



# 产品承认书

## Product Approval Sheet

编号 NO.	5.0SMDJ-A/0-B
日期 Date	2021.09.03

客户 (Customer)	
品名 (Product)	TVS
系列 (Series)	5.0SMDJ

料号 (Part No.)		规格描述 (Specification)	备注 (Remark)
贝特电子 Betterfuse			
客户 Customer			

### 环保符合性说明 (Instructions for HSF)

本产品符合:  RoHS 2.0  HF  REACH  LEAD FREE  其他备注

供应商-贝特 Supplier-Better fuse		确认合格章 (Confirm qualified Signet)	客 户 (Customer)	零件承认章 (Approval Signet)
制 作 Make	陈文珊			
审 核 Check	高飞			
确 认 Approval	项伟荣			

### 联络 (Contact)

业务 (Sales)	电话 (Telephone)	手机 (Cellphone)	邮箱 (E-mail)

零件承认后敬请回签一份给我司留存, 或将承认后的封面回传至我司邮箱, 谢谢!

Please sign a copy of the parts for our company or fax the acknowledged cover to our E-mail. Thanks!



## 变更履历 Modified Information

序号 (No.)	日期 (Date)	修订内容 (Modified Content)	页码 (Page)	版本 (Edition)	制定人 (Prepared by)	审核人 (Checked by)
1	2021.09.03	Draft	/	A/0	Wenshan Chen	Fei Gao

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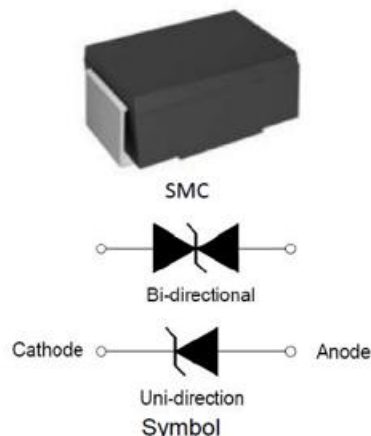
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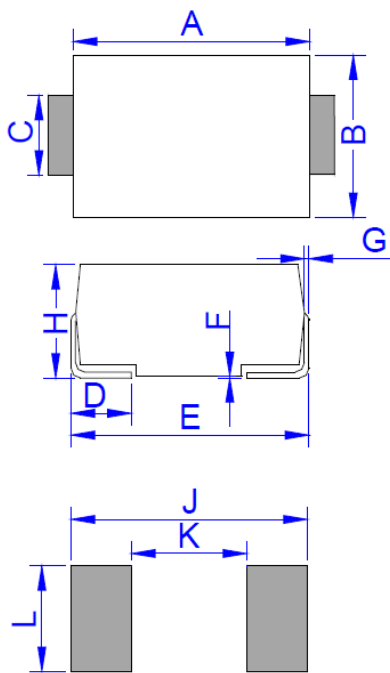


## 1. Scope and Description

- ✧ For surface mounted applications in order to optimize board space
- ✧ Low profile package
- ✧ Built-in strain relief
- ✧ Glass passivated junction
- ✧ Low inductance
- ✧ Excellent clamping capability
- ✧ Fast response time
- ✧ Typical  $I_R$  less than  $2\mu A$  above 22V
- ✧ High Temperature soldering:  $260^{\circ}C/10$  seconds at terminals
- ✧ Plastic package has underwriters laboratory flammability 94V-0
- ✧ Meets MSL level 1, per J-STD-020
- ✧ 5000W peak pulse power capability at 10/1000 $\mu s$  waveform, repetition rate (duty cycle): 0.01%



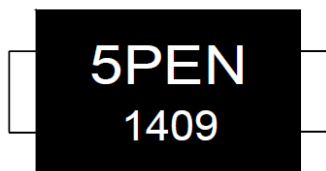
## 2. Size



DO-214AB (SMC)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	6.60	7.11	0.260	0.280
B	5.59	6.20	0.220	0.244
C	2.75	3.20	0.108	0.126
D	0.76	1.52	0.030	0.060
E	7.74	8.13	0.305	0.320
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	8.12		0.320	
K		4.69		0.185
L	3.07		0.121	

