



产品承认书

Product Approval Sheet

编号 NO.	P4SMA-A/0-B
日期 Date	2021.10.23

客户 (Customer)	
品名 (Product)	TVS
系列 (Series)	P4SMA

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			

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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	2021.10.23	Draft	/	A/0	Wenshan Chen	Fei Gao

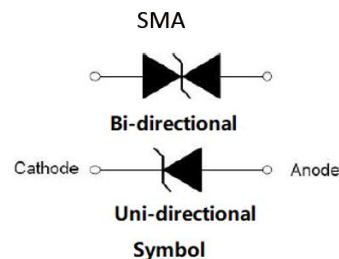
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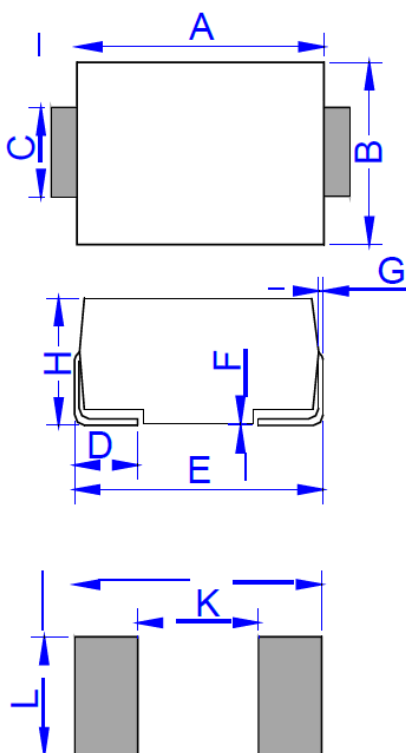


1. Scope and Description

- ◇ 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 12V.
- ◇ 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



6V8A: Device Marking Code
1409: In ninth week, 2014

**4. Electrical Characteristics(T_A=25°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	V	A
P4SMA6.8A	P4SMA6.8CA	6V8A	6V8C	5.8	1000	6.45	7.14	10	10.5	39.0
P4SMA7.5A	P4SMA7.5CA	7V5A	7V5C	6.4	500	7.13	7.88	10	11.3	36.3
P4SMA8.2A	P4SMA8.2CA	8V2A	8V2C	7.02	200	7.79	8.61	10	12.1	33.9
P4SMA9.1A	P4SMA9.1CA	9V1A	9V1C	7.78	50	8.65	9.55	1	13.4	30.6
P4SMA10A	P4SMA10CA	10A	10C	8.55	10	9.50	10.50	1	14.5	28.3
P4SMA11A	P4SMA11CA	11A	11C	9.4	5	10.50	11.60	1	15.6	26.3
P4SMA12A	P4SMA12CA	12A	12C	10.2	5	11.40	12.60	1	16.7	24.6
P4SMA13A	P4SMA13CA	13A	13C	11.1	1	12.40	13.70	1	18.2	22.5
P4SMA15A	P4SMA15CA	15A	15C	12.8	1	14.30	15.80	1	21.2	19.3
P4SMA16A	P4SMA16CA	16A	16C	13.6	1	15.20	16.80	1	22.5	18.2
P4SMA18A	P4SMA18CA	18A	18C	15.3	1	17.10	18.90	1	25.2	16.1
P4SMA20A	P4SMA20CA	20A	20C	17.1	1	19.00	21.00	1	27.7	14.8
P4SMA22A	P4SMA22CA	22A	22C	18.8	1	20.90	23.10	1	30.6	13.4
P4SMA24A	P4SMA24CA	24A	24C	20.5	1	22.80	25.20	1	33.2	12.3
P4SMA27A	P4SMA27CA	27A	27C	23.1	1	25.70	28.40	1	37.5	10.9
P4SMA30A	P4SMA30CA	30A	30C	25.6	1	28.50	31.50	1	41.4	9.9
P4SMA33A	P4SMA33CA	33A	33C	28.2	1	31.40	34.70	1	45.7	9.0
P4SMA36A	P4SMA36CA	36A	36C	30.8	1	34.20	37.80	1	49.9	8.2
P4SMA39A	P4SMA39CA	39A	39C	33.3	1	37.10	41.00	1	53.9	7.6
P4SMA43A	P4SMA43CA	43A	43C	36.8	1	40.90	45.20	1	59.3	6.9
P4SMA47A	P4SMA47CA	47A	47C	40.2	1	44.70	49.40	1	64.8	6.3
P4SMA51A	P4SMA51CA	51A	51C	43.6	1	48.50	53.60	1	70.1	5.8
P4SMA56A	P4SMA56CA	56A	56C	47.8	1	53.20	58.80	1	77.0	5.2
P4SMA62A	P4SMA62CA	62A	62C	53.0	1	58.90	65.10	1	85.0	4.8
P4SMA68A	P4SMA68CA	68A	68C	58.1	1	64.60	71.40	1	92.0	4.4
P4SMA75A	P4SMA75CA	75A	75C	64.1	1	71.30	78.80	1	103.0	3.9
P4SMA82A	P4SMA82CA	82A	82C	70.1	1	77.90	86.10	1	113.0	3.6
P4SMA91A	P4SMA91CA	91A	91C	77.8	1	86.50	95.50	1	125.0	3.2
P4SMA100A	P4SMA100CA	100A	100C	85.5	1	95.00	105.0	1	137.0	3.0



