TEL: 805-498-2111 FAX: 805-498-3804

DESCRIPTION

The SMBJ series of transient voltage suppressors are designed to protect components from over voltages caused by electrostatic discharge (**ESD**), electrical fast transients (**EFT**), induced lightning, and system generated transients.

TVS diodes are characterized by their high surge capability, low operating and clamping voltages, and fast response time. This makes them ideal for use as board level protection of sensitive semiconductor components. The SMBJ series is suitable protection for sensitive TTL and MOS ICs such as microprocessors, I/O transceivers, ASICs, transducers, and MOS memory.

APPLICATIONS:

- General Transient Protection
- Board Level Surface Mount Applications
- Industrial & Commercial Electronics
- Portable electronics
- Networks

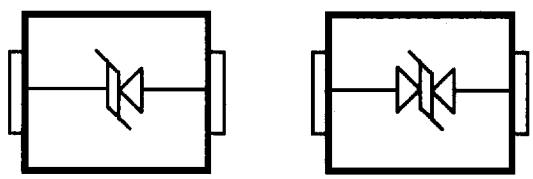
FEATURES:

- 600 watts Peak Pulse Power (tp = 10 x 1000 µs)
- Unidirectional or Bidirectional
- Wide voltage range (5V - 170V)
- Low clamping voltages
- Solid state silicon avalanche technology

MECHANICAL CHARACTERISTICS:

- JEDEC DO-214AA Outline
- Molded epoxy case
- Marking : Device code and logo
- Unidirectional devices marked with polarity band

SCHEMATIC



Unidirectional Bidirectional

MAXIMUM RATINGS

RATING	SYMBOL	VALUE	UNIT
Peak Pulse Power (tp = 10 x 1000 µs)	Ppk	600	Watts
Operating Temperature	Tj	-55 to +150	°C
Storage Temperature	Tstg	-55 to +150	°C

ELECTRICAL CHARACTERISTICS @ 25°C

UNI-DIRECTIONAL PART NUMBER Note 1.	DEVICE MARKING CODE	BI-DIRECTIONAL PART NUMBER Note 1, 2	DEVICE MARKING CODE	REVERSE STAND-OFF VOLTAGE V_{RWM} (V)	REVERSE LEAKAGE @ V_{RWM} (I_R) (µA)	BREAKDOWN VOLTAGE V_{BR} MIN @ I_T (V)	TEST CURRENT I_T (mA)	MAXIMUM CLAMPING VOLTAGE @ I_{PP} (V_C) (V)	PEAK PULSE CURRENT (Ipp) (A)	MAX. VOLTAGE TEMPERATURE VARIATION OF V_{BR} (mV/°C)
SMBJ5.0♦	KD			5.0	800	6.40	10	9.6	62.5	5.0
SMBJ5.0A♦	KE			5.0	800	6.40	10	9.2	65.2	5.0
SMBJ6.0 ♦	KF	SMBJ6.0C ♦	AF	6.0	800	6.67	10	11.4	52.6	5.0
SMBJ6.0A♦	KG	SMBJ6.0CA♦	AG	6.0	800	6.67	10	10.3	58.3	5.0
SMBJ6.5	KH	SMBJ6.5C ♦	AH	6.5	500	7.22	10	12.3	48.7	5.0
SMBJ6.5A	KK	SMBJ6.5CA♦	AK	6.5	500	7.22	10	11.2	53.6	5.0
SMBJ7.0	KL	SMBJ7.0C	AL	7.0	200	7.78	10	13.3	45.1	6.0
SMBJ7.0A	KM	SMBJ7.0CA	AM	7.0	200	7.78	10	12.0	50.0	6.0
SMBJ7.5	KN	SMBJ7.5C	AN	7.5	100	8.33	1	14.3	42.0	7.0
SMBJ7.5A	KP	SMBJ7.5CA	AP	7.5	100	8.33	1	12.9	46.5	7.0
SMBJ8.0	KQ	SMBJ8.0C	AQ	8.0	50	8.89	1	15.0	40.0	7.0
SMBJ8.0A	KR	SMBJ8.0CA	AR	8.0	50	8.89	1	13.6	44.1	7.0
SMBJ8.5 ♦	KS	SMBJ8.5C ♦	AS	8.5	10	9.44	1	15.9	37.7	8.0
SMBJ8.5A♦	KT	SMBJ8.5CA♦	AT	8.5	10	9.44	1	14.4	41.7	8.0
SMBJ9.0	KU	SMBJ9.0C	AU	9.0	5	10.0	1	16.9	35.5	9.0
SMBJ9.0A	KV	SMBJ9.0CA	AV	9.0	5	10.0	1	15.4	39.0	9.0

