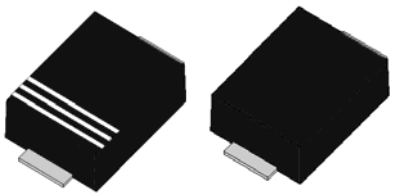
15BJ Series 1500W Transient Voltage Suppressor

Rev.1.5

DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.



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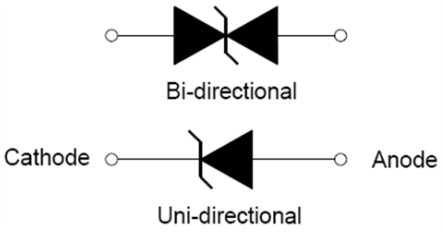


Symbol

FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 1500W peak pulse power capability at 10/1000μs waveform.
- ✧ Typical I_R less than 1μA above 11V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature to reflow soldering: 260℃/40s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260℃.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order to optimize board space.
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

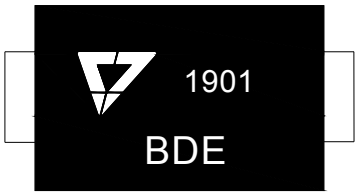
ABSOLUTE MAXIMUM RATINGS (T_A=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T_{STG}/ T_J	-55 to +150	℃
Peak pulse power dissipation at 10/1000μs waveform	P_{PP}	1500	W
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	5.0	W
Maximum instantaneous forward voltage at 50A for unidirectional	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine wave (Note 1)	I_{FSM}	200	A

Notes:

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

MARKING



BDE : Device Marking Code
1901: the first week, 2019

ELECTRICAL CHARACTERISTICS(T_A=25℃)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
15BJ5.0A	15BJ5.0CA	GDE	BDE	5.0	300	6.40	7.00	10	9.2	163.0
15BJ6.0A	15BJ6.0CA	GDG	BDG	6.0	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	134.0
15BJ7.0A	15BJ7.0CA	GDM	BDM	7.0	100	7.78	8.60	10	12.0	125.0
15BJ7.5A	15BJ7.5CA	GDP	BDP	7.5	50	8.33	9.21	1	12.9	116.3
15BJ8.0A	15BJ8.0CA	GDR	BDR	8.0	30	8.89	9.83	1	13.6	110.3
15BJ8.5A	15BJ8.5CA	GDT	BDT	8.5	20	9.44	10.40	1	14.4	104.2
15BJ9.0A	15BJ9.0CA	GDV	BDV	9.0	10	10.00	11.10	1	15.4	97.4
15BJ10A	15BJ10CA	GDX	BDX	10	5	11.10	12.30	1	17.0	88.2
15BJ11A	15BJ11CA	GDZ	BDZ	11	2	12.20	13.50	1	18.2	82.4
15BJ12A	15BJ12CA	GEE	BEE	12	1	13.30	14.70	1	19.9	75.4
15BJ13A	15BJ13CA	GEG	BEG	13	1	14.40	15.90	1	21.5	69.8
15BJ14A	15BJ14CA	GEK	BEK	14	1	15.60	17.20	1	23.2	64.7
15BJ15A	15BJ15CA	GEM	BEM	15	1	16.70	18.50	1	24.4	61.5
15BJ16A	15BJ16CA	GEP	BEP	16	1	17.80	19.70	1	26.0	57.7
15BJ17A	15BJ17CA	GER	BER	17	1	18.90	20.90	1	27.6	54.4
15BJ18A	15BJ18CA	GET	BET	18	1	20.00	22.10	1	29.2	51.4
15BJ20A	15BJ20CA	GEV	BEV	20	1	22.20	24.50	1	32.4	46.3
15BJ22A	15BJ22CA	GEX	BEX	22	1	24.40	26.90	1	35.5	42.3
15BJ24A	15BJ24CA	GEZ	BEZ	24	1	26.70	29.50	1	38.9	38.6
15BJ26A	15BJ26CA	GFE	BFE	26	1	28.90	31.90	1	42.1	35.6
15BJ28A	15BJ28CA	GFG	BFG	28	1	31.10	34.40	1	45.4	33.1
15BJ30A	15BJ30CA	GFK	BFK	30	1	33.30	36.80	1	48.4	31.0
15BJ33A	15BJ33CA	GFM	BFM	33	1	36.70	40.60	1	53.3	28.2

