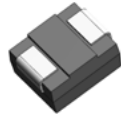


# 10BJ

## 1000 W Transient voltage suppressor



### Product features

- Low profile SMB package
- Excellent clamping capability
- 1000 W peak pulse power capability at 10/1000  $\mu$ s waveform
- Typical  $I_R$  less than 1  $\mu$ A above 12 V
- Fast response time: typically less than 1.0 ps from 0 V to  $V_{BR}$  minimum
- High temperature reflow soldering: +260 °C /40 s at terminal
- Plastic package meets UL 94 V-0 flammability rating
- Meets moisture sensitivity level (MSL) level 1
- Terminal: Solder plated leads, solderable per J-STD-002
- For surface mounted applications in order to optimize board space
- UL 497B recognized  
File No. : E198449 Guide QVGQ2

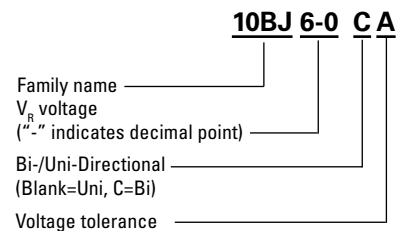
### Applications

- Consumer electronics
- Telecommunications
- Computing and servers
- Appliances
- Industrial automation
- Mobile and wearables

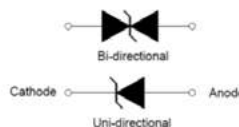
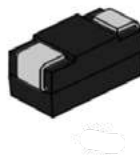
### Environmental compliance and general specifications



### Ordering part number



### PIN configuration



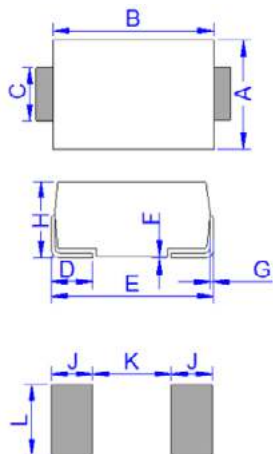
### Absolute maximum ratings

(+25 °C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage operating junction temperature range	$T_{STG}/T_J$	-55 to +150	°C
Steady state power dissipation at $T_L = +75$ °C	$P_{M(AV)}$	5.0	W
Peak pulse power dissipation on 10/1000 $\mu$ s waveform	$P_{PP}$	1000	W
Maximum instantaneous forward voltage at 50 A for unidirectional	$V_F$	3.5	V
Peak forward surge current, 8.3 ms single half sine wave <sup>1</sup>	$I_{FSM}$	120	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	°C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	°C/W

1. Measured on 8.3 ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle = 4 per minute maximum

### Mechanical parameters, pad layout- mm



Dimension	Millimeters		Inches	
	Minimum	Maximum	Minimum	Maximum
A	3.30	3.94	0.130	0.155
B	4.30	4.80	0.169	0.189
C	1.90	2.20	0.075	0.087
D	0.95	1.52	0.037	0.060
E	5.20	5.60	0.205	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.10	2.40	0.083	0.094
J	2.20		0.087	
K		2.60		0.102
L	2.30		0.091	

### Part marking



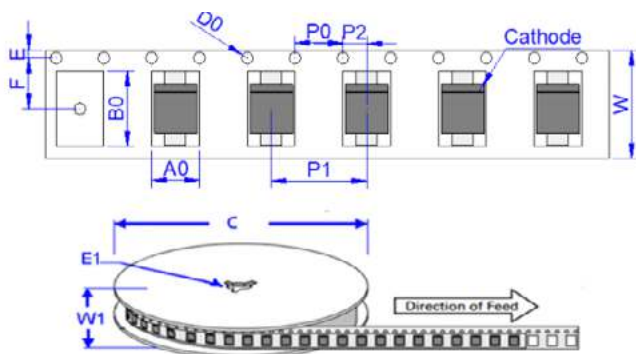
Cathode band (Uni-polar only)

Part marking: xxxx = Date code  
yyyy- Refer to marking designator listed in Electrical Characteristics table

### Packaging information (mm)

Drawing not to scale.

