



# 产品承认书

## Product Approval Sheet

编号 NO.	15KPA-A/0-T
日期 Date	2021.10.20

客户 (Customer)	
品名 (Product)	TVS
系列 (Series)	15KPA

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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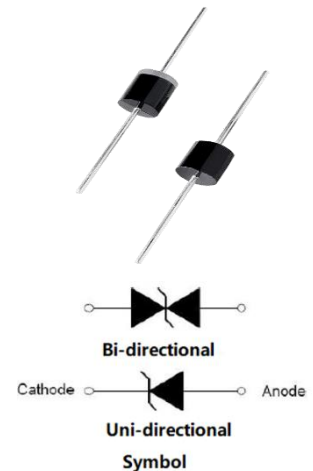


## 1. Description

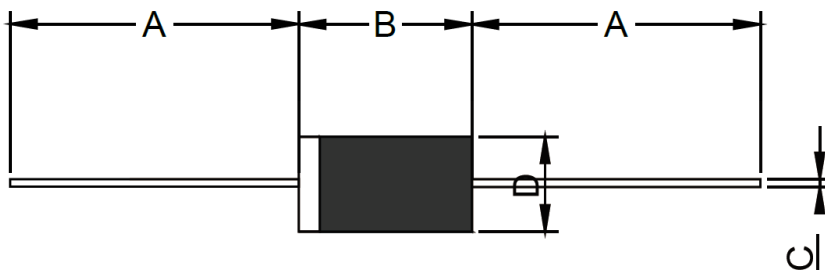
The 15KPA series of high current uni/bi-directional transient suppressors are designed for A.C. line protection and high power DC bus clamping applications. These devices offer uni/bi-directional port protection from 17 volts to 280 volts. They provide a clamping voltage lower than the avalanche voltage. 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°C/10s at terminals.
- ✧ 15000W 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( $T_A=25^{\circ}\text{C}$ )

Part Number		$V_R$	$I_R@V_R$	$V_{BR}@I_T$		$I_T$	$V_C@I_{PP}$	$I_{PP}^{\circ}$
Uni-Polar	Bi-Polar	V	$\mu\text{A}$	Min(V)	Max(V)	mA	Max(V)	A
15KPA17A	15KPA17CA	17.0	5000	18.90	20.90	50	29.3	515.4
15KPA18A	15KPA18CA	18.0	5000	20.00	22.10	50	30.9	488.7
15KPA20A	15KPA20CA	20.0	1500	22.20	24.50	20	34.3	440.2
15KPA22A	15KPA22CA	22.0	500	24.40	26.90	10	37.1	407.0
15KPA24A	15KPA24CA	24.0	150	26.70	29.50	5	40.7	371.0
15KPA26A	15KPA26CA	26.0	50	28.90	31.90	5	44.0	343.2
15KPA28A	15KPA28CA	28.0	25	31.10	34.40	5	47.5	317.9
15KPA30A	15KPA30CA	30.0	15	33.30	36.80	5	50.7	297.8
15KPA33A	15KPA33CA	33.0	2	36.70	40.60	5	54.7	276.1
15KPA36A	15KPA36CA	36.0	2	40.00	44.20	5	59.8	252.5
15KPA40A	15KPA40CA	40.0	2	44.40	49.10	5	65.8	229.5
15KPA43A	15KPA43CA	43.0	2	47.80	52.80	5	69.8	216.3
15KPA45A	15KPA45CA	45.0	2	50.00	55.30	5	72.8	207.4
15KPA48A	15KPA48CA	48.0	2	53.30	58.90	5	77.7	194.3
15KPA51A	15KPA51CA	51.0	2	56.70	62.70	5	82.9	182.1
15KPA54A	15KPA54CA	54.0	2	60.00	66.30	5	87.7	172.2
15KPA58A	15KPA58CA	58.0	2	64.40	71.20	5	93.8	161.0
15KPA60A	15KPA60CA	60.0	2	66.70	73.70	5	97.4	155.0
15KPA64A	15KPA64CA	64.0	2	71.10	78.60	5	104.2	144.9
15KPA70A	15KPA70CA	70.0	2	77.80	86.00	5	113.6	132.9
15KPA75A	15KPA75CA	75.0	2	83.30	92.10	5	122.0	123.8
15KPA78A	15KPA78CA	78.0	2	86.70	95.80	5	126.1	119.7
15KPA85A	15KPA85CA	85.0	2	94.40	104.0	5	137.6	109.7
15KPA90A	15KPA90CA	90.0	2	100.0	111.0	5	145.6	103.7
15KPA100A	15KPA100CA	100.0	2	100.0	111.0	5	161.3	93.6
15KPA110A	15KPA110CA	110.0	2	111.0	123.0	5	178.6	84.5
15KPA120A	15KPA120CA	120.0	2	122.0	135.0	5	192.3	78.5
15KPA130A	15KPA130CA	130.0	2	133.0	147.0	5	208.3	72.5
15KPA150A	15KPA150CA	150.0	2	144.0	159.0	5	241.9	62.4



