



产品承认书

Product Approval Sheet

编号 NO.	SMAJ-A/0-B
日期 Date	2021.10.15

客户 (Customer)	
品名 (Product)	TVS
系列 (Series)	SMAJ

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)
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目录 (Table of contents)

Cover 1

Modified Information 2

1. Scope and Description 3

2. Size 3

3. Marking 3

4. Electrical Characteristics 4

5. Ratings And V-I Characteristics Curves 6

6. Absolute Maximum Ratings 6

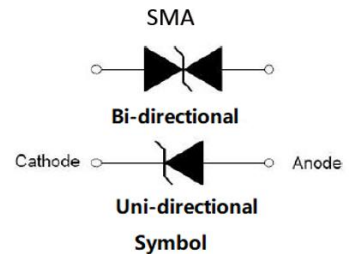
7. Package Information 7

8. Soldering Parameters 7

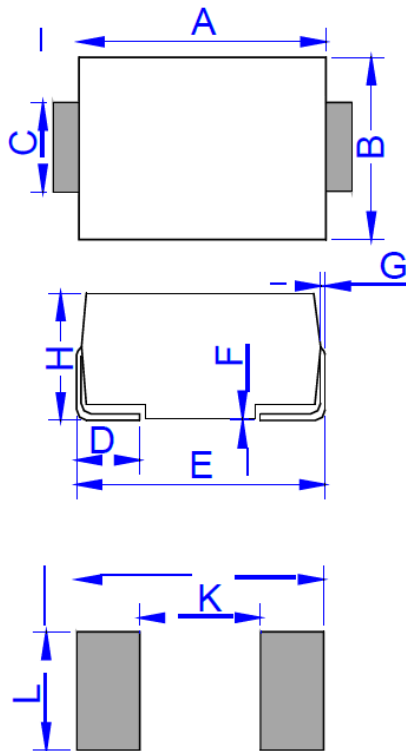


1. Scope and Description

- ✧ Glass passivated or planar junction.
- ✧ Low profile package and low inductance.
- ✧ Excellent clamping capability.
- ✧ Repetition rate(duty cycle): 0.01%.
- ✧ 400W Peak Pulse power capability at 10×1000μs waveform.
- ✧ Typical I_R less than 1μA above 10V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature soldering: 260°C/10s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020.
- ✧ For surface mounted applications in order to optimize board space.



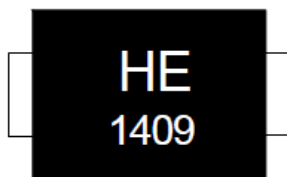
2. Size



DO-214AC(SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.99	4.65	0.157	0.183
B	2.50	2.90	0.098	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.93	5.28	0.194	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.98	2.41	0.078	0.095
J	6.80		0.268	
K		2.60		0.102
L	2.40		0.094	

