

# 15BJ

## 1500 W Transient voltage suppressor



### Product features

- Low profile SMD package
- Excellent clamping capability
- 1500 W peak pulse power capability at 10/1000  $\mu$ s waveform
- Typical  $I_R$  less than 1  $\mu$ A above 11 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

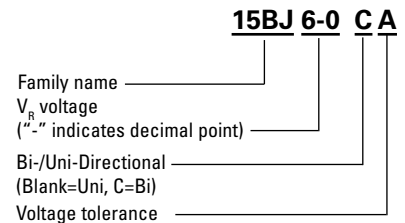
### Applications

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

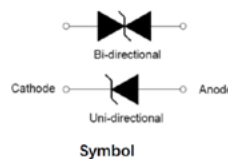
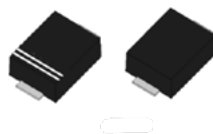
### Environmental compliance and general specifications



### Ordering part number



### PIN configuration



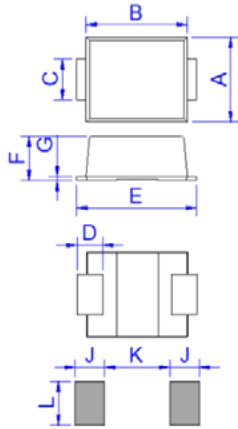
**Absolute maximum ratings**

(+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	$P_{PP}$	1500	W
Maximum instantaneous forward voltage at 50 A for unidirectional	$V_F$	5.0	V
Peak forward surge current, 8.3 ms single half sine wave <sup>1</sup>	$I_{FSM}$	200	A

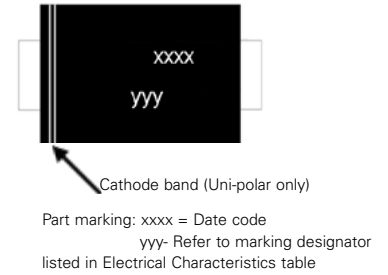
1. Measured on 8.3 ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle = 4 per minute maximum

**Mechanical parameters, pad layout- mm**



Dimension	Millimeters		Inches	
	Minimum	Maximum	Minimum	Maximum
A	3.90	4.50	0.154	0.177
B	4.65	5.15	0.183	0.203
C	1.85	2.15	0.073	0.085
D	0.60		0.024	
E	5.60	6.00	0.220	0.236
F	2.05	2.35	0.081	0.093
G	0.12	0.28	0.005	0.011
J	2.00		0.079	
K		3.20		0.126
L	2.30		0.091	

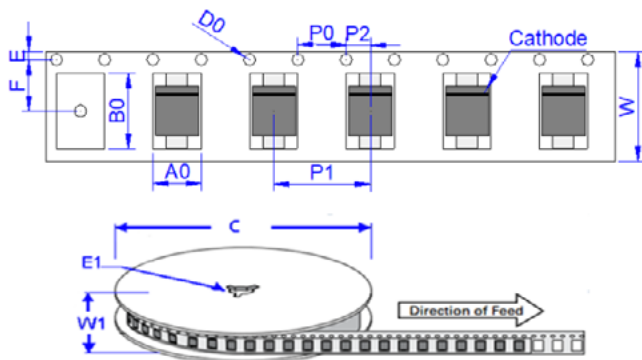
**Part marking**



**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	4.50 ± 0.3	0.177 ± 0.012
B0	6.10 ± 0.3	0.240 ± 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 ± 0.2	0.618 ± 0.079

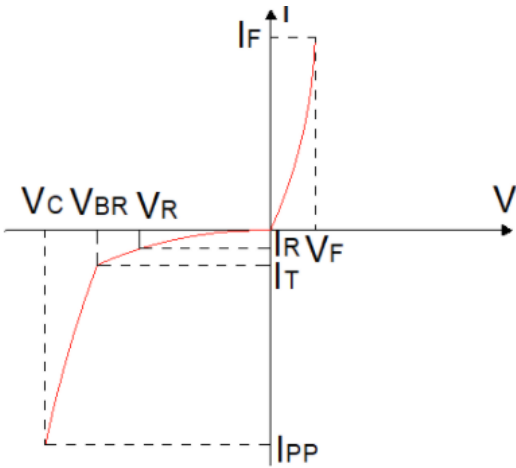
15BJ  
1500 W Transient voltage suppressor

Electrical characteristics (+25 °C)