  652 MITCHELL ROAD NEWBURY PARK CA 91320

TEL: 805-498-2111 FAX: 805-498-3804

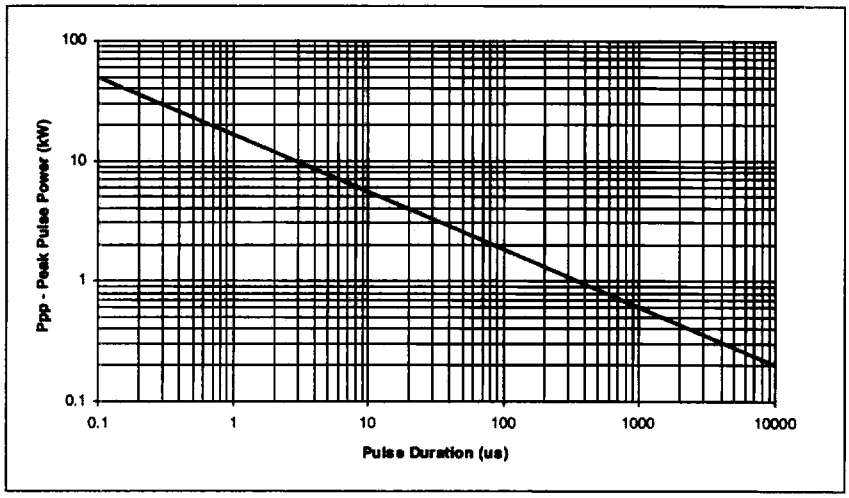
ELECTRICAL CHARACTERISTICS @ 25°C (CONTINUED)

