ELECTRONICS INDUSTRY (USA) CO., LTD.

Certificate Number: Q10561 Certificate Number: E17276

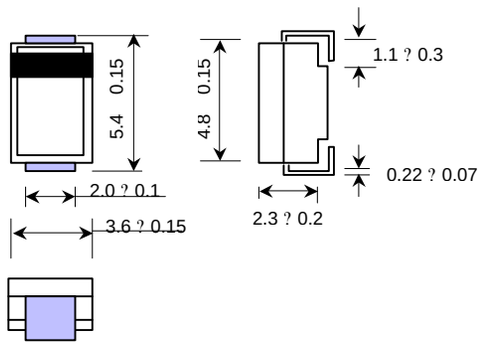
103 MOO 4, LATKRABANG EXPORT PROCESSING ZONE, LATKRABANG, BANGKOK 10520, THAILAND
TEL. : (66 2) 326-0102, 739-4580 FAX. : (66 2) 326-0933 E-mail : eicfirst @ iname.com http. : // www.eicsemi.com

SMBJ 5.0 - 170A

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

V_{BR} : 6.8 - 200 Volts
P_{PK} : 600 Watts

SMB (DO-214AA)



Dimensions in millimeter

FEATURES :

* 600W surge capability at 1ms
* Excellent clamping capability
* Low inductance
* Response Time Typically < 1ns
* Typical I_R less then 1µA above 10V

MECHANICAL DATA

* Case : SMB Molded plastic
* Epoxy : UL94V-O rate flame retardant
* Lead : Lead Formed for Surface Mount
* Polarity : Color band denotes cathode end
* Mounting position : Any
* Weight : 0.108 gram

MAXIMUM RATINGS

Rating at Ta = 25 ?C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000µs (1) waveform (Notes 1, 2, Fig. 3)	P_{PPM}	Minimum 600	Watts
Peak Pulse Current on 10/1000µs waveform (Note 1, Fig. 5)	I_{PPM}	See Table	Amps
Peak forward Surge Current 8.3 ms single half sine-wave superimposed on rated load (JEDEC Method)(Notes 2, 3)			
Maximum Instantaneous Forward Voltage at 50A (Note 3,4)	V_{FM}	See Note 3, 4	Volts
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 65 to + 150	?C

Note :

(1) Non-repetitive Current pulse, per Fig. 5 and derated above Ta = 25 ?C per Fig. 1

(2) Mounted on 5.0mm2 (0.013mm thick) land areas.

(3) Measured on 8.3ms. Single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minutes maximum.

(4) V_F=3.5V for SMBJ5.0 thru SMBJ90 devices and V_F=5V for SMBJ100 thru SMBJ170 devices.

