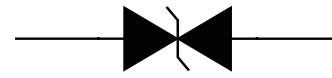


1. General description

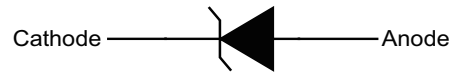
P1KSMBJ series, 1000W transient voltage suppressor (TVS) in SMB package, designed to protect electronic circuits against damage induced by lightning surges or other transient voltage events.

2. Features and benefits

- Peak pulse power 1000W @ 10/1000 μ s waveform
- Excellent clamping capability
- Surface mount package for easy assembly and PCB space-saving
- Typical $I_R < 1\mu A$ 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 $^{\circ}C/10sec$
- 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



Bi-directional



Uni-directional

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).

$T_j = 25^{\circ}C$ 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 $T_a = 50^{\circ}C$	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	$^{\circ}C$
T_j	operating temperature range		-65 to 150	$^{\circ}C$

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

6. Characteristics

$T_j = 25\text{ }^\circ\text{C}$ 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	1B08J	1B08J
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

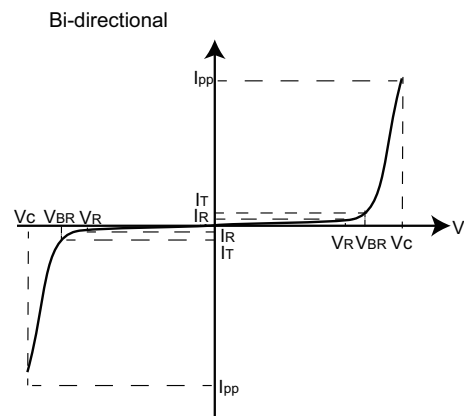


Fig. 2. I-V curve characteristics; Bi-directional



Fig. 3. Peak pulse power derating curve



Fig. 4. Pulse waveform

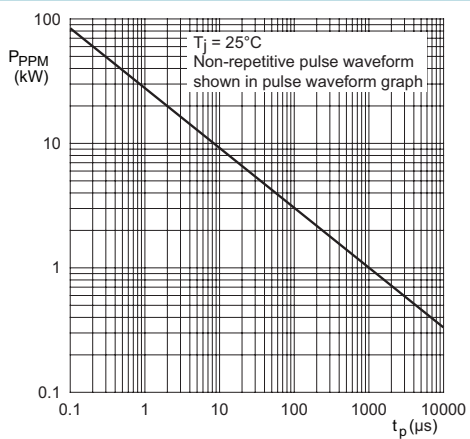


Fig. 5. Peak pulse power rating curve

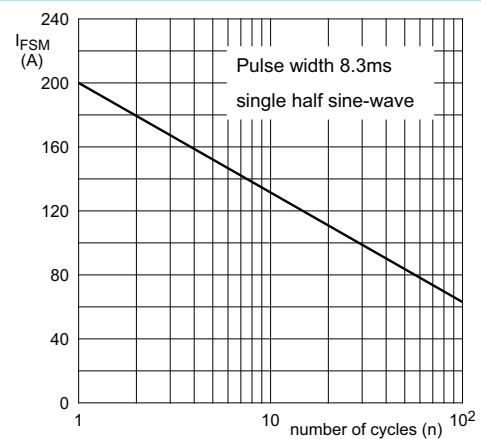


Fig. 6. Maximum non-repetitive surge current Uni-directional only

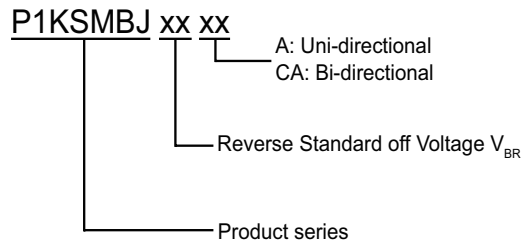


Fig. 8. Part numbering

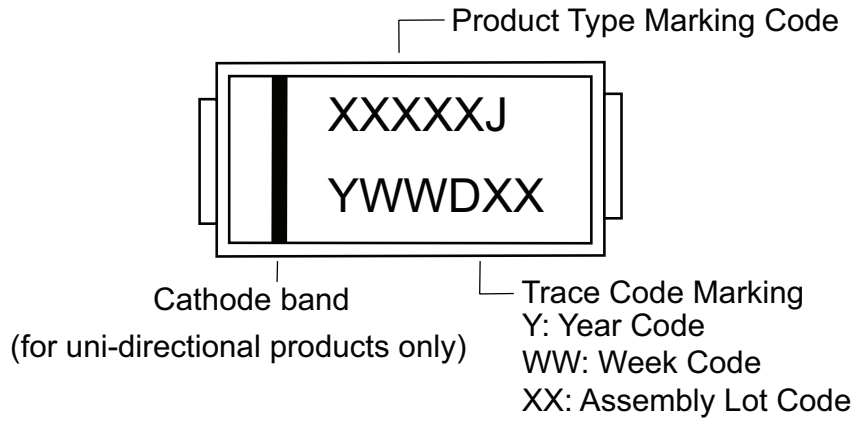


Fig. 9. Part marking

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

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.

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.ween-semi.com>.

Definitions

Draft — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. WeEn Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

Short data sheet — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local WeEn Semiconductors sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

Product specification — The information and data provided in a Product data sheet shall define the specification of the product as agreed between WeEn Semiconductors and its customer, unless WeEn Semiconductors and customer have explicitly agreed otherwise in writing. In no event however, shall an agreement be valid in which the WeEn Semiconductors product is deemed to offer functions and qualities beyond those described in the Product data sheet.

Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, WeEn Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. WeEn Semiconductors takes no responsibility for the content in this document if provided by an information source outside of WeEn Semiconductors.

In no event shall WeEn Semiconductors be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, WeEn Semiconductors' aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the *Terms and conditions of commercial sale* of WeEn Semiconductors.

Right to make changes — WeEn Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — WeEn Semiconductors products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or equipment, nor in applications where failure or malfunction of an WeEn Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. WeEn Semiconductors and its suppliers accept no liability for inclusion and/or use of WeEn Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Quick reference data — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. WeEn Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using WeEn Semiconductors products, and WeEn Semiconductors accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the WeEn Semiconductors product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

WeEn Semiconductors does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using WeEn Semiconductors products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). WeEn does not accept any liability in this respect.

Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) will cause permanent damage to the device. Limiting values are stress ratings only and (proper) operation of the device at these or any other conditions above those given in the Recommended operating conditions section (if present) or the Characteristics sections of this document is not warranted. Constant or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the device.

No offer to sell or license — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Non-automotive qualified products — Unless this data sheet expressly states that this specific WeEn Semiconductors product is automotive qualified, the product is not suitable for automotive use. It is neither qualified nor tested in accordance with automotive testing or application requirements. WeEn Semiconductors accepts no liability for inclusion and/or use of non-automotive qualified products in automotive equipment or applications.

In the event that customer uses the product for design-in and use in automotive applications to automotive specifications and standards, customer (a) shall use the product without WeEn Semiconductors' warranty of the product for such automotive applications, use and specifications, and (b) whenever customer uses the product for automotive applications beyond WeEn Semiconductors' specifications such use shall be solely at customer's own risk, and (c) customer fully indemnifies WeEn Semiconductors for any liability, damages or failed product claims resulting from customer design and use of the product for automotive applications beyond WeEn Semiconductors' standard warranty and WeEn Semiconductors' product specifications.