UNI-DIRECTIONAL PART NUMBER Note 1.	DEVICE MARKING CODE	BI-DIRECTIONAL PART NUMBER Note 1, 2	DEVICE MARKING CODE	REVERSE STAND-OFF VOLTAGE V_{RWM} (V)	REVERSE LEAKAGE @ V_{RWM} (I_R) (µA)	BREAKDOWN VOLTAGE V_{BR} MIN @ I_T (V)	TEST CURRENT I_T (mA)	MAXIMUM CLAMPING VOLTAGE @ Ipp (Vc) (V)	PEAK PULSE CURRENT (Ipp) (A)	MAX. VOLTAGE TEMPERATURE VARIATION OF V_{BR} (mV/°C)
SMBJ10 ♦	KW	SMBJ10C	AW	10	5	11.1	1	15.8	31.9	10
SMBJ10A ♦	KX	SMBJ10CA	AX	10	5	11.1	1	17.0	35.3	10
SMBJ11	KY	SMBJ11C	AY	11	5	12.2	1	20.1	29.9	11
SMBJ11A	KZ	SMBJ11CA	AZ	11	5	12.2	1	18.2	33.0	11
SMBJ12 ♦	LD	SMBJ12C ♦	BD	12	5	13.3	1	22.0	27.3	12
SMBJ12A ♦	LE	SMBJ12CA ♦	BE	12	5	13.3	1	19.9	30.2	12
SMBJ13	LF	SMBJ13C	BF	13	5	14.4	1	23.8	25.2	13
SMBJ13A	LG	SMBJ13CA	BG	13	5	14.4	1	21.5	27.9	13
SMBJ14	LH	SMBJ14C	BH	14	5	15.6	1	25.8	23.3	14
SMBJ14A	LK	SMBJ14CA	BK	14	5	15.6	1	23.2	25.8	14
SMBJ15 ♦	LL	SMBJ15C ♦	BL	15	5	16.7	1	26.9	22.3	16
SMBJ15A ♦	LM	SMBJ15CA ♦	BM	15	5	16.7	1	24.4	24.0	16
SMBJ16	LN	SMBJ16C	BN	16	5	17.8	1	28.8	20.8	19
SMBJ16A	LP	SMBJ16CA	BP	16	5	17.8	1	26.0	23.1	17
SMBJ17	LQ	SMBJ17C	BQ	17	5	18.9	1	30.5	19.7	20
SMBJ17A	LR	SMBJ17CA	BR	17	5	18.9	1	27.6	21.7	19
SMBJ18	LS	SMBJ18C	BS	18	5	20.0	1	32.2	18.6	21
SMBJ18A	LT	SMBJ18CA	BT	18	5	20.0	1	29.2	20.5	20
SMBJ20	LU	SMBJ20C	BU	20	5	22.2	1	35.8	16.7	25
SMBJ20A	LV	SMBJ20CA	BV	20	5	22.2	1	32.4	18.5	23
SMBJ22	LW	SMBJ22C	BW	22	5	24.4	1	39.4	15.2	28
SMBJ22A	LX	SMBJ22CA	BX	22	5	24.4	1	35.5	16.9	25
SMBJ24 ♦	LY	SMBJ24C ♦	BY	24	5	26.7	1	43.0	14.0	31
SMBJ24A ♦	LZ	SMBJ24CA ♦	BZ	24	5	26.7	1	38.9	15.4	28
SMBJ26	MD	SMBJ26C	CD	26	5	28.9	1	46.6	12.4	31
SMBJ26A	ME	SMBJ26CA	CE	26	5	28.9	1	42.1	14.2	30
SMBJ28 ♦	MF	SMBJ28C ♦	CF	28	5	31.1	1	50.0	12.0	35
SMBJ28A ♦	MG	SMBJ28CA ♦	CG	28	5	31.1	1	45.4	13.2	31
SMBJ30	MH	SMBJ30C	CH	30	5	33.3	1	53.5	11.2	39
SMBJ30A	MK	SMBJ30CA	CK	30	5	33.3	1	48.4	12.4	36
SMBJ33 ♦	ML	SMBJ33C ♦	CL	33	5	36.7	1	59.0	10.2	42
SMBJ33A ♦	MM	SMBJ33CA ♦	CM	33	5	36.7	1	53.3	11.3	39
SMBJ36	MN	SMBJ36C	CN	36	5	40.0	1	64.3	9.3	46
SMBJ36A	MP	SMBJ36CA	CP	36	5	40.0	1	58.1	10.3	41