UPDATE : MAY 25, 2000

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ELECTRICAL CHARACTERISTICS

Rating at Ta = 25 ?C ambient temperature unless otherwise specified

TYPE	Marking Code	Breakdown Voltage @ IT (Note 1)			Reverse Stand-off Voltage	Maximum Reverse Leakage @ VWM	Maximum Peak Pulse Surge Current (See Fig. 2)	Maximum Clamping Voltage @ IPPM
		VBR (V)		IT	VWM	IR	IPPM	VC
		Min.	Max.	(mA)	(V)	(µA)	(A)	(V)
SMBJ5.0	**606I**	6.40	7.55	10	5.0	800	62.5	9.6
SMBJ5.0A	**656I**	6.40	7.25	10	5.0	800	65.2	9.2
SMBJ6.0	**607C**	6.67	8.45	10	6.0	800	52.6	11.4
SMBJ6.0A	**657C**	6.67	7.67	10	6.0	800	58.3	10.3
SMBJ6.5	**607I**	7.22	9.14	10	6.5	500	48.7	12.3
SMBJ6.5A	**657I**	7.22	8.30	10	6.5	500	53.6	11.2
SMBJ7.0	**608E**	7.78	9.86	10	7.0	200	45.1	13.3
SMBJ7.0A	**658E**	7.78	8.95	10	7.0	200	50.0	12.0
SMBJ7.5	**609A**	8.33	10.67	1.0	7.5	100	42.0	14.3
SMBJ7.5A	**659A**	8.33	9.58	1.0	7.5	100	46.5	12.9
SMBJ8.0	**609G**	8.89	11.3	1.0	8.0	50	40.0	15.0
SMBJ8.0A	**659G**	8.89	10.23	1.0	8.0	50	44.1	13.6
SMBJ8.5	**6010**	9.44	11.92	1.0	8.5	20	37.7	15.9
SMBJ8.5A	**6510**	9.44	10.82	1.0	8.5	20	41.7	14.4
SMBJ9.0	**6011**	10.0	12.6	1.0	9.0	10	35.5	16.9
SMBJ9.0A	**6511**	10.0	11.5	1.0	9.0	10	39.0	15.4
SMBJ10	**6012**	11.1	14.1	1.0	10	5.0	31.9	18.8
SMBJ10A	**6512**	11.1	12.8	1.0	10	5.0	35.3	17.0
SMBJ11	**6013**	12.2	15.4	1.0	11	5.0	29.9	20.1
SMBJ11A	**6513**	12.2	14.0	1.0	11	5.0	33.0	18.2
SMBJ12	**6014**	13.3	16.9	1.0	12	5.0	27.3	22.0
SMBJ12A	**6514**	13.3	15.3	1.0	12	5.0	30.2	19.9
SMBJ13	**6015**	14.4	18.2	1.0	13	5.0	25.2	23.8
SMBJ13A	**6515**	14.4	16.5	1.0	13	5.0	27.9	21.5
SMBJ14	**6017**	15.6	19.8	1.0	14	5.0	23.3	25.8
SMBJ14A	**6517**	15.6	17.9	1.0	14	5.0	25.8	23.2
SMBJ15	**6018**	16.7	21.1	1.0	15	5.0	22.3	26.9
SMBJ15A	**6518**	16.7	19.2	1.0	15	5.0	24.0	24.4
SMBJ16	**6019**	17.8	22.6	1.0	16	5.0	20.8	28.8
SMBJ16A	**6519**	17.8	20.5	1.0	16	5.0	23.1	26.0
SMBJ17	**6020**	18.9	23.9	1.0	17	5.0	19.7	30.5
SMBJ17A	**6520**	18.9	21.7	1.0	17	5.0	21.7	27.6
SMBJ18	**6022**	20.0	25.3	1.0	18	5.0	18.6	32.2
SMBJ18A	**6522**	20.0	23.3	1.0	18	5.0	20.5	29.2
SMBJ20	**6024**	22.2	28.1	1.0	20	5.0	16.7	35.8
SMBJ20A	**6524**	22.2	25.5	1.0	20	5.0	18.5	32.4
SMBJ22	**6026**	24.4	30.9	1.0	22	5.0	15.2	39.4
SMBJ22A	**6526**	24.4	28.0	1.0	22	5.0	16.9	35.5
SMBJ24	**6029**	26.7	33.8	1.0	24	5.0	14.0	43.0
SMBJ24A	**6529**	26.7	30.7	1.0	24	5.0	15.4	38.9
SMBJ26	**6031**	28.9	36.6	1.0	26	5.0	12.4	46.6
SMBJ26A	**6531**	28.9	33.2	1.0	26	5.0	14.2	42.1
SMBJ28	**6033**	31.1	39.4	1.0	28	5.0	12.0	50.0
SMBJ28A	**6533**	31.1	35.8	1.0	28	5.0	13.2	45.4
SMBJ30	**6036**	33.3	42.2	1.0	30	5.0	11.2	53.5
SMBJ30A	**6536**	33.1	38.3	1.0	30	5.0	12.4	46.6

