产 品 承 认 书
Product Approval Sheet

编号 NO.	20KPA-A/0-T
日期 Date	2021.10.20

客户 (Customer)	
品名 (Product)	TVS
系列 (Series)	20KPA

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

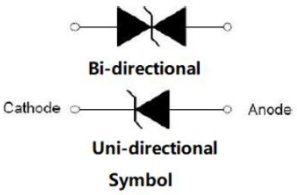
序号 (No.)	日期 (Date)	修订内容 (Modified Content)	页码 (Page)	版本 (Edition)	制定人 (Prepared by)	审核人 (Checked by)
1	2021.10.20	Draft	/	A/0	Wenshan Chen	Fei Gao

目 录 (Table of contents)

1. Description

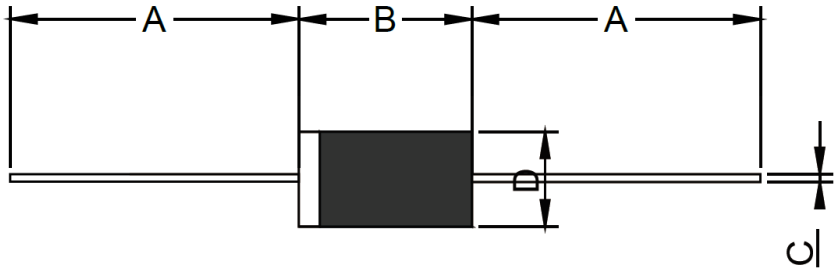
The 20KPA series of high current uni/bi-directional transient suppressors are designed for A.C. line protection and high power DC bus clamping applications. These devices offer uni/bi-directional port protection from 20 volts to 300 volts. They provide a clamping voltage lower than the avalanche voltage. Therefore, any voltage rise due to increased current conduction is contained to a minimum, providing the best possible protection level. They can also be connected in series and/or parallel to create very high capacity protection solutions.

2. Features



- ✧ Low zener impedance.
- ✧ Excellent clamping capability.
- ✧ JEDEC R-6/P-600 Molded Plastic.
- ✧ Repetition rate (duty cycle): 0.01%.
- ✧ Color band denoted cathode except bidirectional.
- ✧ High temperature soldering: 260℃/10s at terminals.
- ✧ 20000W Peak Pulse power capability at 10×1000μs waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ Glass passivated chip junction in R-6/P-600 package.
- ✧ Meets MSL level 1, per J-STD-020.

3. Size



Ref.	Dimensions			
	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	1.000	-	25.40	-
B	0.339	0.370	8.60	9.40
C	0.048	0.052	1.20	1.40
D	0.340	0.360	8.60	9.10