Part Number		VR	IR@VR	VBR@IT		IT	VC@IPP	IPP <sup>①</sup>
Uni-Polar	Bi-Polar	V	μA	Min(V)	Max(V)	mA	Max(V)	A
15KPA160A	15KPA160CA	160.0	2	167.0	185.0	5	258.6	58.4
15KPA170A	15KPA170CA	170.0	2	178.0	197.0	5	272.7	55.4
15KPA180A	15KPA180CA	180.0	2	189.0	209.0	5	288.5	52.3
15KPA200A	15KPA200CA	200.0	2	224.0	247.0	5	319.1	47.3
15KPA220A	15KPA220CA	220.0	2	246.0	272.0	5	352.5	42.8
15KPA240A	15KPA240CA	240.0	2	268.0	292.0	5	384.6	39.3
15KPA260A	15KPA260CA	260.0	2	289.0	317.0	5	416.7	36.2
15KPA280A	15KPA280CA	280.0	2	311.0	341.0	5	454.5	33.2

① Surge waveform: 10/1000μs

V<sub>R</sub>: Stand-off Voltage -- Maximum voltage that can be applied

V<sub>BR</sub>: Breakdown Voltage

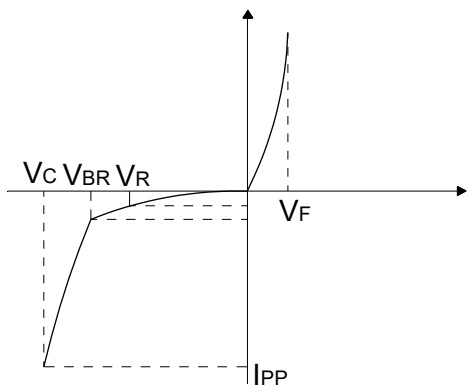
V<sub>C</sub>: Clamping Voltage -- Peak voltage measured across the suppressor at a specified I<sub>pp</sub>

