



*DC COMPONENTS CO., LTD.*

RECTIFIER SPECIALISTS

SMBJ5.0  
THRU  
SMBJ440CA

**TECHNICAL SPECIFICATIONS OF TRANSIENT VOLTAGE SUPPRESSOR**

**VOLTAGE RANGE - 5.0 to 440Volts**

**PEAK PULAE POWER - 600 Watts**

**FEATURES**

- \* Glass passivated junction
- \* 600 Watts Peak Pulse Power capability on 10/1000  $\mu$ s waveform
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time

**MECHANICAL DATA**

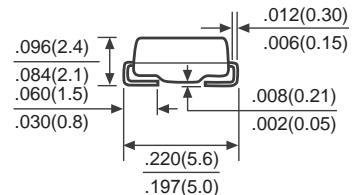
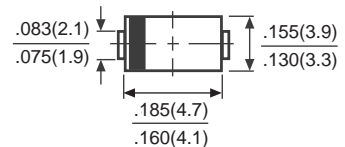
- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: MIL-STD-202E, Method 208 guaranteed
- \* Polarity: Color band denotes positive end (cathode) except bidirectional types
- \* Mounting position: Any
- \* Weight: 0.093 gram

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25°C ambient temperature unless otherwise specified.  
Single phase, half wave, 60 Hz, resistive or inductive load,  
For capacitive load, derate current by 20%.



SMB ( DO-214AA )



Dimensions in inches and (millimeters)

**DEVICES FOR BIPOLAR APPLICATIONS**

For Bidirectional use C or CA suffix (e.g. SMBJ5.0C, SMBJ440CA).

Electrical characteristics apply in both directions

	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (Note1, FIG.1)	PPM	Minimum 600	Watts
Steady State Power Dissipation at T = 75°C Lead Lengths .375"(9.5mm) (Note 2)	P <sub>M(AV)</sub>	5.0	Watts
Peak Forward Surge Current, 8.3ms single half sine-wave superimposed on rated load(JEDEC Method) (Note 3)	I <sub>FSM</sub>	100	Amps
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 175	°C

- NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above TA = 25°C per Fig. 2.  
2. Mounted on Copper Leaf area of 0.2 X 0.2" ( 5.0 X 5.0mm ) per Fig. 5  
3. 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