4. Electrical Characteristics(T_A=25℃)

Part Number		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	V	μA	Min(V)	Max(V)	mA	Max(V)	A
20KPA20A	20KPA20CA	20.0	5000	22.34	24.94	50	36.8	543.5
20KPA24A	20KPA24CA	24.0	5000	26.81	29.93	50	41.2	485.4
20KPA26A	20KPA26CA	26.0	2000	29.04	32.42	50	44.7	447.4
20KPA28A	20KPA28CA	28.0	1000	31.28	34.92	50	48.0	416.7
20KPA30A	20KPA30CA	30.0	250	33.51	37.41	5	51.5	388.3
20KPA32A	20KPA32CA	32.0	150	35.74	39.90	5	54.3	368.3
20KPA34A	20KPA34CA	34.0	50	38.00	42.42	5	57.5	347.8
20KPA36A	20KPA36CA	36.0	20	40.20	44.88	5	61.5	325.2
20KPA40A	20KPA40CA	40.0	15	44.70	49.90	5	67.8	295.0
20KPA44A	20KPA44CA	44.0	2	49.10	54.81	5	72.7	275.1
20KPA48A	20KPA48CA	48.0	2	49.10	59.83	5	79.4	251.9
20KPA52A	20KPA52CA	52.0	2	58.10	64.86	5	85.8	233.1
20KPA56A	20KPA56CA	56.0	2	62.60	69.88	5	92.6	216.0
20KPA60A	20KPA60CA	60.0	2	67.00	74.79	5	97.6	204.9
20KPA64A	20KPA64CA	64.0	2	71.50	79.82	5	104.0	192.3
20KPA68A	20KPA68CA	68.0	2	76.00	84.84	5	110.0	181.8
20KPA72A	20KPA72CA	72.0	2	80.40	89.75	5	116.0	172.4
20KPA80A	20KPA80CA	80.0	2	89.40	99.80	5	130.0	153.8
20KPA88A	20KPA88CA	88.0	2	98.30	109.73	5	142.0	140.8
20KPA96A	20KPA96CA	96.0	2	107.20	119.67	5	155.0	129.0
20KPA104A	20KPA104CA	104.0	2	116.20	129.72	5	168.0	119.0
20KPA112A	20KPA112CA	112.0	2	125.10	139.65	5	182.0	109.9
20KPA120A	20KPA120CA	120.0	2	134.00	149.59	5	194.0	103.1
20KPA132A	20KPA132CA	132.0	2	147.40	164.54	5	213.0	93.9
20KPA144A	20KPA144CA	144.0	2	160.80	179.50	5	232.0	86.2
20KPA160A	20KPA160CA	160.0	2	178.70	199.49	5	258.0	77.5
20KPA172A	20KPA172CA	172.0	2	192.10	214.44	5	277.0	72.2
20KPA180A	20KPA180CA	180.0	2	201.10	224.49	5	291.0	68.7
20KPA192A	20KPA192CA	192.0	2	214.50	239.45	5	309.0	64.7

Part Number		VR	IR@VR	VBR@IT		IT	VC@IPP	IPP①
Uni-Polar	Bi-Polar	V	μA	Min(V)	Max(V)	mA	Max(V)	A
20KPA204A	20KPA204CA	204.0	2	227.90	254.41	5	329.0	60.8
20KPA216A	20KPA216CA	216.0	2	241.30	269.37	5	348.0	57.5
20KPA232A	20KPA232CA	232.0	2	259.10	289.24	5	374.0	53.5
20KPA240A	20KPA240CA	240.0	2	268.10	299.28	5	387.0	51.7
20KPA256A	20KPA256CA	256.0	2	286.00	319.27	5	412.0	48.5
20KPA280A	20KPA280CA	280.0	2	312.80	349.18	5	451.0	44.3
20KPA300A	20KPA300CA	300.0	2	335.10	374.08	5	483.0	41.4

①Surge 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℃, Unless otherwise noted)

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

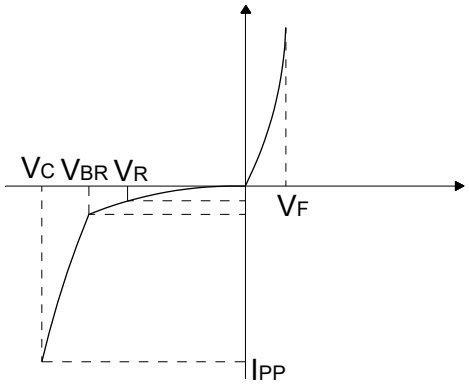


FIG.2:V-I curve characteristic (Bi-directional)