ELECTRICAL CHARACTERISTICS (T_A=25℃, continued)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
15BJ36A	15BJ36CA	GFP	BFP	36	1	40.00	44.20	1	58.1	25.8
15BJ40A	15BJ40CA	GFR	BFR	40	1	44.40	49.10	1	64.5	23.3
15BJ43A	15BJ43CA	GFT	BFT	43	1	47.80	52.80	1	69.4	21.6
15BJ45A	15BJ45CA	GFV	BFV	45	1	50.00	55.30	1	72.7	20.6
15BJ48A	15BJ48CA	GFX	BFX	48	1	53.30	58.90	1	77.4	19.4
15BJ51A	15BJ51CA	GFZ	BFZ	51	1	56.70	62.70	1	82.4	18.2
15BJ54A	15BJ54CA	GGE	BGE	54	1	60.00	66.30	1	87.1	17.2
15BJ58A	15BJ58CA	GGG	BGG	58	1	64.40	71.20	1	93.6	16.1
15BJ60A	15BJ60CA	GGK	BGK	60	1	66.70	73.70	1	96.8	15.5
15BJ64A	15BJ64CA	GGM	BGM	64	1	71.10	78.60	1	103.0	14.6
15BJ70A	15BJ70CA	GGP	BGP	70	1	77.80	86.00	1	113.0	13.3
15BJ75A	15BJ75CA	GGR	BGR	75	1	83.30	92.10	1	121.0	12.4
15BJ78A	15BJ78CA	GGT	BGT	78	1	86.70	95.80	1	126.0	11.9
15BJ85A	15BJ85CA	GGV	BGV	85	1	94.40	104.0	1	137.0	11.0
15BJ90A	15BJ90CA	GGX	BGX	90	1	100.0	111.0	1	146.0	10.3
15BJ100A	15BJ100CA	GGZ	BGZ	100	1	111.0	123.0	1	162.0	9.3
15BJ110A	15BJ110CA	GHE	BHE	110	1	122.0	135.0	1	177.0	8.5
15BJ120A	15BJ120CA	GHG	BHG	120	1	133.0	147.0	1	193.0	7.8
15BJ130A	15BJ130CA	GHK	BHK	130	1	144.0	159.0	1	209.0	7.2
15BJ150A	15BJ150CA	GHM	BHM	150	1	167.0	185.0	1	243.0	6.2
15BJ160A	15BJ160CA	GHP	BHP	160	1	178.0	197.0	1	259.0	5.8
15BJ170A	15BJ170CA	GHR	BHR	170	1	189.0	209.0	1	275.0	5.5
15BJ180A	15BJ180CA	GHT	BHT	180	1	201.0	222.0	1	292.0	5.2
15BJ190A	15BJ190CA	GHU	BHU	190	1	211.0	234.0	1	307.0	4.9
15BJ200A	15BJ200CA	GHV	BHV	200	1	224.0	247.0	1	324.0	4.7
15BJ210A	15BJ210CA	GHX	BHX	210	1	233.0	258.0	1	337.0	4.5
15BJ220A	15BJ220CA	GHZ	BHZ	220	1	246.0	272.0	1	356.0	4.2
15BJ250A	15BJ250CA	GIE	BIE	250	1	279.0	309.0	1	405.0	3.7
15BJ300A	15BJ300CA	GIG	BIG	300	1	335.0	371.0	1	486.0	3.1
15BJ350A	15BJ350CA	GIK	BIK	350	1	391.0	432.0	1	567.0	2.6

ELECTRICAL CHARACTERISTICS (T_A=25℃, continued)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
15BJ400A	15BJ400CA	GIM	BIM	400	1	447.0	494.0	1	648.0	2.3
15BJ440A	15BJ440CA	GIP	BIP	440	1	492.0	543.0	1	713.0	2.1

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 I_{PP}

I_R: Reverse leakage current

ORDERING INFORMATION

15BJ xx C A

15BJ: 1500W SMBF Series

xx: V_R Voltage

C: Bi-directional

A: 5% V_{BR} Voltage tolerance

RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25℃, unless otherwise noted)

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

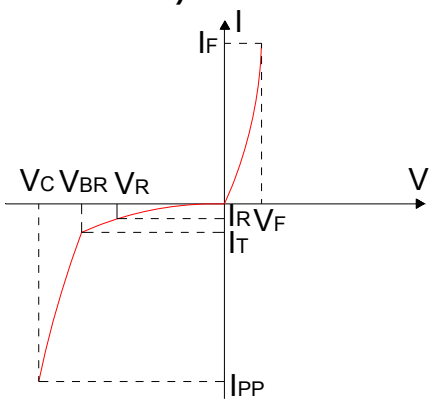


FIG.2:V- I curve characteristics (Bi-directional)