Supplied in tape and reel packaging, 3,000 parts per 13" diameter reel (EIA-481 compliant)



Dimensions	Millimeters	Inches
A0	3.76 ± 0.3	0.148 ± 0.012
B0	5.69 ± 0.3	0.224 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	5.5 ± 0.2	0.217 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.315 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2	0.472 ± 0.008
W1	15.7 ± 2.0	0.618 ± 0.079

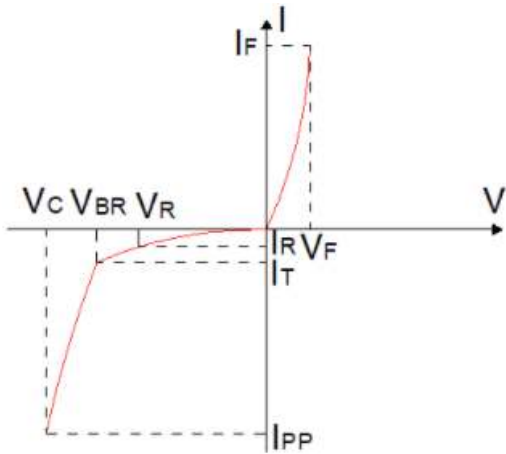
10BJ  
1000 W Transient voltage suppressor

Electrical characteristics (+25 °C)

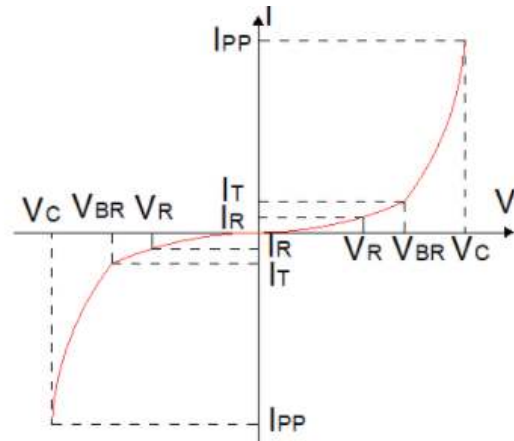
Part number		Marking		V <sub>R</sub> (V)	I <sub>R</sub> @ V <sub>R</sub> (μA)	V <sub>BR</sub> @ I <sub>T</sub>		I <sub>T</sub> (mA)	V <sub>C</sub> @ I <sub>PP</sub> max (V)	I <sub>PP</sub> (A)
Uni-polar	Bi-polar	Uni	Bi			min (V)	max (V)			
10BJ5-0A	10BJ5-0CA	A5	C5	5.0	200	6.40	7.00	10	9.2	108.7
10BJ6-0A	10BJ6-0CA	A6	C6	6.0	200	6.67	7.37	10	10.3	97.1
10BJ6-5A	10BJ6-5CA	A6V	C6V	6.5	120	7.22	7.98	10	11.2	89.3
10BJ7-0A	10BJ7-0CA	A7	C7	7.0	80	7.78	8.60	10	12.0	83.4
10BJ7-5A	10BJ7-5CA	A7V	C7V	7.5	50	8.33	9.21	1	12.9	77.6
10BJ8-0A	10BJ8-0CA	A8	C8	8.0	20	8.89	9.83	1	13.6	73.6
10BJ8-5A	10BJ8-5CA	A8V	C8V	8.5	10	9.44	10.40	1	14.4	69.5
10BJ9-0A	10BJ9-0CA	A9	C9	9.0	5	10.00	11.10	1	15.4	65.0
10BJ10A	10BJ10CA	A10	C10	10	2	11.10	12.30	1	17.0	58.9
10BJ11A	10BJ11CA	A11	C11	11	2	12.20	13.50	1	18.2	55.0
10BJ12A	10BJ12CA	A12	C12	12	2	13.30	14.70	1	19.9	50.3
10BJ13A	10BJ13CA	A13	C13	13	1	14.40	15.90	1	21.5	46.6
10BJ14A	10BJ14CA	A14	C14	14	1	15.60	17.20	1	23.2	43.1
10BJ15A	10BJ15CA	A15	C15	15	1	16.70	18.50	1	24.4	41.0
10BJ16A	10BJ16CA	A16	C16	16	1	17.80	19.70	1	26.0	38.5
10BJ17A	10BJ17CA	A17	C17	17	1	18.90	20.90	1	27.6	36.3
10BJ18A	10BJ18CA	A18	C18	18	1	20.00	22.10	1	29.2	34.3