# RATING AND CHARACTERISTIC CURVES (SMBJ5.0 THRU SMBJ440CA)

FIG. 1 - PEAK PULSE POWER RATING CURVE

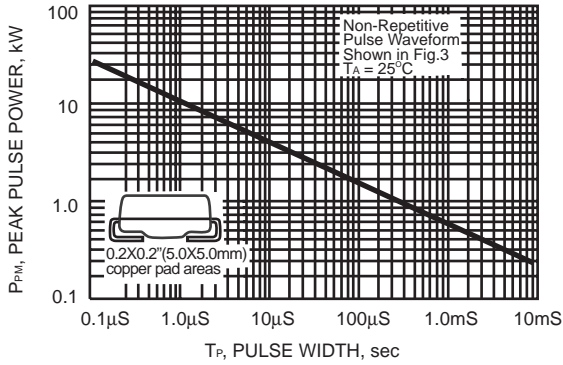


FIG. 2 - PULSE DERATING CURVE

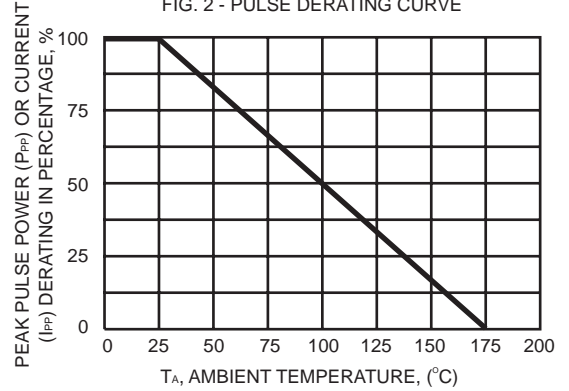


FIG. 3 - PULSE WAVEFORM

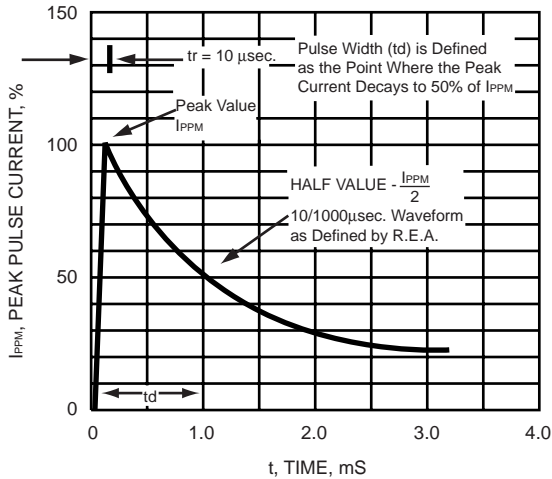


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

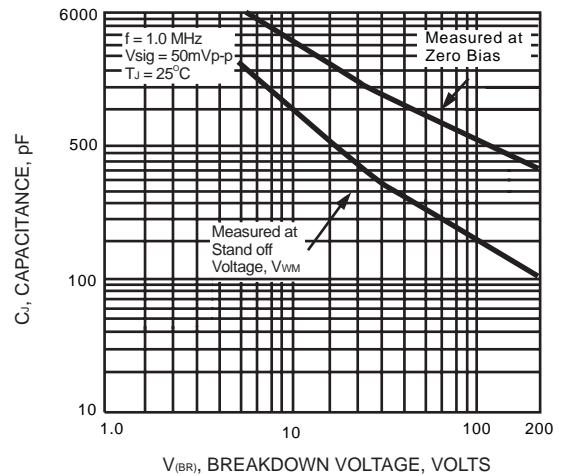
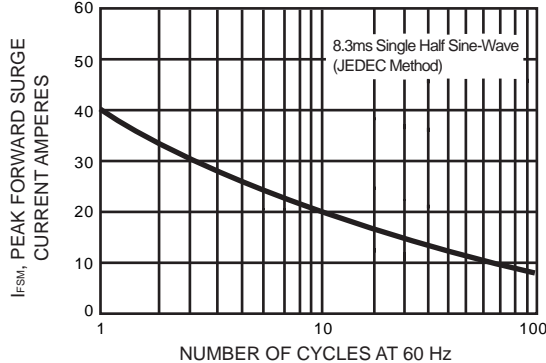


FIG. 5 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL



## SMBJ (600W) SERIES TRANSIENT VOLTAGE SUPPRESSORS

TYPE	Reverse Stand-off Voltage	Breakdown Voltage @ I <sub>T</sub>		Test Current	Maximum Reverse Leakage @ V <sub>RWM</sub>		Maximum Clamping Voltage @ I <sub>PP</sub>	Maximum Peak Pulse Current
		V <sub>BR</sub>			I <sub>R</sub>	I <sub>R</sub>		
	V <sub>RWM</sub>	Min.	Max.	I <sub>T</sub>		UNI-	BI-	V <sub>C</sub>
		V	V		V	mA	μA	
SMBJ5.0	5.0	6.40	7.55	10	800	1600	9.6	62.5
SMBJ5.0A	5.0	6.40	7.25	10	800	1600	9.2	65.2
SMBJ6.0	6.0	6.67	8.45	10	800	1600	11.4	52.6
SMBJ6.0A	6.0	6.67	7.67	10	800	1600	10.3	58.3
SMBJ6.5	6.5	7.22	9.14	10	500	1000	12.3	48.7
SMBJ6.5A	6.5	7.22	8.30	10	500	1000	11.2	53.6
SMBJ7.0	7.0	7.78	9.86	10	200	400	13.3	45.1
SMBJ7.0A	7.0	7.78	8.95	10	200	400	12.0	50
SMBJ7.5	7.5	8.33	10.67	1	100	200	14.3	42
SMBJ7.5A	7.5	8.33	9.58	1	100	200	12.9	46.5
SMBJ8.0	8.0	8.89	11.30	1	50	100	15.0	40
SMBJ8.0A	8.0	8.89	10.23	1	50	100	13.6	44.1
SMBJ8.5	8.5	9.44	11.92	1	10	20	15.9	37.7
SMBJ8.5A	8.5	9.44	10.82	1	10	20	14.4	41.7
SMBJ9.0	9.0	10.0	12.6	1	5	10	16.9	35.5
SMBJ9.0A	9.0	10.0	11.5	1	5	10	15.4	39
SMBJ10	10	11.1	14.1	1	5		18.8	31.9
SMBJ10A	10	11.1	12.8	1	5		17.0	35.3
SMBJ11	11	12.2	15.4	1	5		20.1	29.9
SMBJ11A	11	12.2	14.0	1	5		18.2	33
SMBJ12	12	13.3	16.9	1	5		22.0	27.3
SMBJ12A	12	13.3	15.3	1	5		19.9	30.2
SMBJ13	13	14.4	18.2	1	5		23.8	25.2
SMBJ13A	13	14.4	16.5	1	5		21.5	27.9
SMBJ14	14	15.6	19.8	1	5		25.8	23.3
SMBJ14A	14	15.6	17.9	1	5		23.2	25.8
SMBJ15	15	16.7	21.1	1	5		26.9	22.3
SMBJ15A	15	16.7	19.2	1	5		24.4	24
SMBJ16	16	17.8	22.6	1	5		28.8	20.8
SMBJ16A	16	17.8	20.5	1	5		26.0	23.1
SMBJ17	17	18.9	23.9	1	5		30.5	19.7
SMBJ17A	17	18.9	21.7	1	5		27.6	21.7
SMBJ18	18	20.0	25.3	1	5		32.2	18.6
SMBJ18A	18	20.0	23.3	1	5		29.2	20.5
SMBJ20	20	22.2	28.1	1	5		35.8	16.7
SMBJ20A	20	22.2	25.5	1	5		32.4	18.5
SMBJ22	22	24.4	30.9	1	5		39.4	15.2
SMBJ22A	22	24.4	28.0	1	5		35.5	16.9
SMBJ24	24	26.7	33.8	1	5		43.0	14
SMBJ24A	24	26.7	30.7	1	5		38.9	15.4
SMBJ26	26	28.9	36.6	1	5		46.6	12.4
SMBJ26A	26	28.9	33.2	1	5		42.1	14.2
SMBJ28	28	31.1	39.4	1	5		50.0	12
SMBJ28A	28	31.1	35.8	1	5		45.4	13.2
SMBJ30	30	33.3	42.2	1	5		53.5	11.2
SMBJ30A	30	33.3	38.3	1	5		48.4	12.4
SMBJ33	33	36.7	46.5	1	5		59.0	10.2
SMBJ33A	33	36.7	42.2	1	5		53.3	11.3
SMBJ36	36	40.0	50.7	1	5		64.3	9.3
SMBJ36A	36	40.0	46.0	1	5		58.1	10.3
SMBJ40	40	44.4	56.3	1	5		71.4	8.4
SMBJ40A	40	44.4	51.1	1	5		64.5	9.3