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TYPE	Marking Code	Breakdown Voltage @ I_T (Note 1)			Reverse Stand-off Voltage	Maximum Reverse Leakage @ V_{WM}	Maximum Peak Pulse Surge Current (See Fig. 2)	Maximum Clamping Voltage @ I_{PPM}
		V_{BR} (V)		I_T	V_{WM}	I_R	I_{PPM}	V_C
		Min.	Max.	(mA)	(V)	(µA)	(A)	(V)
SMBJ33	**6040**	36.7	46.5	1.0	33	5.0	10.2	59.0
SMBJ33A	**6540**	36.7	42.2	1.0	33	5.0	11.3	53.3
SMBJ36	**6043**	40.0	50.7	1.0	36	5.0	9.3	64.3
SMBJ36A	**6543**	40.0	46.0	1.0	36	5.0	10.3	58.1
SMBJ40	**6048**	44.4	56.3	1.0	40	5.0	8.4	71.4
SMBJ40A	**6548**	44.4	51.1	1.0	40	5.0	9.3	64.5
SMBJ43	**6051**	47.8	60.5	1.0	43	5.0	7.8	76.7
SMBJ43A	**6551**	47.8	54.9	1.0	43	5.0	8.6	69.4
SMBJ45	**6054**	50.0	63.3	1.0	45	5.0	7.5	80.3
SMBJ45A	**6554**	50.0	57.5	1.0	45	5.0	8.3	72.7
SMBJ48	**6057**	53.3	67.5	1.0	48	5.0	7.0	85.5
SMBJ48A	**6557**	53.3	61.3	1.0	48	5.0	7.7	77.4
SMBJ51	**6061**	56.7	71.8	1.0	51	5.0	6.6	91.1
SMBJ51A	**6561**	56.7	65.2	1.0	51	5.0	7.3	82.4
SMBJ54	**6065**	60.0	76.0	1.0	54	5.0	6.2	96.3
SMBJ54A	**6565**	60.0	69.0	1.0	54	5.0	6.9	87.1
SMBJ58	**6070**	64.4	81.6	1.0	58	5.0	5.8	103.0
SMBJ58A	**6570**	64.4	74.1	1.0	58	5.0	6.4	93.6
SMBJ60	**6072**	66.7	84.5	1.0	60	5.0	5.6	107
SMBJ60A	**6572**	66.7	76.7	1.0	60	5.0	6.2	96.8
SMBJ64	**6076**	71.1	90.1	1.0	64	5.0	5.3	114
SMBJ64A	**6576**	71.1	81.8	1.0	64	5.0	5.8	103
SMBJ70	**6084**	77.8	98.6	1.0	70	5.0	4.8	125
SMBJ70A	**6584**	77.8	89.5	1.0	70	5.0	5.3	113
SMBJ75	**6090**	83.3	105.7	1.0	75	5.0	4.5	134
SMBJ75A	**6590**	83.3	95.8	1.0	75	5.0	4.9	121
SMBJ78	**6093**	86.7	109.8	1.0	78	5.0	4.3	139
SMBJ78A	**6593**	86.7	99.7	1.0	78	5.0	4.7	126
SMBJ85	**60B0**	94.4	119.2	1.0	85	5.0	3.9	151
SMBJ85A	**65B0**	94.4	108.2	1.0	85	5.0	4.4	137
SMBJ90	**60B1**	100	126.5	1.0	90	5.0	3.8	160
SMBJ90A	**65B1**	100	115.5	1.0	90	5.0	4.1	146
SMBJ100	**60B2**	111	141.0	1.0	100	5.0	3.4	179
SMBJ100A	**65B2**	111	128.0	1.0	100	5.0	3.7	162
SMBJ110	**60B3**	122	154.5	1.0	110	5.0	3.0	196
SMBJ110A	**65B3**	122	140.5	1.0	110	5.0	3.4	177
SMBJ120	**60B4**	133	169.0	1.0	120	5.0	2.8	214
SMBJ120A	**65B4**	133	153.0	1.0	120	5.0	3.1	193
SMBJ130	**60B5**	144	182.5	1.0	130	5.0	2.6	231
SMBJ130A	**65B5**	144	165.5	1.0	130	5.0	2.9	209
SMBJ150	**60B8**	167	211.5	1.0	150	5.0	2.2	268
SMBJ150A	**65B8**	167	192.5	1.0	150	5.0	2.5	243
SMBJ160	**60B9**	178	226.0	1.0	160	5.0	2.1	287
SMBJ160A	**65B9**	178	205.0	1.0	160	5.0	2.3	259
SMBJ170	**60D0**	189	239.5	1.0	170	5.0	2.0	304
SMBJ170A	**65D0**	189	217.5	1.0	170	5.0	2.2	275

Note:

(1) V_{BR} measured after I_T applied for 300 µs., I_T = square wave pulse or equivalent.
(2) Surge Current Waveform per Figure 5 and Derate per Figure 1
(3) A Transient suppressor is normally selected according to the reverse " Stand-off Voltage " (V_{WM}) which should be equal to or greater then the D.C. or continuous peak operating voltage level.