## 3. Marking



5PEN: Device Marking Code  
1409: In ninth week, 2014

4. Electrical Characteristics(T<sub>A</sub>=25℃)

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Reverse Leakage @V <sub>RWM</sub>	Breakdown Voltage @I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current
Uni-polar	Bi-polar	UNI	BI	V <sub>RWM</sub> (V)	I <sub>R</sub> (μA)	V <sub>BR</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A) <sup>①</sup>
5.0SMDJ11A	5.0SMDJ11CA	5PEN	5BEN	11.0	800	12.20~13.50	10	18.2	275.00
5.0SMDJ12A	5.0SMDJ12CA	5PEP	5BEP	12.0	800	13.30~14.70	10	19.9	252.00
5.0SMDJ13A	5.0SMDJ13CA	5PEQ	5BEQ	13.0	500	14.40~15.90	10	21.5	233.00
5.0SMDJ14A	5.0SMDJ14CA	5PER	5BER	14.0	200	15.60~17.20	10	23.2	216.00
5.0SMDJ15A	5.0SMDJ15CA	5PES	5BES	15.0	100	16.70~18.50	1	24.4	205.00
5.0SMDJ16A	5.0SMDJ16CA	5PET	5BET	16.0	50	17.80~19.70	1	26.0	193.00
5.0SMDJ17A	5.0SMDJ17CA	5PEU	5BEU	17.0	20	18.90~20.90	1	27.6	181.00
5.0SMDJ18A	5.0SMDJ18CA	5PEV	5BEV	18.0	10	20.00~22.10	1	29.2	172.00
5.0SMDJ20A	5.0SMDJ20CA	5PEW	5BEW	20.0	5	22.20~24.50	1	32.4	155.00
5.0SMDJ22A	5.0SMDJ22CA	5PEX	5BEX	22.0	5	24.40~26.90	1	35.5	141.00
5.0SMDJ24A	5.0SMDJ24CA	5PEZ	5BEZ	24.0	2	26.70~29.50	1	38.9	129.00
5.0SMDJ26A	5.0SMDJ26CA	5PFE	5BFE	26.0	2	28.90~31.90	1	42.1	119.00
5.0SMDJ28A	5.0SMDJ28CA	5PFG	5BFG	28.0	2	31.10~34.40	1	45.4	110.00
5.0SMDJ30A	5.0SMDJ30CA	5PFK	5BFK	30.0	2	33.30~36.80	1	48.4	103.00
5.0SMDJ33A	5.0SMDJ33CA	5PFM	5BFM	33.0	2	36.70~40.60	1	53.3	93.90
5.0SMDJ36A	5.0SMDJ36CA	5PFP	5BFP	36.0	2	40.00~44.20	1	58.1	86.10
5.0SMDJ40A	5.0SMDJ40CA	5PFR	5BFR	40.0	2	44.40~49.10	1	64.5	77.60
5.0SMDJ43A	5.0SMDJ43CA	5PFT	5BFT	43.0	2	47.80~52.80	1	69.4	72.10
5.0SMDJ45A	5.0SMDJ45CA	5PFV	5BFV	45.0	2	50.00~55.30	1	72.7	68.80
5.0SMDJ48A	5.0SMDJ48CA	5PFX	5BFX	48.0	2	53.30~58.90	1	77.4	64.70
5.0SMDJ51A	5.0SMDJ51CA	5PFZ	5BFZ	51.0	2	56.70~62.70	1	82.4	60.70
5.0SMDJ54A	5.0SMDJ54CA	5PGE	5BGE	54.0	2	60.00~66.30	1	87.1	57.50
5.0SMDJ58A	5.0SMDJ58CA	5PGG	5BGG	58.0	2	64.40~71.20	1	93.6	53.50



Part Number		Device Marking Code		Reverse Stand-Off Voltage	Reverse Leakage @V <sub>RWM</sub>	Breakdown Voltage @I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current
Uni-polar	Bi-polar	UNI	BI	V <sub>RWM</sub> (V)	I <sub>R</sub> (μA)	V <sub>BR</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A) <sup>①</sup>
5.0SMDJ60A	5.0SMDJ60CA	5PGK	5BGK	60.0	2	66.70~73.70	1	96.8	51.70
5.0SMDJ64A	5.0SMDJ64CA	5PGM	5BGM	64.0	2	71.10~78.60	1	103.0	48.60
5.0SMDJ70A	5.0SMDJ70CA	5PGP	5BGP	70.0	2	77.80~86.00	1	113.0	44.30
5.0SMDJ75A	5.0SMDJ75CA	5PGR	5BGR	75.0	2	83.30~92.10	1	121.0	41.40
5.0SMDJ78A	5.0SMDJ78CA	5PGT	5BGT	78.0	2	86.70~95.80	1	126.0	39.70
5.0SMDJ85A	5.0SMDJ85CA	5PGV	5BGV	85.0	2	94.40~104.00	1	137.0	36.50
5.0SMDJ90A	5.0SMDJ90CA	5PGX	5BGX	90.0	2	100.00~111.00	1	146.0	34.30
5.0SMDJ100A	5.0SMDJ100CA	5PGZ	5BGZ	100.0	2	111.00~123.00	1	162.0	30.90
5.0SMDJ110A	5.0SMDJ110CA	5PHE	5BHE	110.0	2	122.00~135.00	1	177.0	28.30
5.0SMDJ120A	5.0SMDJ120CA	5PHG	5BHG	120.0	2	133.00~147.00	1	193.0	26.00
5.0SMDJ130A	5.0SMDJ130CA	5PHK	5BHK	130.0	2	144.00~159.00	1	209.0	24.00
5.0SMDJ150A	5.0SMDJ150CA	5PHM	5BHM	150.0	2	167.00~185.00	1	243.0	20.60
5.0SMDJ160A	5.0SMDJ160CA	5PHP	5BHP	160.0	2	178.00~197.00	1	259.0	19.30
5.0SMDJ170A	5.0SMDJ170CA	5PHR	5BHR	170.0	2	189.00~209.00	1	275.0	18.20