3. Marking



HE: Device Marking Code
1409: In ninth week, 2014

4. Electrical Characteristics($T_A=25^{\circ}\text{C}$)

Part Number		Marking		V_R	$I_R@V_R$	$V_{BR}@I_T$		I_T	$V_C@I_{PP}$	I_{PP}°
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	Min(V)	Max(V)	mA	Max(V)	A
SMAJ5.0A	SMAJ5.0CA	HE	TE	5.0	800	6.40	7.00	10	9.2	43.5
SMAJ6.0A	SMAJ6.0CA	HG	TG	6.0	800	6.67	7.37	10	10.3	38.8
SMAJ6.5A	SMAJ6.5CA	HK	TK	6.5	500	7.22	7.98	10	11.2	35.7
SMAJ7.0A	SMAJ7.0CA	HM	TM	7.0	200	7.78	8.60	10	12.0	33.3
SMAJ7.5A	SMAJ7.5CA	HP	TP	7.5	100	8.33	9.21	1	12.9	31.0
SMAJ8.0A	SMAJ8.0CA	HR	TR	8.0	50	8.89	9.83	1	13.6	29.4
SMAJ8.5A	SMAJ8.5CA	HT	TT	8.5	20	9.44	10.40	1	14.4	27.8
SMAJ9.0A	SMAJ9.0CA	HV	TV	9.0	10	10.00	11.10	1	15.4	26.0
SMAJ10A	SMAJ10CA	HX	TX	10.0	5	11.10	12.30	1	17.0	23.5
SMAJ11A	SMAJ11CA	HZ	TZ	11.0	1	12.20	13.50	1	18.2	22.0
SMAJ12A	SMAJ12CA	IE	TE	12.0	1	13.30	14.70	1	19.9	20.1
SMAJ13A	SMAJ13CA	IG	UG	13.0	1	14.40	15.90	1	21.5	18.6
SMAJ14A	SMAJ14CA	IK	UK	14.0	1	15.60	17.20	1	23.2	17.3
SMAJ15A	SMAJ15CA	IM	UM	15.0	1	16.70	18.50	1	24.4	16.4
SMAJ16A	SMAJ16CA	IP	UP	16.0	1	17.80	19.70	1	26.0	15.4
SMAJ17A	SMAJ17CA	IR	UR	17.0	1	18.90	20.90	1	27.6	14.5
SMAJ18A	SMAJ18CA	IT	UT	18.0	1	20.00	22.10	1	29.2	13.7
SMAJ20A	SMAJ20CA	IV	UV	20.0	1	22.20	24.50	1	32.4	12.4
SMAJ22A	SMAJ22CA	IX	UX	22.0	1	24.40	26.90	1	35.5	11.3
SMAJ24A	SMAJ24CA	IZ	UZ	24.0	1	26.70	29.50	1	38.9	10.3
SMAJ26A	SMAJ26CA	JE	VE	26.0	1	28.90	31.90	1	42.1	9.5
SMAJ28A	SMAJ28CA	JG	VG	28.0	1	31.10	34.40	1	45.4	8.8
SMAJ30A	SMAJ30CA	JK	VK	30.0	1	33.30	36.80	1	48.4	8.3
SMAJ33A	SMAJ33CA	JM	VM	33.0	1	36.70	40.60	1	53.3	7.5
SMAJ36A	SMAJ36CA	JP	VP	36.0	1	40.00	44.20	1	58.1	6.9
SMAJ40A	SMAJ40CA	JR	VR	40.0	1	44.40	49.10	1	64.5	6.2
SMAJ43A	SMAJ43CA	JT	VT	43.0	1	47.80	52.80	1	69.4	5.8
SMAJ45A	SMAJ45CA	JV	VV	45.0	1	50.00	55.30	1	72.7	5.5
SMAJ48A	SMAJ48CA	JX	VX	48.0	1	53.30	58.90	1	77.4	5.2



Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	Min(V)	Max(V)	mA	Max(V)	A
SMAJ51A	SMAJ51CA	JZ	VZ	51.0	1	56.70	62.70	1	82.4	4.9
SMAJ54A	SMAJ54CA	RE	WE	54.0	1	60.00	66.30	1	87.1	4.6
SMAJ58A	SMAJ58CA	RG	WG	58.0	1	64.40	71.20	1	93.6	4.3
SMAJ60A	SMAJ60CA	RK	WK	60.0	1	66.70	73.70	1	96.8	4.1
SMAJ64A	SMAJ64CA	RM	WM	64.0	1	71.10	78.60	1	103.0	3.9
SMAJ70A	SMAJ70CA	RP	WP	70.0	1	77.80	86.00	1	113.0	3.6
SMAJ75A	SMAJ75CA	RR	WR	75.0	1	83.30	92.10	1	121.0	3.3
SMAJ78A	SMAJ78CA	RT	WT	78.0	1	86.70	95.80	1	126.0	3.2
SMAJ85A	SMAJ85CA	RV	WV	85.0	1	94.40	104.0	1	137.0	2.9
SMAJ90A	SMAJ90CA	RX	WX	90.0	1	100.0	111.0	1	146.0	2.8
SMAJ100A	SMAJ100CA	RZ	WZ	100.0	1	100.0	111.0	1	162.0	2.5
SMAJ110A	SMAJ110CA	SE	XE	110.0	1	111.0	123.0	1	177.0	2.3
SMAJ120A	SMAJ120CA	SG	XG	120.0	1	122.0	135.0	1	193.0	2.1
SMAJ130A	SMAJ130CA	SK	XK	130.0	1	133.0	147.0	1	209.0	1.9
SMAJ150A	SMAJ150CA	SM	XM	150.0	1	144.0	159.0	1	243.0	1.7
SMAJ160A	SMAJ160CA	SP	XP	160.0	1	167.0	185.0	1	259.0	1.6
SMAJ170A	SMAJ170CA	SR	XR	170.0	1	178.0	197.0	1	275.0	1.5
SMAJ180A	SMAJ180CA	ST	XT	180.0	1	189.0	209.0	1	292.0	1.4
SMAJ200A	SMAJ200CA	SV	XV	200.0	1	201.0	222.0	1	324.0	1.3
SMAJ220A	SMAJ220CA	SX	XX	220.0	1	211.0	234.0	1	356.0	1.1
SMAJ250A	SMAJ250CA	SZ	XZ	250.0	1	224.0	247.0	1	405.0	1.0
SMAJ300A	SMAJ300CA	ZE	YE	300.0	1	233.0	258.0	1	486.0	0.8
SMAJ350A	SMAJ350CA	ZG	YG	350.0	1	391.0	432.0	1	567.0	0.7
SMAJ400A	SMAJ400CA	ZK	YK	400.0	1	447.0	494.0	1	648.0	0.6
SMAJ440A	SMAJ440CA	ZM	YM	440.0	1	492.0	543.0	1	713.0	0.6

