P1KSMBJ Series

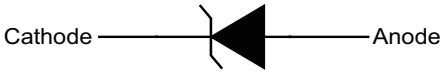
1000W Transient Voltage Suppressor

Rev.01 - 07 May 2022 Product data sheet

1. General description

P1KSMBJ series, 1000W transient voltage suppressor (TVS) in SMB package, designed to protect electronic circuits against damage induced by lightning surges or other transient voltage events.

Bi-directional



Uni-directional

2. Features and benefits

- Peak pulse power 1000W @ 10/1000μs waveform
- Excellent clamping capability
- Surface mount package for easy assembly and PCB space-saving
- Typical I_R < 1μA when V_{BR} min > 12V
- Fast response time: typically < 1.0ps from 0V to V_{BR} minimum
- IEC 61000-4-2 ESD 30kV (Air), 30kV (Contact)
- EFT protection of data lines in accordance with IEC 61000-4-4
- Guaranteed high temperature for reflow soldering: 260°C/10sec
- Mold compound complies to UL94V-0 flammability classification
- Meets MSL level 1, per J-STD-020
- Pb-free lead finish
- Halogen free and RoHS compliant

3. Applications

- Power supplies
- Industrial applications
- Power management circuits
- I/O interfaces

4. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
P1KSMBJxxxXX	SMB	P1KSMBJxxxXXJ	Tape and reel	3000	SMBJ	18-Oct-2020
eg. P1KSMBJ6.8CA	SMB	P1KSMBJ6.8CAJ	Tape and reel	3000	SMBJ	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]	1000	W
$P_{M(AV)}$	steady state power dissipation	on infinite heatsink at T_a = 50 °C	6.5	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	200	A
V_F	forward on-state voltage	I_F = 50 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 (Uni)	PN (Bi)	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					Uni	Bi
P1KSMBJ6.8A	P1KSMBJ6.8CA	5.8	6.45	7.14	10	10.5	95.2	900	1B06EJ	1B06EJ
P1KSMBJ7.5A	P1KSMBJ7.5CA	6.4	7.13	7.88	10	11.3	88.5	400	1B07FJ	1B07FJ
P1KSMBJ8.2A	P1KSMBJ8.2CA	7.02	7.79	8.61	10	12.1	82.6	180	1B08tJ	1B08tJ
P1KSMBJ9.1A	P1KSMBJ9.1CA	7.78	8.65	9.55	1	13.4	74.6	45	1B09oJ	1B09oJ
P1KSMBJ10A	P1KSMBJ10CA	8.55	9.5	10.5	1	14.5	69	8	1B010J	1B010J
P1KSMBJ11A	P1KSMBJ11CA	9.4	10.5	11.6	1	15.6	64.1	4	1B011J	1B011J
P1KSMBJ12A	P1KSMBJ12CA	10.2	11.4	12.6	1	16.7	59.9	1	1B012J	1B012J
P1KSMBJ13A	P1KSMBJ13CA	11.1	12.4	13.7	1	18.2	54.9	1	1B013J	1B013J
P1KSMBJ15A	P1KSMBJ15CA	12.8	14.3	15.8	1	21.2	47.2	1	1B015J	1B015J
P1KSMBJ16A	P1KSMBJ16CA	13.6	15.2	16.8	1	22.5	44.4	1	1B016J	1B016J
P1KSMBJ18A	P1KSMBJ18CA	15.3	17.1	18.9	1	25.5	39.2	1	1B018J	1B018J
P1KSMBJ20A	P1KSMBJ20CA	17.1	19	21	1	27.7	36.1	1	1B020J	1B020J
P1KSMBJ22A	P1KSMBJ22CA	18.8	20.9	23.1	1	30.6	32.7	1	1B022J	1B022J
P1KSMBJ24A	P1KSMBJ24CA	20.5	22.8	25.2	1	33.2	30.1	1	1B024J	1B024J
P1KSMBJ27A	P1KSMBJ27CA	23.1	25.7	28.4	1	37.5	26.7	1	1B027J	1B027J
P1KSMBJ30A	P1KSMBJ30CA	25.6	28.5	31.5	1	41.4	24.2	1	1B030J	1B030J
P1KSMBJ33A	P1KSMBJ33CA	28.2	31.4	34.7	1	45.7	21.9	1	1B033J	1B033J
P1KSMBJ36A	P1KSMBJ36CA	30.8	34.2	37.8	1	49.9	20	1	1B036J	1B036J
P1KSMBJ39A	P1KSMBJ39CA	33.3	37.1	41	1	53.9	18.6	1	1B039J	1B039J
P1KSMBJ43A	P1KSMBJ43CA	36.8	40.9	45.2	1	59.3	16.9	1	1B043J	1B043J
P1KSMBJ47A	P1KSMBJ47CA	40.2	44.7	49.4	1	64.8	15.4	1	1B047J	1B047J
P1KSMBJ51A	P1KSMBJ51CA	43.6	48.5	53.6	1	70.1	14.3	1	1B051J	1B051J
P1KSMBJ56A	P1KSMBJ56CA	47.8	53.2	58.8	1	77	13	1	1B056J	1B056J
P1KSMBJ62A	P1KSMBJ62CA	53	58.9	65.1	1	85	11.8	1	1B062J	1B062J
P1KSMBJ68A	P1KSMBJ68CA	58.1	64.6	71.4	1	92	10.9	1	1B068J	1B068J
P1KSMBJ75A	P1KSMBJ75CA	64.1	71.3	78.8	1	103	9.7	1	1B075J	1B075J
P1KSMBJ82A	P1KSMBJ82CA	70.1	77.9	86.1	1	113	8.8	1	1B082J	1B082J
P1KSMBJ91A	P1KSMBJ91CA	77.8	86.5	95.5	1	125	8	1	1B091J	1B091J
P1KSMBJ100A	P1KSMBJ100CA	85.5	95	105	1	137	7.3	1	1B100J	1B100J

