H
P6SMAL43A	43	47.8	52.8	1	69.4	8.7	1	6A043H
P6SMAL45A	45	50	55.3	1	72.7	8.3	1	6A045H
P6SMAL48A	48	53.3	58.9	1	77.4	7.8	1	6A048H
P6SMAL51A	51	56.7	62.7	1	82.4	7.3	1	6A051H
P6SMAL54A	54	60	66.3	1	87.1	6.9	1	6A054H
P6SMAL58A	58	64.4	71.2	1	93.6	6.5	1	6A058H
P6SMAL60A	60	66.7	73.7	1	96.8	6.2	1	6A060H
P6SMAL64A	64	71.1	78.6	1	103	5.9	1	6A064H
P6SMAL70A	70	77.8	86	1	113	5.3	1	6A070H
P6SMAL75A	75	83.3	92.1	1	121	5	1	6A075H
P6SMAL78A	78	86.7	95.8	1	126	4.8	1	6A078H
P6SMAL85A	85	94.4	104	1	137	4.4	1	6A085H

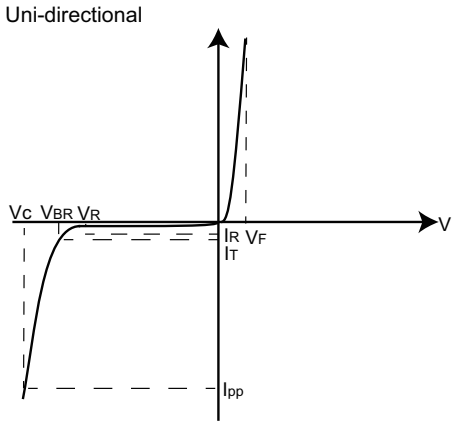


Fig. 1. I-V curve characteristics; Uni-directional

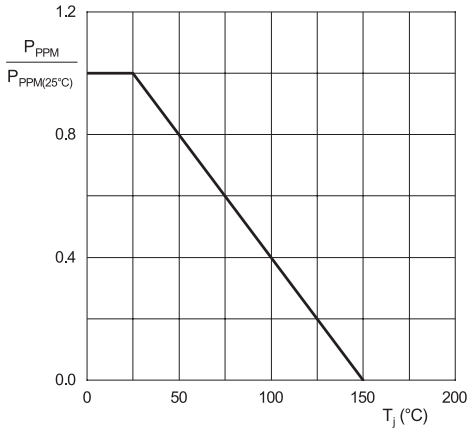


Fig. 2. Peak pulse power derating curve

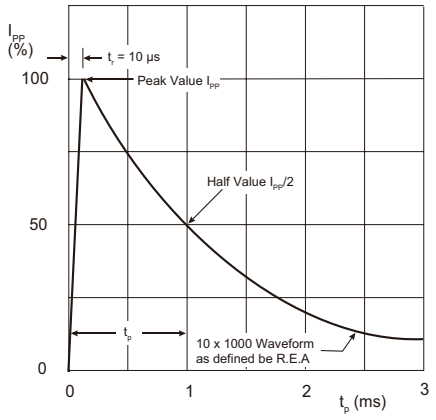