10BJ20A	10BJ20CA	A20	C20	20	1	22.20	24.50	1	32.4	30.9
10BJ22A	10BJ22CA	A22	C22	22	1	24.40	26.90	1	35.5	28.2
10BJ24A	10BJ26CA	A24	C24	24	1	26.70	29.50	1	38.9	25.7
10BJ26A	10BJ26CA	A26	C26	26	1	28.90	31.90	1	42.1	23.8
10BJ28A	10BJ28CA	A28	C28	28	1	31.10	34.40	1	45.4	22.1
10BJ30A	10BJ30CA	A30	C30	30	1	33.30	36.80	1	48.4	20.7
10BJ33A	10BJ33CA	A33	C33	33	1	36.70	40.60	1	53.3	18.8
10BJ36A	10BJ40CA	A36	C36	36	1	40.00	44.20	1	58.1	17.2
10BJ40A	10BJ40CA	A40	C40	40	1	44.40	49.10	1	64.5	15.5
10BJ43A	10BJ43CA	A43	C43	43	1	47.80	52.80	1	69.4	14.4
10BJ45A	10BJ45CA	A45	C45	45	1	50.00	55.30	1	72.7	13.8
10BJ48A	10BJ48CA	A48	C48	48	1	53.30	58.90	1	77.4	13.0
10BJ51A	10BJ54CA	A51	C51	51	1	56.70	62.70	1	82.4	12.2
10BJ54A	10BJ54CA	A54	C54	54	1	60.00	66.30	1	87.1	11.5
10BJ58A	10BJ60CA	A58	C58	58	1	64.40	71.20	1	93.6	10.7
10BJ60A	10BJ60CA	A60	C60	60	1	66.70	73.70	1	96.8	10.3
10BJ64A	10BJ64CA	A64	C64	64	1	71.10	78.60	1	103.0	9.7
10BJ70A	10BJ70CA	A70	C70	70	1	77.80	86.00	1	113.0	8.9
10BJ75A	10BJ75CA	A75	C75	75	1	83.30	92.10	1	121.0	8.3
10BJ78A	10BJ78CA	A78	C78	78	1	86.70	95.80	1	126.0	7.9
10BJ85A	10BJ85CA	A85	C85	85	1	94.40	104.0	1	137.0	7.3
10BJ90A	10BJ90CA	A90	C90	90	1	100.0	111.0	1	146.0	6.9
10BJ100A	10BJ100CA	A100	C100	100	1	111.0	123.0	1	162.0	6.2
10BJ110A	10BJ110CA	A110	C110	110	1	122.0	135.0	1	177.0	5.6
10BJ120A	10BJ120CA	A120	C120	120	1	133.0	147.0	1	193.0	5.2
10BJ130A	10BJ130CA	A130	C130	130	1	144.0	159.0	1	209.0	4.8
10BJ150A	10BJ150CA	A150	C150	150	1	167.0	185.0	1	243.0	4.2
10BJ160A	10BJ160CA	A160	C160	160	1	178.0	197.0	1	259.0	3.9
10BJ170A	10BJ170CA	A170	C170	170	1	189.0	209.0	1	275.0	3.7
10BJ180A	10BJ180CA	A180	C180	180	1	201.0	222.0	1	292.0	3.5
10BJ190A	10BJ190CA	A190	C190	190	1	211.0	234.0	1	307.0	3.3
10BJ200A	10BJ200CA	A200	C200	200	1	224.0	247.0	1	324.0	3.1