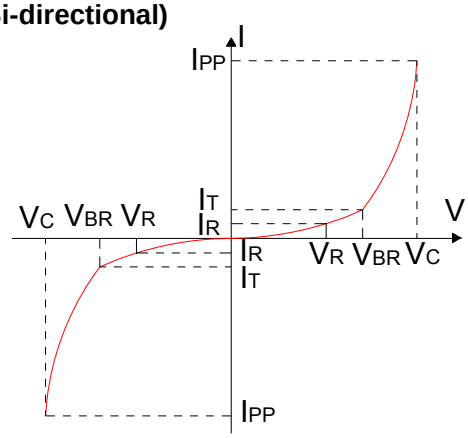


FIG.3: Pulse waveform

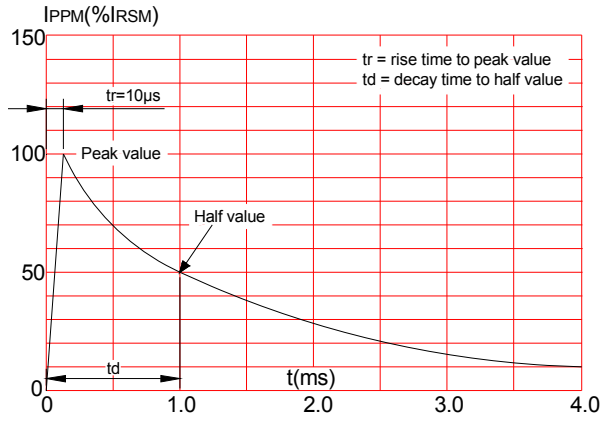
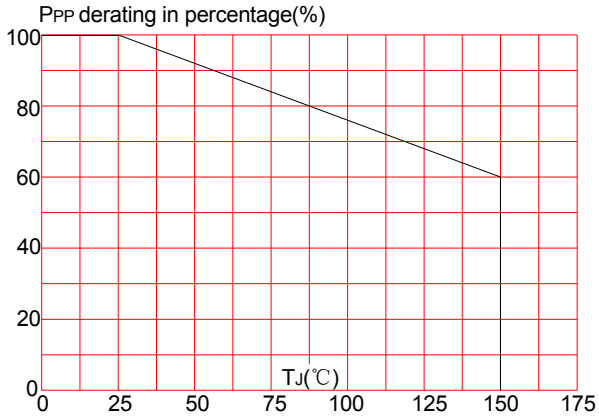
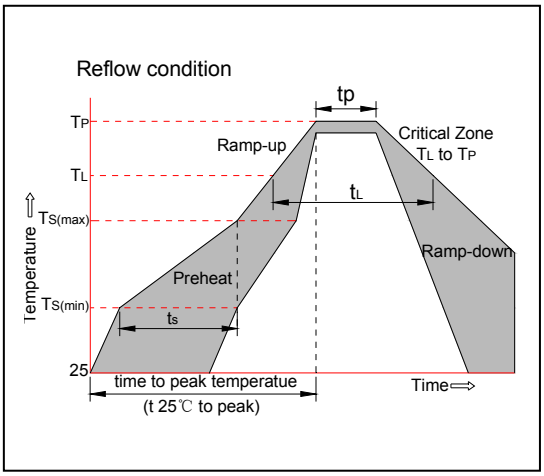


FIG.4: Pulse derating curve

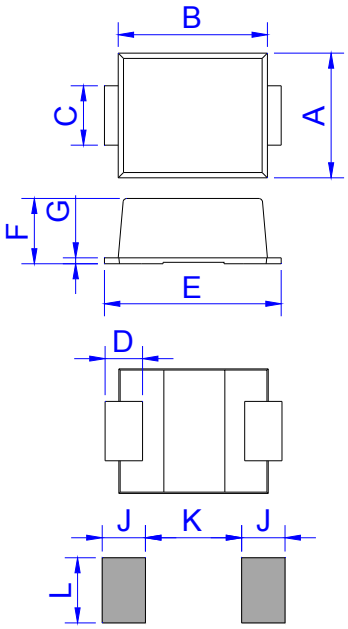


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



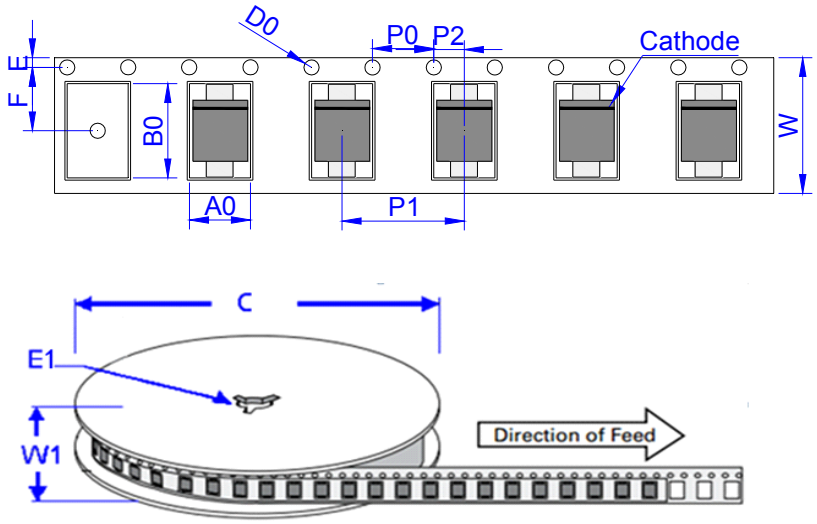
PACKAGE MECHANICAL DATA



SMBF

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
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	

TAPE AND REEL SPECIFICATION-SMBF



Ref.	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±2.0	0.618 ± 0.079

PART No.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
15BJxxA/CA	0.13	3,000	48,000	13 inch reel pack

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