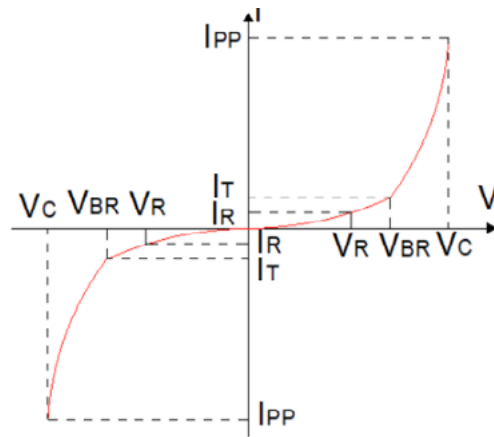
Part number		Marking	Bi	V <sub>R</sub> (V)	I <sub>R</sub> @V <sub>R</sub> (μA)	V <sub>BR</sub> @I <sub>T</sub> min (V)	max (V)	I <sub>T</sub> (mA)	V <sub>C</sub> @I <sub>PP</sub> max (V)	I <sub>PP</sub> (A)
Uni-polar	Bi-polar									
15BJ5-0A	15BJ5-0CA	GDE	BDE	5	300	6.4	7	10	9.2	163
15BJ6-0A	15BJ6-0CA	GDG	BDG	6	250	6.67	7.37	10	10.3	145.6
15BJ6-5A	15BJ6-5CA	GDK	BDK	6.5	150	7.22	7.98	10	11.2	134
15BJ7-0A	15BJ7-0CA	GDM	BDM	7	100	7.78	8.6	10	12	125
15BJ7-5A	15BJ7-5CA	GDP	BDP	7.5	50	8.33	9.21	1	12.9	116.3
15BJ8-0A	15BJ8-0CA	GDR	BDR	8	30	8.89	9.83	1	13.6	110.3
15BJ8-5A	15BJ8-5CA	GDT	BDT	8.5	20	9.44	10.4	1	14.4	104.2
15BJ9-0A	15BJ9-0CA	GDV	BDV	9	10	10	11.1	1	15.4	97.4
15BJ10A	15BJ10CA	GDX	BDX	10	5	11.1	12.3	1	17	88.2
15BJ11A	15BJ11CA	GDZ	BDZ	11	2	12.2	13.5	1	18.2	82.4
15BJ12A	15BJ12CA	GEE	BEE	12	1	13.3	14.7	1	19.9	75.4
15BJ13A	15BJ13CA	GEG	BEG	13	1	14.4	15.9	1	21.5	69.8
15BJ14A	15BJ14CA	GEK	BEK	14	1	15.6	17.2	1	23.2	64.7
15BJ15A	15BJ15CA	GEM	BEM	15	1	16.7	18.5	1	24.4	61.5
15BJ16A	15BJ16CA	GEP	BEP	16	1	17.8	19.7	1	26	57.7
15BJ17A	15BJ17CA	GER	BER	17	1	18.9	20.9	1	27.6	54.4
15BJ18A	15BJ18CA	GET	BET	18	1	20	22.1	1	29.2	51.4
15BJ20A	15BJ20CA	GEV	BEV	20	1	22.2	24.5	1	32.4	46.3
15BJ22A	15BJ22CA	GEX	BEX	22	1	24.4	26.9	1	35.5	42.3
15BJ24A	15BJ24CA	GEZ	BEZ	24	1	26.7	29.5	1	38.9	38.6
15BJ26A	15BJ26CA	GFE	BFE	26	1	28.9	31.9	1	42.1	35.6
15BJ28A	15BJ28CA	GFG	BFG	28	1	31.1	34.4	1	45.4	33.1
15BJ30A	15BJ30CA	GFK	BFK	30	1	33.3	36.8	1	48.4	31
15BJ33A	15BJ33CA	GFM	BFM	33	1	36.7	40.6	1	53.3	28.2
15BJ36A	15BJ36CA	GFP	BFP	36	1	40	44.2	1	58.1	25.8
15BJ40A	15BJ40CA	GFR	BFR	40	1	44.4	49.1	1	64.5	23.3
15BJ43A	15BJ43CA	GFT	BFT	43	1	47.8	52.8	1	69.4	21.6
15BJ45A	15BJ45CA	GFV	BFV	45	1	50	55.3	1	72.7	20.6
15BJ48A	15BJ48CA	GFX	BFX	48	1	53.3	58.9	1	77.4	19.4
15BJ51A	15BJ51CA	GFZ	BFZ	51	1	56.7	62.7	1	82.4	18.2
15BJ54A	15BJ54CA	GGE	BGE	54	1	60	66.3	1	87.1	17.2
15BJ58A	15BJ58CA	GGG	BGG	58	1	64.4	71.2	1	93.6	16.1
15BJ60A	15BJ60CA	GKK	BGK	60	1	66.7	73.7	1	96.8	15.5
15BJ64A	15BJ64CA	GGM	BGM	64	1	71.1	78.6	1	103	14.6
15BJ70A	15BJ70CA	GGP	BGP	70	1	77.8	86	1	113	13.3
15BJ75A	15BJ75CA	GGR	BGR	75	1	83.3	92.1	1	121	12.4
15BJ78A	15BJ78CA	GGT	BGT	78	1	86.7	95.8	1	126	11.9
15BJ85A	15BJ85CA	GGV	BGV	85	1	94.4	104	1	137	11
15BJ90A	15BJ90CA	GGX	BGX	90	1	100	111	1	146	10.3
15BJ100A	15BJ100CA	GGZ	BGZ	100	1	111	123	1	162	9.3
15BJ110A	15BJ110CA	GHE	BHE	110	1	122	135	1	177	8.5
15BJ120A	15BJ120CA	GHG	BHG	120	1	133	147	1	193	7.8
15BJ130A	15BJ130CA	GHK	BHK	130	1	144	159	1	209	7.2
15BJ150A	15BJ150CA	GHM	BHM	150	1	167	185	1	243	6.2
15BJ160A	15BJ160CA	GHP	BHP	160	1	178	197	1	259	5.8
15BJ170A	15BJ170CA	GHR	BHR	170	1	189	209	1	275	5.5
15BJ180A	15BJ180CA	GHT	BHT	180	1	201	222	1	292	5.2
15BJ190A	15BJ190CA	GHU	BHU	190	1	211	234	1	307	4.9
15BJ200A	15BJ200CA	GHV	BHV	200	1	224	247	1	324	4.7
15BJ210A	15BJ210CA	GHX	BHX	210	1	233	258	1	337	4.5
15BJ220A	15BJ220CA	GHZ	BHZ	220	1	246	272	1	356	4.2
15BJ250A	15BJ250CA	GIE	BIE	250	1	279	309	1	405	3.7
15BJ300A	15BJ300CA	GIG	BIG	300	1	335	371	1	486	3.1
15BJ350A	15BJ350CA	GIK	BIK	350	1	391	432	1	567	2.6
15BJ400A	15BJ400CA	GIM	BIM	400	1	447	494	1	648	2.3
15BJ440A	15BJ440CA	GIP	BIP	440	1	492	543	1	713	2.1