**Ratings and V-I characteristic curves (+25 °C unless otherwise noted)**

**V- I curve characteristics (Uni-directional)**



**V- I curve characteristics (Bi-directional)**



Surge waveform: 10/1000  $\mu$ s

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

V<sub>BR</sub>: Breakdown voltage -

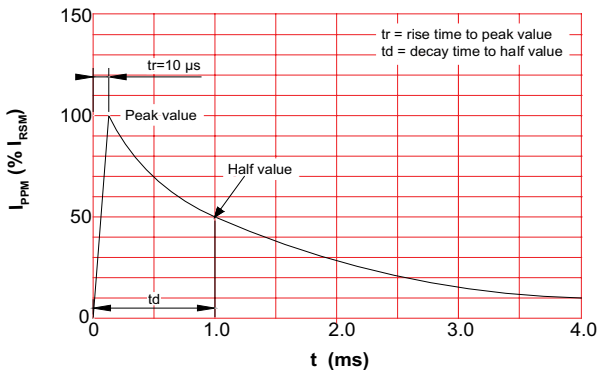
V<sub>C</sub>: Clamping voltage – Peak voltage measured across the suppressor at a specified I<sub>pp</sub>

I<sub>R</sub>: Reverse leakage current -

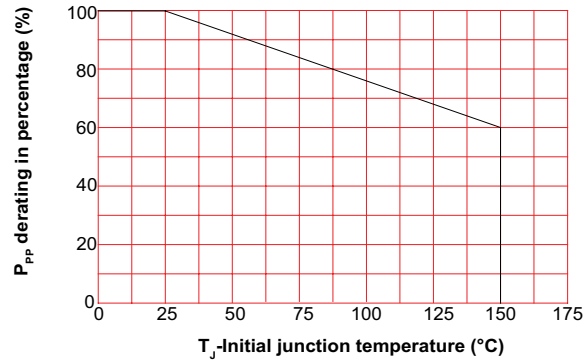
I<sub>T</sub>: Test current

V<sub>F</sub>: Forward voltage drop for Uni-directional TVS diode

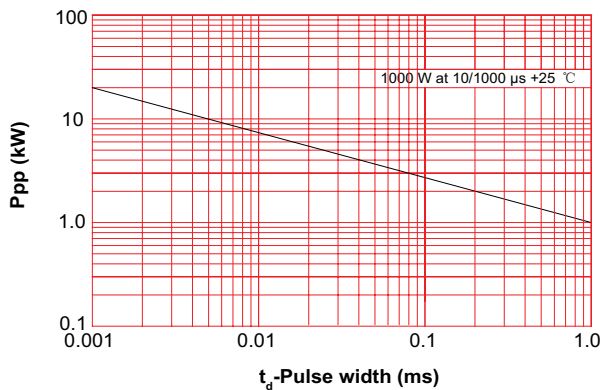
**Pulse waveform**



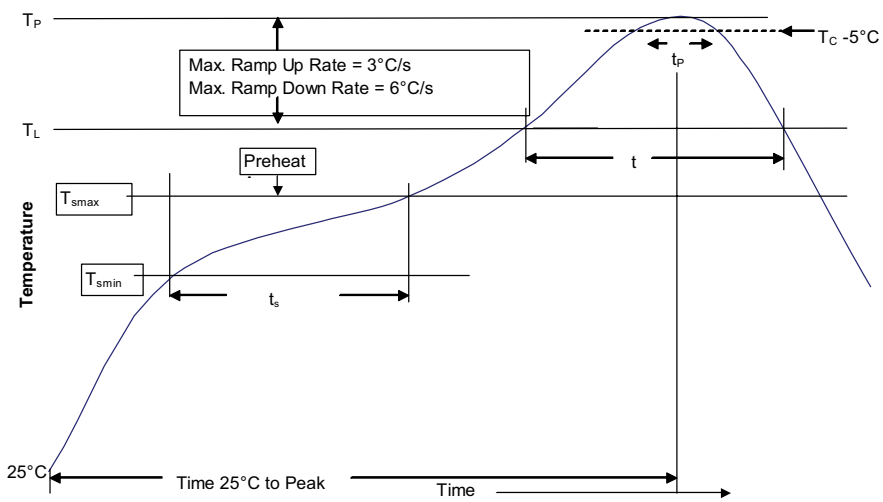
**Pulse derating curve**



**Peak pulse power dissipation vs. pulse width**



**Solder reflow profile**



**Table 1 - Standard SnPb solder ( $T_C$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

**Table 2 - Lead (Pb) free solder ( $T_C$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

**Reference J-STD-020**

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak	<ul style="list-style-type: none"> <li>Temperature min. (<math>T_{smin}</math>)</li> <li>Temperature max. (<math>T_{smax}</math>)</li> <li>Time (<math>T_{smin}</math> to <math>T_{smax}</math>) (<math>t_s</math>)</li> </ul>	<ul style="list-style-type: none"> <li>100 °C</li> <li>150 °C</li> <li>60-120 seconds</li> </ul>
Ramp up rate $T_L$ to $T_p$	3 °C/ second max.	3 °C/ second max.
Liquidous temperature ( $T_L$ ) Time ( $t_L$ ) maintained above $T_L$	<ul style="list-style-type: none"> <li>183 °C</li> <li>60-150 seconds</li> </ul>	<ul style="list-style-type: none"> <li>217 °C</li> <li>60-150 seconds</li> </ul>
Peak package body temperature ( $T_p$ )*	Table 1	Table 2
Time ( $t_p$ )* within 5 °C of the specified classification temperature ( $T_C$ )	20 seconds*	40 seconds*
Ramp-down rate ( $T_p$ to $T_L$ )	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

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