SMBJ40 ♦	MQ	SMBJ40C ♦	CQ	40	5	44.4	1	71.4	8.4	51
SMBJ40A ♦	MR	SMBJ40CA ♦	CR	40	5	44.4	1	64.5	9.3	46
SMBJ43	MS	SMBJ43C	CS	43	5	47.8	1	76.7	7.8	55
SMBJ43A	MT	SMBJ43CA	CT	43	5	47.8	1	69.4	8.6	50
SMBJ45	MU	SMBJ45C	CU	45	5	50.0	1	80.3	7.5	58
SMBJ45A	MV	SMBJ45CA	CV	45	5	50.0	1	72.7	8.3	52
SMBJ48	MW	SMBJ48C	CW	48	5	53.3	1	85.5	7.0	63
SMBJ48A	MX	SMBJ48CA	CX	48	5	53.3	1	77.4	7.7	56
SMBJ51	MY	SMBJ51C	CY	51	5	56.7	1	91.1	6.6	66
SMBJ51A	MZ	SMBJ51CA	CZ	51	5	56.7	1	82.4	7.3	61
SMBJ54	ND	SMBJ54C	DD	54	5	60.0	1	98.3	6.2	71
SMBJ54A	NE	SMBJ54CA	DE	54	5	60.0	1	87.1	6.9	65
SMBJ58 ♦	NF	SMBJ58C ♦	DF	58	5	64.4	1	105.0	5.8	78
SMBJ58A ♦	NG	SMBJ58CA ♦	DG	58	5	64.4	1	93.6	6.4	70
SMBJ60	NH	SMBJ60C	DH	60	5	66.7	1	107.0	5.6	80
SMBJ60A	NK	SMBJ60CA	DK	60	5	66.7	1	96.8	6.2	71
SMBJ64 ♦	NL	SMBJ64C ♦	DL	64	5	71.1	1	114.0	5.3	86
SMBJ64A ♦	NM	SMBJ64CA ♦	DM	64	5	71.1	1	103.0	5.8	76
SMBJ70	NN	SMBJ70C	DN	70	5	77.8	1	125	4.8	94
SMBJ70A	NP	SMBJ70CA	DP	70	5	77.8	1	113	5.3	85
SMBJ75	NQ	SMBJ75C ♦	DQ	75	5	83.3	1	134	4.5	101
SMBJ75A	NR	SMBJ75CA ♦	DR	75	5	83.3	1	121	4.9	91
SMBJ78	NS	SMBJ78C	DS	78	5	86.7	1	139	4.3	105
SMBJ78A	NT	SMBJ78CA	DT	78	5	86.7	1	126	4.7	95
SMBJ85	NU	SMBJ85C	DU	85	5	94.4	1	151	3.9	114
SMBJ85A	NV	SMBJ85CA	DV	85	5	94.4	1	137	4.4	103
SMBJ90	NW	SMBJ90C	DW	90	5	100	1	160	3.8	121
SMBJ90A	NX	SMBJ90CA	DX	90	5	100	1	146	4.1	110
SMBJ100	NY	SMBJ100C	DY	100	5	111	1	179	3.4	135
SMBJ100A	NZ	SMBJ100CA	DZ	100	5	111	1	162	3.7	123
SMBJ110	PD	SMBJ110C	ED	110	5	122	1	196	3.0	148
SMBJ110A	PE	SMBJ110CA	EE	110	5	122	1	177	3.4	133
SMBJ120	PF	SMBJ120C ♦	EF	120	5	133	1	214	2.8	162
SMBJ120A	PG	SMBJ120CA♦	EG	120	5	133	1	193	3.1	146
SMBJ130	PH	SMBJ130C	EH	130	5	144	1	231	2.6	175
SMBJ130A	PK	SMBJ130CA	EK	130	5	144	1	209	2.9	158
SMBJ150	PL	SMBJ150C	EL	150	5	167	1	268	2.2	203
SMBJ150A	PM	SMBJ150CA	EM	150	5	167	1	243	2.5	184
SMBJ160	PN	SMBJ160C	EN	160	5	178	1	287	2.1	217
SMBJ160A	PP	SMBJ160CA	EP	160	5	178	1	259	2.3	196
SMBJ170	PQ	SMBJ170C ♦	EQ	170	5	189	1	304	2.0	230
SMBJ170A	PR	SMBJ170CA♦	ER	170	5	189	1	275	2.2	208