**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

$V_R$ : Stand-off voltage – Maximum voltage that can be applied

$V_{BR}$ : Breakdown voltage

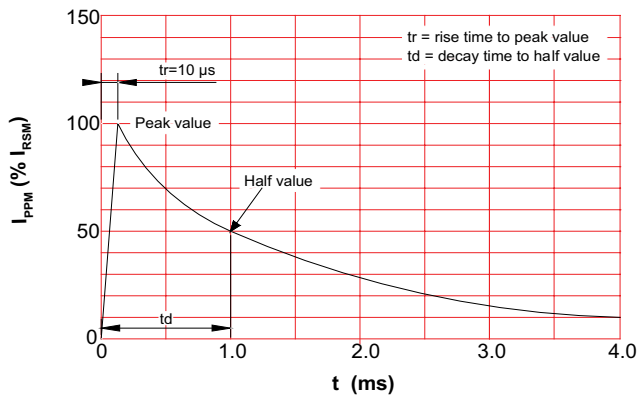
$V_C$ : Clamping voltage – Peak voltage measured across the suppressor at a specified  $I_{PP}$

$I_R$ : Reverse leakage current

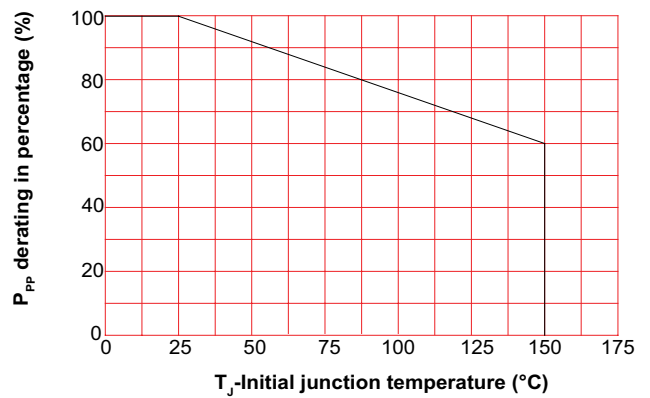
$I_T$ : Test current

$V_F$ : Forward voltage drop for Uni-directional TVS diode

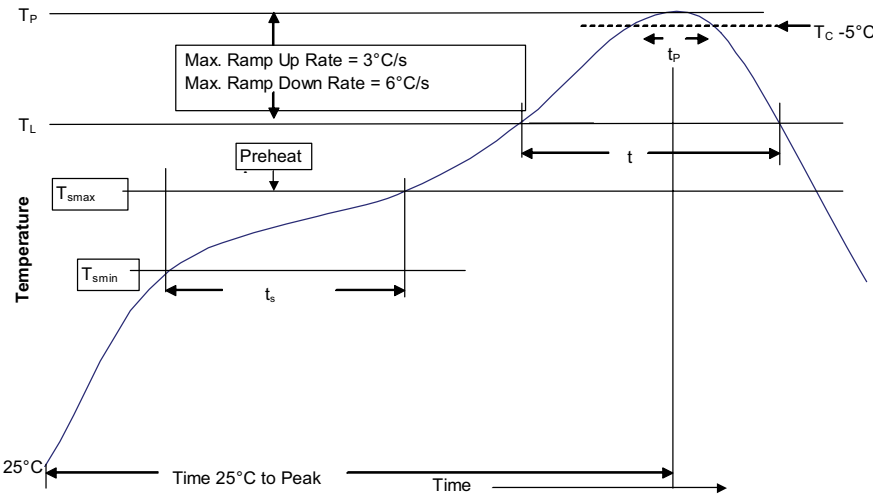
**Pulse waveform**



**Pulse derating curve**



**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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