Fig. 3. Pulse waveform

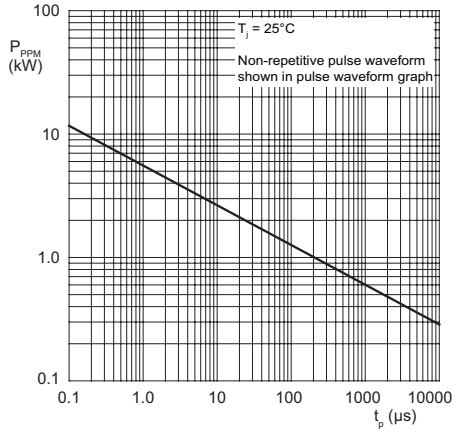


Fig. 4. Pulse rating curve

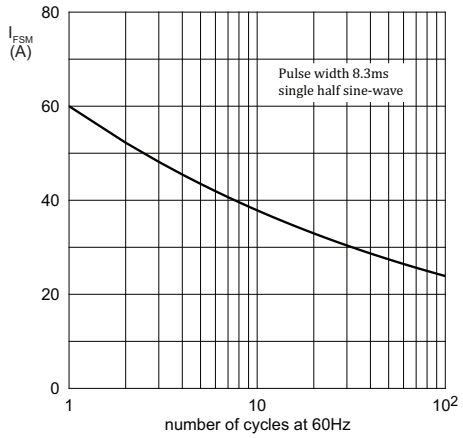


Fig. 5. Maximum non-repetitive surge current

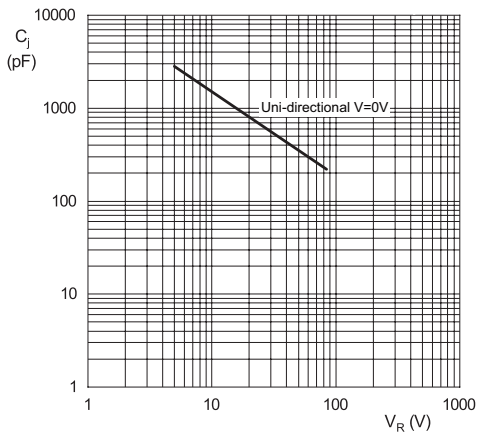


Fig. 6. Typical junction capacitance

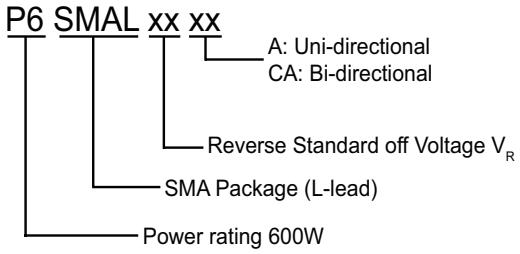


Fig. 7. Part numbering

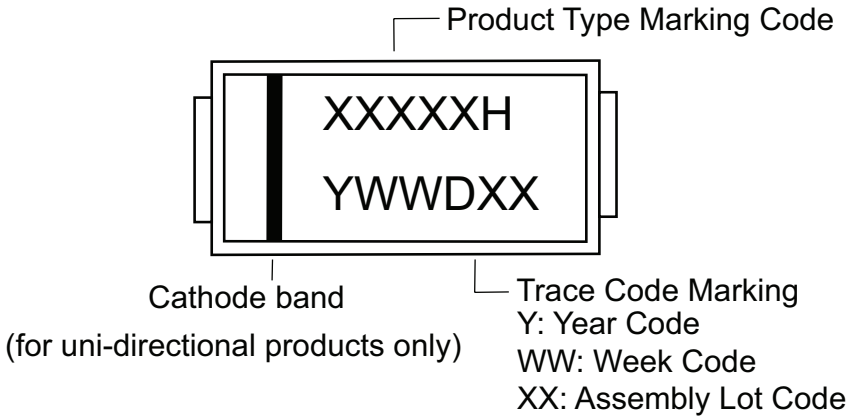
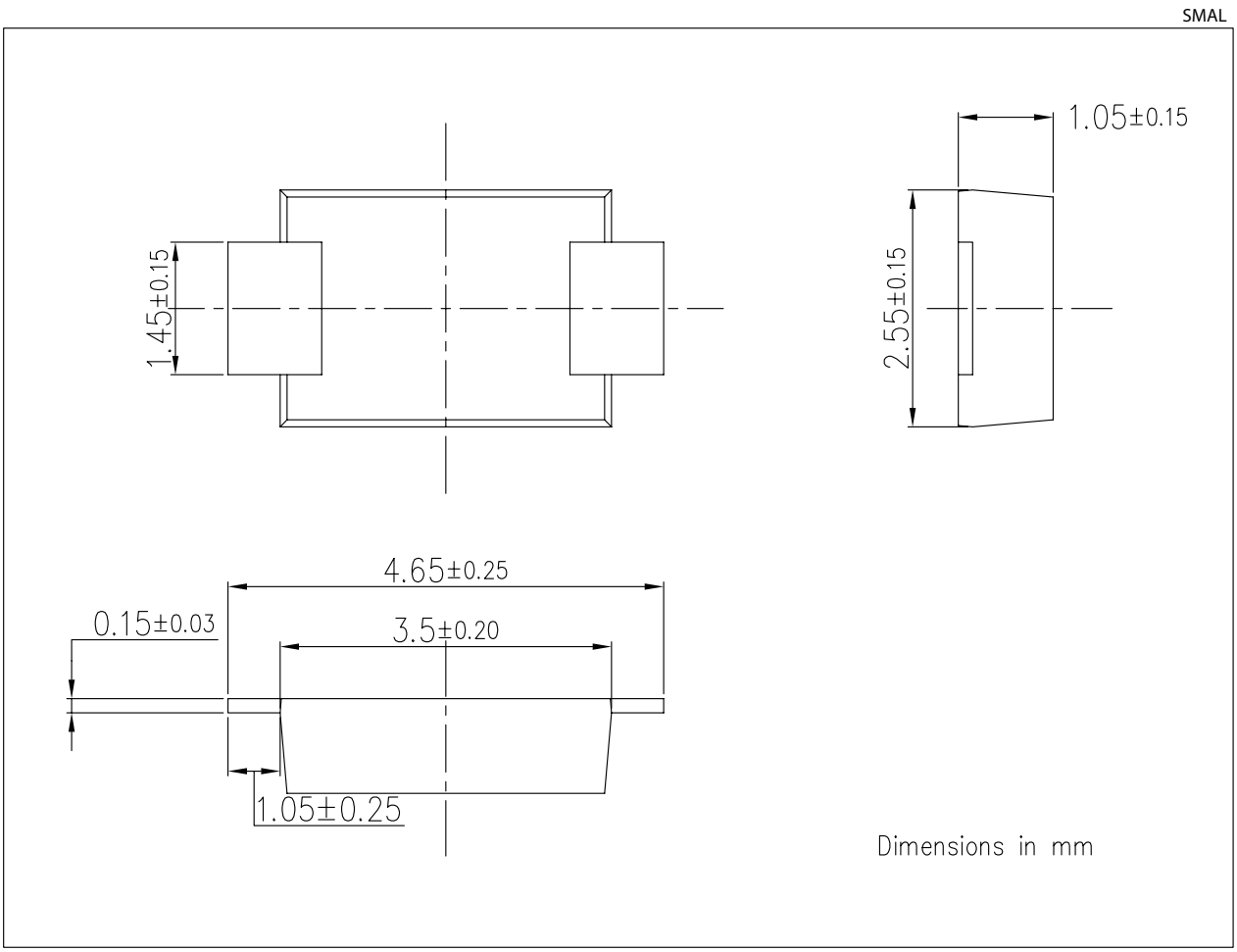


Fig. 8. Part marking

7. Package outline



8. Legal information

Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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[2] The term 'short data sheet' is explained in section "Definitions".
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