I<sub>R</sub>: Reverse Leakage Current

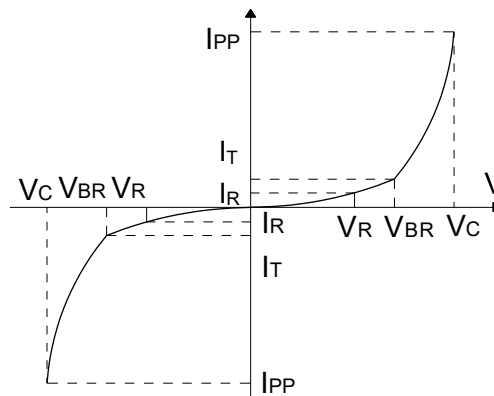


**5. Ratings And V-I Characteristics Curves( $T_A=25^{\circ}\text{C}$ , Unless otherwise noted)**

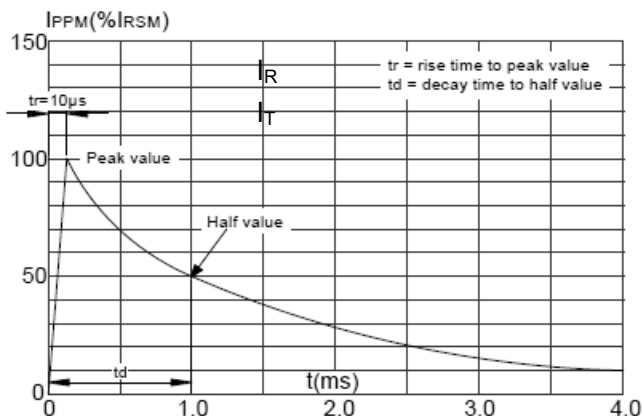
**FIG.1: V-I curve characteristics (Uni-directional)**



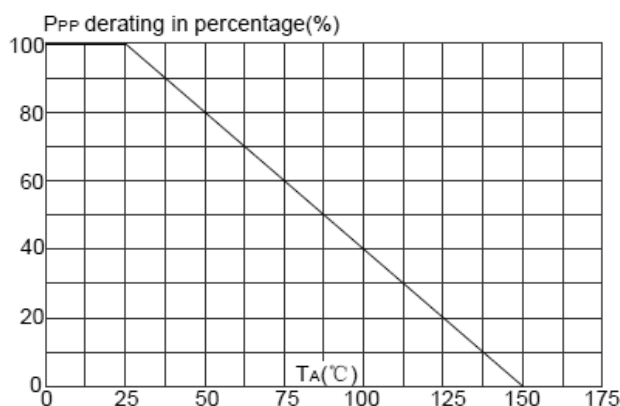
**FIG.2: V-I curve characteristic (Bi-directional)**



**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
Operating junction and Storage temperature range	$T_{STG}, T_J$	-55 to +150	$^{\circ}\text{C}$
Peak pulse current of on 10/1000 $\mu\text{s}$ waveform	$I_{PP}$	See next table	A
Steady state power dissipation at $T_L=75^{\circ}\text{C}$	$P_{M(AV)}$	8	W
Peak pulse power dissipation on 10/1000 $\mu\text{s}$ waveform	$P_{PP}$	15000	W
Peak forward surge current, 8.3ms single half sine-wave	$I_{FSM}$	400	A

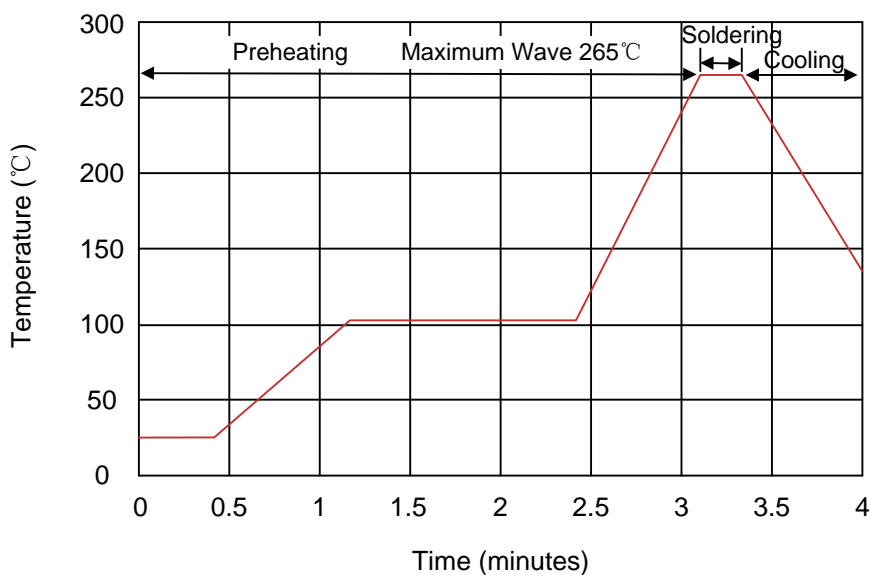


## 7. Package Information

Part No.	Case Type	Quantity	Packing Option
15KPAXXCA/A	R-6/P-600	300	Box

## 8. Soldering Parameters

Wave Soldering



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