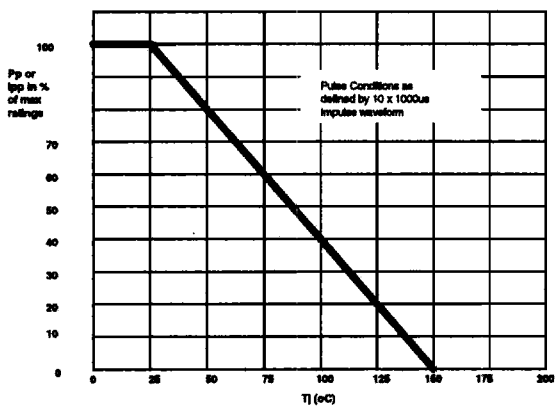
NOTE 1 : "A" = ±5% of nominal V_{BR}, standard tolerance is ±10%.
NOTE 2 : Bidirectional devices have symmetrical avalanche characteristics in both directions.
NOTE 3 : For bidirectional devices with VRWM ≤ 10 volts, the IR limit is doubled.
♦ : Popular / Recommended part types

TEL: 805-498-2111 FAX: 805-498-3804

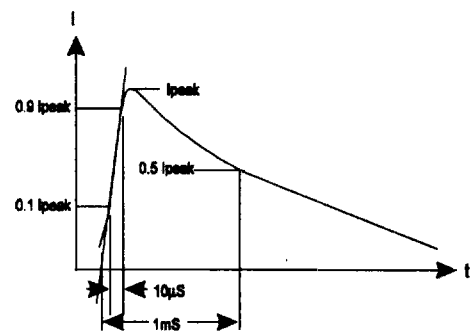
PEAK PULSE POWER vs. PULSE TIME



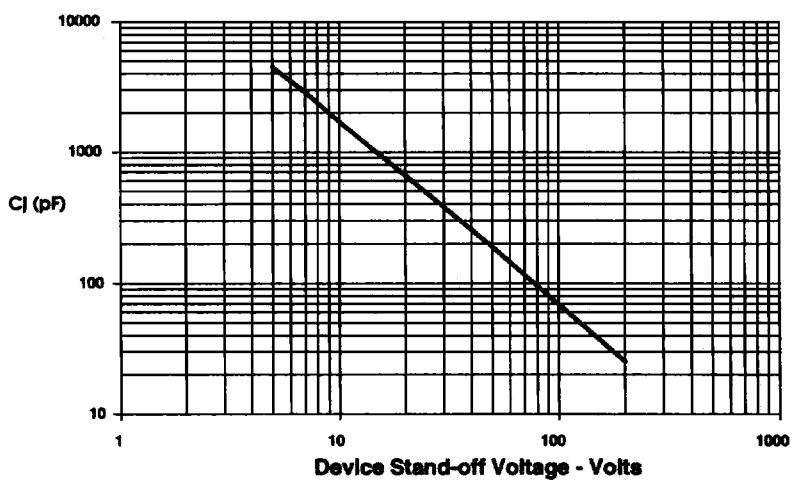
PULSE DERATING CURVE



10x1000µs IMPULSE WAVEFORM



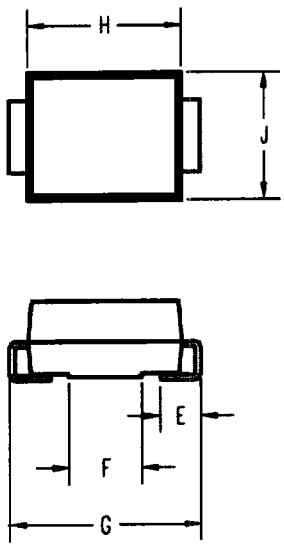
CAPACITANCE vs. WORKING VOLTAGE



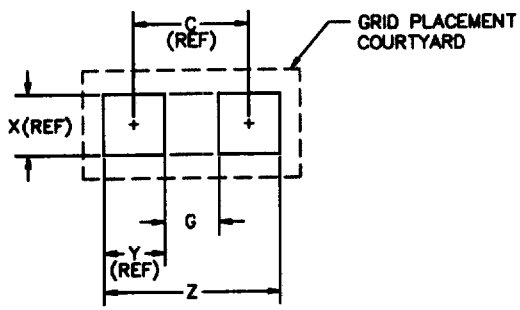
  652 MITCHELL ROAD NEWBURY PARK CA 91320

TEL: 805-498-2111 FAX: 805-498-3804

MECHANICAL OUTLINE & LAND PATTERN - DO-214AA



DIM	INCHES MIN	INCHES MAX	MM MIN	MM MAX	NOTE
A	.075	.095	1.90	2.41	
B	.075	.085	1.90	2.15	
C	.004	.008	.10	.20	
D		.020	–	.51	
E	.030	.060	.76	1.52	
F	.065	.084	1.65	2.13	
G	.201	.220	5.10	5.58	
H	.160	.181	4.06	4.60	
J	.130	.154	3.30	3.90	

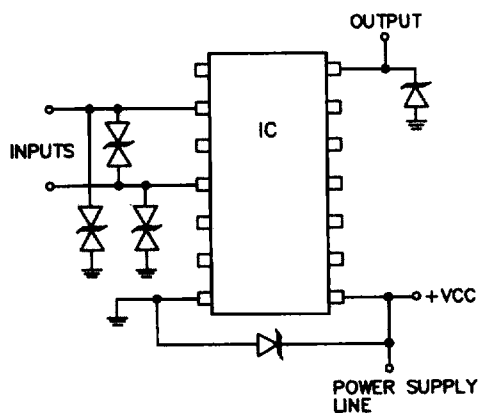


DIM	INCHES MIN	INCHES MAX	MM MIN	MM MAX	NOTE
C	–	.172	–	4.40	–
G	.080	.086	2.00	2.20	–
X	.086	.090	2.20	2.40	–
Y	–	.090	–	2.40	–
Z	.260	.270	6.60	6.80	–

Note : Grid placement courtyard is 8 x 16 elements (4mm x 8mm) in accordance with the internetional grid detailed in IEC publication 97.

TYPICAL APPLICATION : IC PROTECTION

Transient protection for integrated circuits is recommended at the power supply line and signal line interfaces which exit the equipment. A generic application is shown below.



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Semtech:

SMBJ33CA SMBJ36CA SMBJ58CA SMBJ12CA SMBJ24CA SMBJ30CA