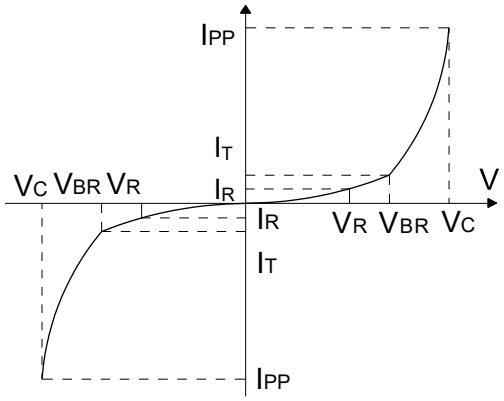


FIG.3: Pulse waveform

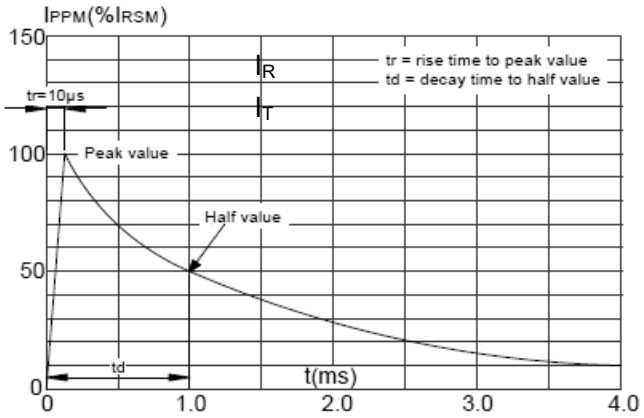
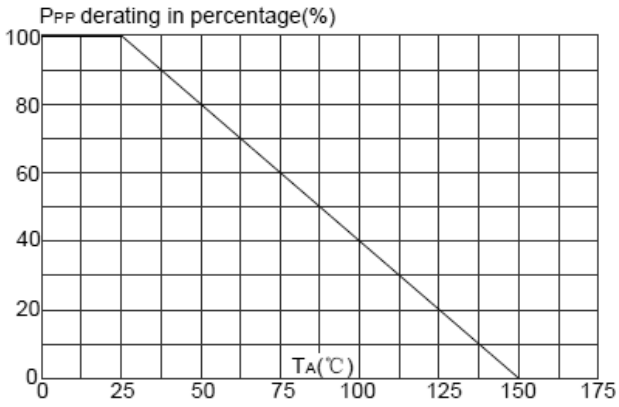


FIG.4: Pulse derating curve



6. Absolute Maximum Ratings(TA=25℃,RH=45%-75%,unless otherwise noted)

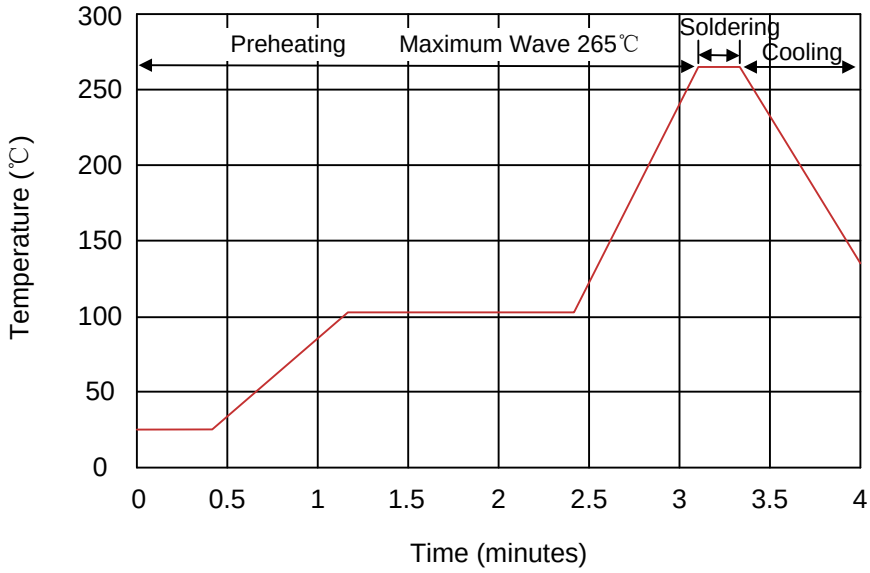
Parameter	Symbol	Value	Unit
Operating junction and Storage temperature range	T_{STG}, T_J	-55 to +150	℃
Peak pulse current of on 10/1000μs waveform	I_{PP}	See next table	A
Steady state power dissipation at TL=75℃	$P_{M(AV)}$	8	W
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	20000	W
Peak forward surge current, 8.3ms single half sine-wave	I_{FSM}	400	A

7. Package Information

Part No.	Case Type	Quantity	Packing Option
20KPAXXCA/A	R-6/P-600	300	Box

8. Soldering Parameters

Wave Soldering



Item	Conditions
Peak Temperature	265℃
Dipping Time	10 seconds
Soldering	1 time