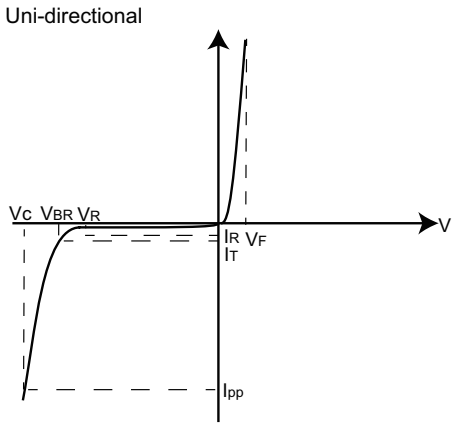


Fig. 1. I-V curve characteristics; Uni-directional

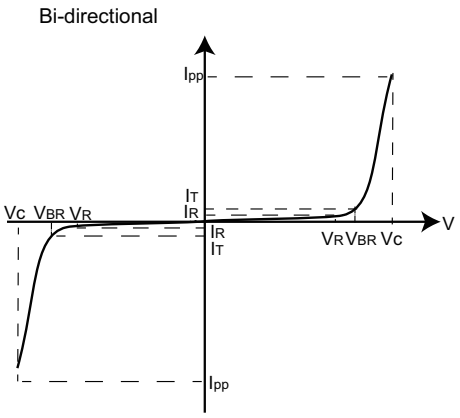


Fig. 2. I-V curve characteristics; Bi-directional

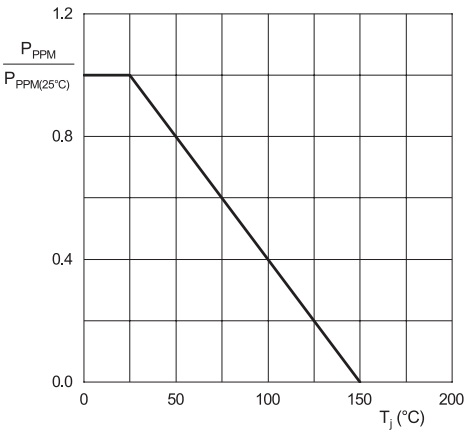


Fig. 3. Peak pulse power derating curve

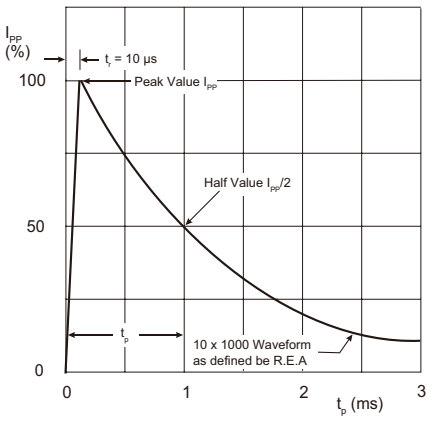


Fig. 4. Pulse waveform

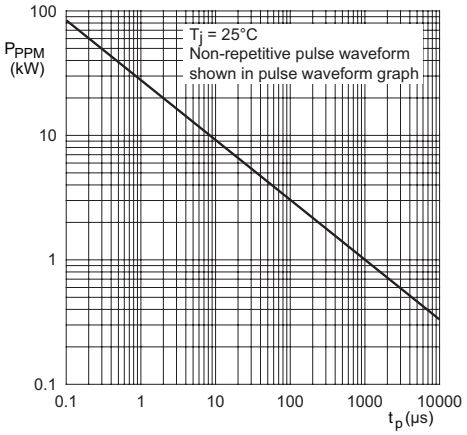


Fig. 5. Peak pulse power rating curve

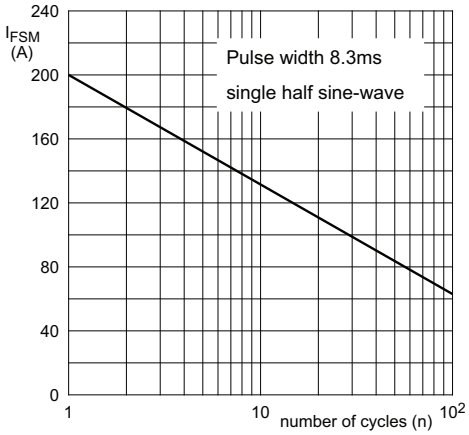


Fig. 6. Maximum non-repetitive surge current Uni-directional only