① Surge waveform: 10/1000μs

VR: Stand-off Voltage -- Maximum voltage that can be applied

VBR: Breakdown Voltage

VC: Clamping Voltage -- Peak voltage measured across the suppressor at a specified I<sub>pp</sub>

IR: Reverse Leakage Current



## 5. Ratings And V-I Characteristics Curves( $T_A=25^{\circ}\text{C}$ , Unless otherwise noted)

FIG.1: V-I curve characteristics  
(Uni-directional)

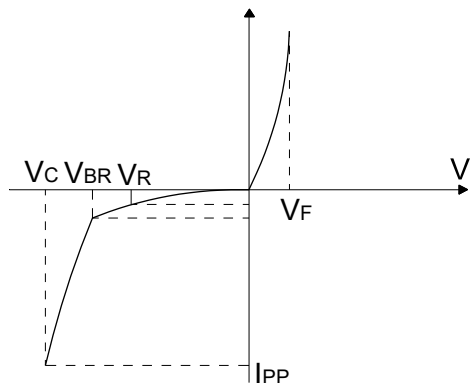


FIG.2: V-I curve characteristic  
(Bi-directional)

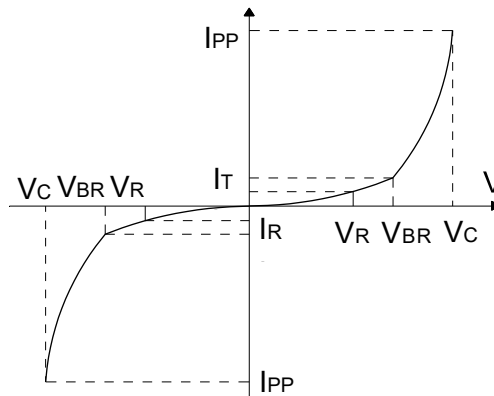


FIG.3: Pulse waveform

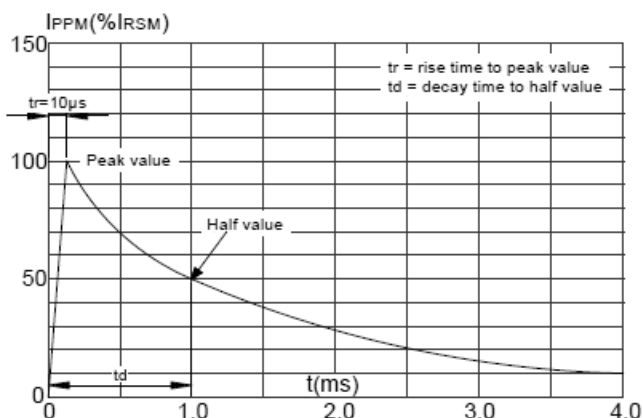
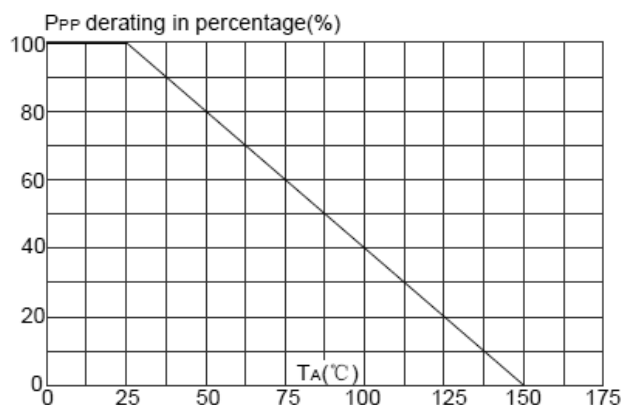


FIG.4: Pulse derating curve



## 6. Absolute Maximum Ratings( $T_A=25^{\circ}\text{C}$ , RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	$T_{stg}$	-55 to +150	$^{\circ}\text{C}$
Operating junction temperature range	$T_j$	-55 to +150	$^{\circ}\text{C}$
Steady state power dissipation at $T_L=75^{\circ}\text{C}$	PM(AV)	10	W
Peak pulse power dissipation on 10/1000 $\mu\text{s}$ waveform	PPP	5000	W
Maximum Instantaneous Forward Voltage at 100A for Unidirectional	VF	5.0	V



## 7. Package Information

PART No.	PACKAGE	QUANTITY	TAPE&REEL
5.0SMDJXXCA/A	SMC(DO214AB)	3,000	13inch

## 8. Soldering Parameters

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquid us)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C