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	V	A
P4SMA110A	P4SMA110CA	110A	110C	94.0	1	105.0	116.0	1	152.0	2.7
P4SMA120A	P4SMA120CA	120A	120C	102	1	114.0	126.0	1	165.0	2.5
P4SMA130A	P4SMA130CA	130A	130C	111	1	124.0	137.0	1	179.0	2.3
P4SMA150A	P4SMA150CA	150A	150C	128	1	143.0	158.0	1	207.0	2.0
P4SMA160A	P4SMA160CA	160A	160C	136	1	152.0	168.0	1	219.0	1.9
P4SMA170A	P4SMA170CA	170A	170C	145	1	162.0	179.0	1	234.0	1.8
P4SMA180A	P4SMA180CA	180A	180C	154	1	171.0	189.0	1	246.0	1.6
P4SMA200A	P4SMA200CA	200A	200C	171	1	190.0	210.0	1	274.0	1.5
P4SMA220A	P4SMA220CA	220A	220C	185	1	209.0	231.0	1	328.0	1.3
P4SMA250A	P4SMA250CA	250A	250C	214	1	237.0	263.0	1	344.0	1.2
P4SMA300A	P4SMA300CA	300A	300C	256	1	285.0	315.0	1	414.0	1.0
P4SMA350A	P4SMA350CA	350A	350C	300	1	332.0	368.0	1	482.0	0.9
P4SMA400A	P4SMA400CA	400A	400C	342	1	380.0	420.0	1	548.0	0.8
P4SMA440A	P4SMA440CA	440A	440C	376	1	418.0	462.0	1	602.0	0.7
P4SMA480A	P4SMA480CA	480A	480C	408	1	456.00	504.00	1	658.0	0.61
P4SMA510A	P4SMA510CA	510A	510C	434	1	485.00	535.00	1	698.0	0.57
P4SMA530A	P4SMA530CA	530A	530C	450	1	503.50	556.50	1	725.0	0.55
P4SMA540A	P4SMA540CA	540A	540C	459	1	513.00	567.00	1	740.0	0.54
P4SMA550A	P4SMA550CA	550A	550C	467	1	522.50	577.50	1	760.0	0.52
P4SMA600A	P4SMA600CA	600A	600C	510	1	570.00	630.00	1	828.0	0.48

① Surge waveform: 10/1000μs

V_R: Stand-off voltage -- maximum voltage that can be applied

V_{BR}: Breakdown voltage

V_C: Clamping voltage -- peak voltage measured across the suppressor at a specified IPP

I_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)

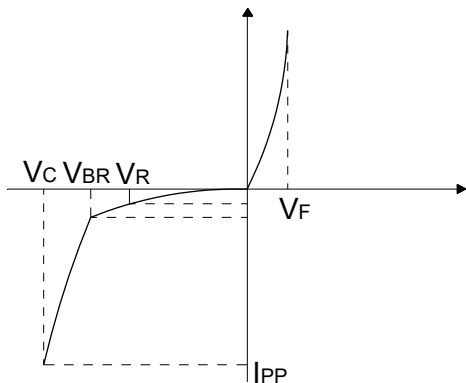


FIG.2: V-I curve characteristic (Bi-directional)

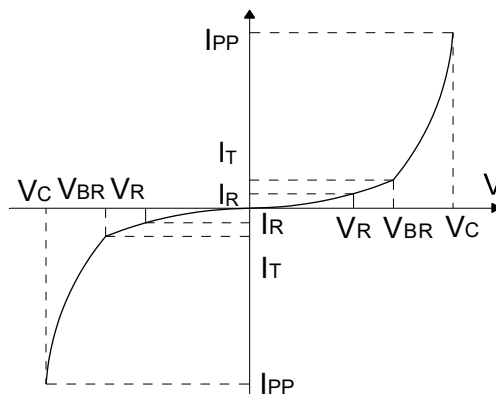


FIG.3: Pulse waveform

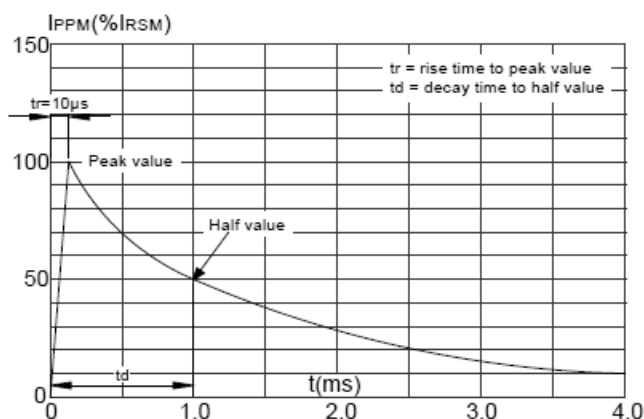
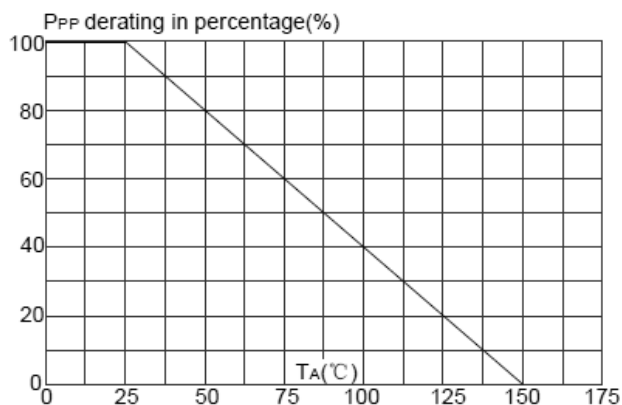


FIG.4: Pulse derating curve



6. Absolute Maximum Ratings($T_A=25^{\circ}\text{C}$, $RH=45\%-75\%$, 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 $T_L=75^{\circ}\text{C}$	$P_{M(AV)}$	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
P4SMAxxCA/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