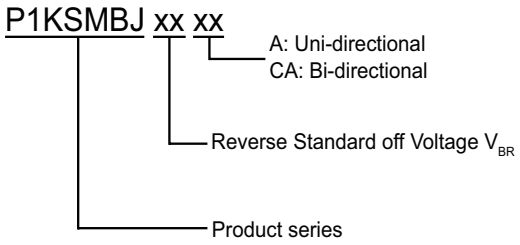


Fig. 8. Part numbering

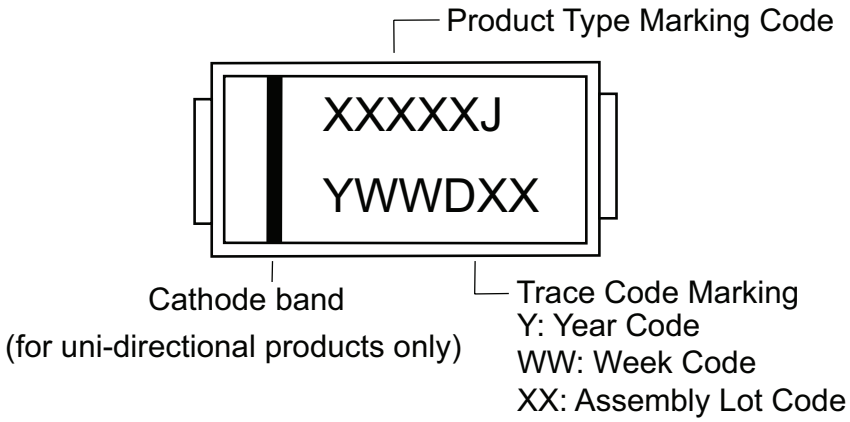
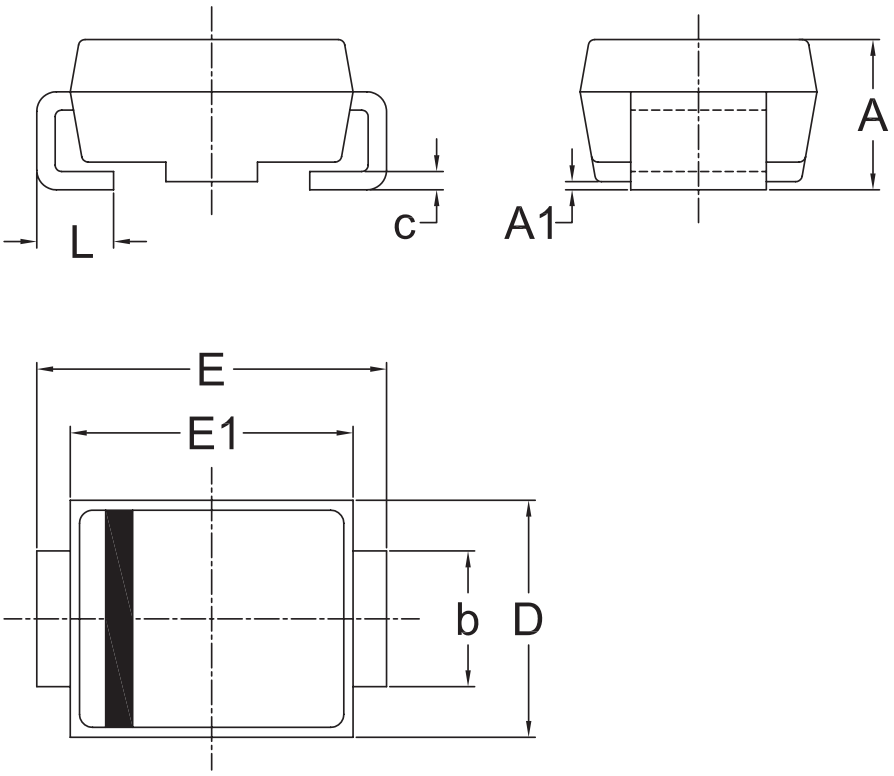


Fig. 9. Part marking

7. Package outline

SMB



UNIT		A	A1	b	c	D	E	E1	L
mm	Max	2.50	0.30	2.15	0.25	3.75	5.54	4.65	1.50
	Min	2.00	0.00	1.85	0.15	3.45	5.04	4.35	0.80

Remark: Dimensions D and E1 do not include mold flash & gate remain.

8. Legal information

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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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