① Surge waveform: 10/1000μs

V_R: Stand-off voltage -- maximum voltage that can be appliedV_{BR}: Breakdown voltageV_C: Clamping voltage -- peak voltage measured across the suppressor at a specified IPPI_R: 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)

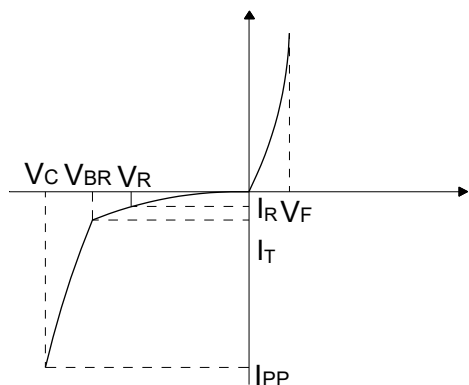


FIG.2: V-I curve characteristic
(Bi-directional)

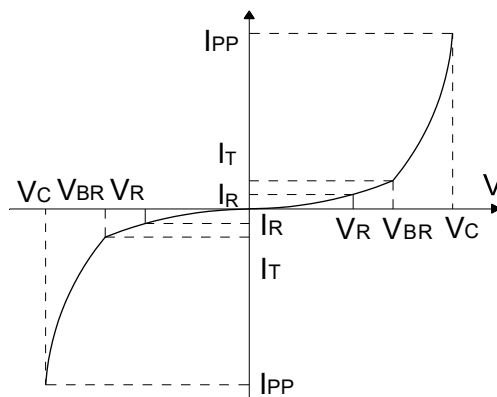


FIG.3: Pulse waveform

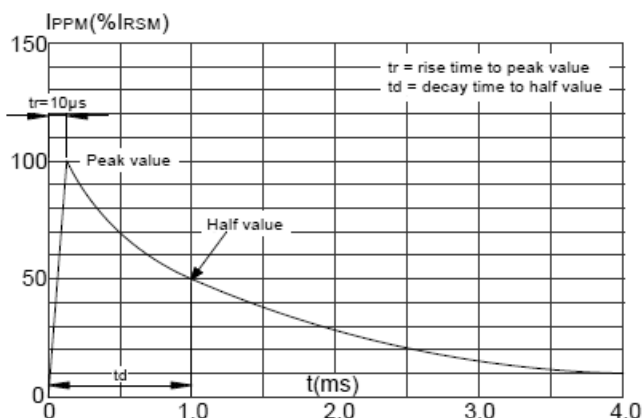
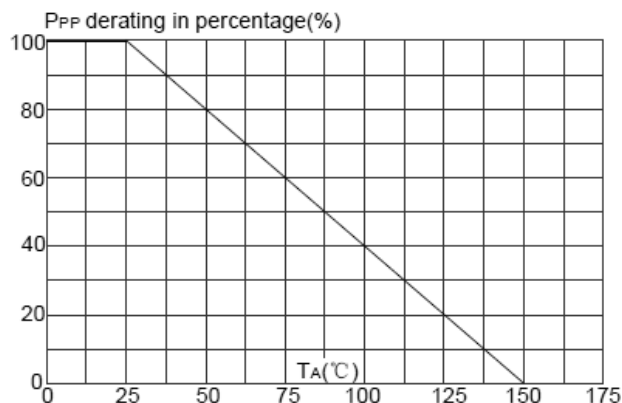


FIG.4: Pulse derating curve



6. Absolute Maximum Ratings($T_A=25^{\circ}\text{C}$, $\text{RH}=45\%-75\%$, 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 $T_L=75^{\circ}\text{C}$	$P_{\text{M(AV)}}$	3.3	W
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	400	W
Maximum Instantaneous Forward Voltage at 30A for Unidirectional	V_{F}	5.0	V



7. Package Information

Part No.	Package	Quantity (pcs)	Tape&Reel
SMAJxxCA/A	SMA(DO-214AC)	5,000	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