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RATING AND CHARACTERISTIC CURVES (SMBJ5.0 - SMBJ170A)

FIG.1 - PULSE DERATING CURVE

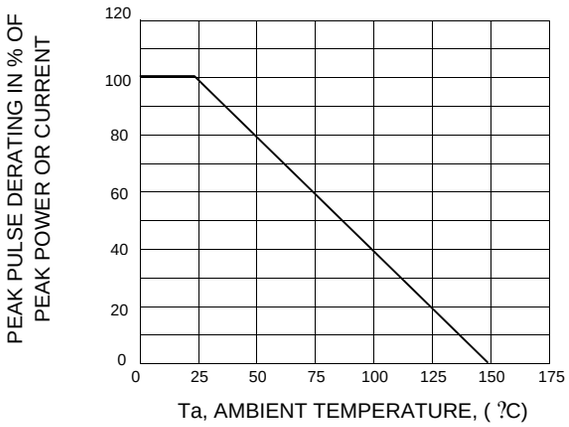

FIG.2 - MAXIMUM NON-REPETITIVE PERK FORWARD SURGE CURRENT

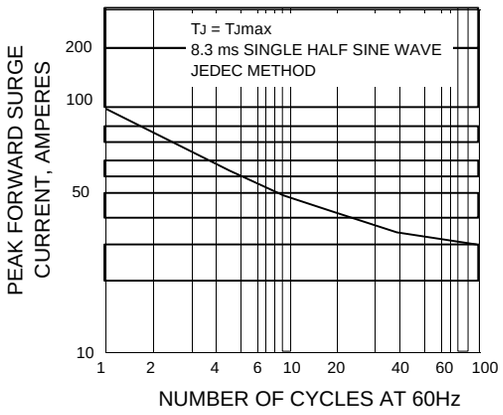

FIG.3 - TYPICAL JUNCTION CAPACITANCE

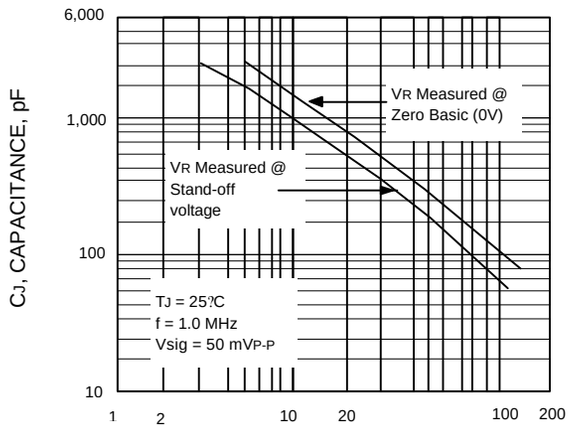

FIG.4 - PEAK PULSE POWER RATING CURVE

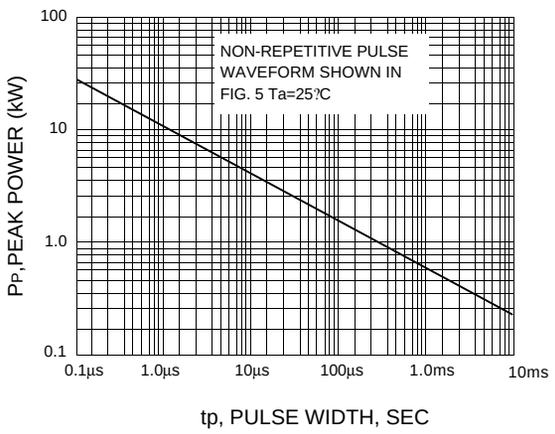

FIG.5 - PULSE WAVEFORM