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		V <sub>BR</sub>			I <sub>T</sub>	I <sub>R</sub>			
		Min.	Max.			UNI-			BI-
		V	V			μA			μA
SMBJ43	43	47.8	60.5	1	5	76.7	7.8		
SMBJ43A	43	47.8	54.9	1	5	69.4	8.6		
SMBJ45	45	50.0	63.3	1	5	80.3	7.5		
SMBJ45A	45	50.0	57.5	1	5	72.7	8.3		
SMBJ48	48	53.3	67.5	1	5	85.5	7		
SMBJ48A	48	53.3	61.3	1	5	77.4	7.7		
SMBJ51	51	56.7	71.8	1	5	91.1	6.6		
SMBJ51A	51	56.7	65.2	1	5	82.4	7.3		
SMBJ54	54	60.0	76.0	1	5	96.3	6.2		
SMBJ54A	54	60.0	69.0	1	5	87.1	6.9		
SMBJ58	58	64.4	81.6	1	5	103.0	5.8		
SMBJ58A	58	64.4	74.1	1	5	93.6	6.4		
SMBJ60	60	66.7	84.5	1	5	107.0	5.6		
SMBJ60A	60	66.7	76.7	1	5	96.8	6.2		
SMBJ64	64	71.1	90.1	1	5	114	5.3		
SMBJ64A	64	71.1	81.8	1	5	103	5.8		
SMBJ70	70	77.8	98.6	1	5	125	4.8		
SMBJ70A	70	77.8	89.5	1	5	113	5.3		
SMBJ75	75	83.3	105.7	1	5	134	4.5		
SMBJ75A	75	83.3	95.8	1	5	121	4.9		
SMBJ78	78	86.7	109.8	1	5	139	4.3		
SMBJ78A	78	86.7	99.7	1	5	126	4.7		
SMBJ85	85	94.4	119.2	1	5	151	3.9		
SMBJ85A	85	94.4	108.2	1	5	137	4.4		
SMBJ90	90	100	126.5	1	5	160	3.8		
SMBJ90A	90	100	115.5	1	5	146	4.1		
SMBJ100	100	111	141.0	1	5	179	3.4		
SMBJ100A	100	111	128.0	1	5	162	3.7		
SMBJ110	110	122	154.5	1	5	196	3		
SMBJ110A	110	122	140.5	1	5	177	3.4		
SMBJ120	120	133	169.0	1	5	214	2.8		
SMBJ120A	120	133	153.0	1	5	193	3.1		
SMBJ130	130	144	182.5	1	5	231	2.6		
SMBJ130A	130	144	165.5	1	5	209	2.9		
SMBJ150	150	167	211.5	1	5	268	2.2		
SMBJ150A	150	167	192.5	1	5	243	2.5		
SMBJ160	160	178	226.0	1	5	287	2.1		
SMBJ160A	160	178	205.0	1	5	259	2.3		
SMBJ170	170	189	239.5	1	5	304	2		
SMBJ170A	170	189	217.5	1	5	275	2.2		
SMBJ180	180	198	253.8	1	5	322	1.9		
SMBJ180A	180	198	230.4	1	5	292	2.1		
SMBJ190	190	209	267.9	1	5	340	1.8		
SMBJ190A	190	209	243.2	1	5	308	2		
SMBJ200	200	220	282.0	1	5	358	1.7		
SMBJ200A	200	220	256.0	1	5	324	1.9		
SMBJ210	210	231	296.1	1	5	376	1.6		
SMBJ210A	210	231	268.8	1	5	340	1.8		
SMBJ220	220	242	310.2	1	5	394	1.5		
SMBJ220A	220	242	281.6	1	5	356	1.7		



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TYPE	Reverse Stand-off Voltage	Breakdown Voltage @ $I_T$		Test Current	Maximum Reverse Leakage @ $V_{RWM}$		Maximum Clamping Voltage @ $I_{PP}$	Maximum Peak Pulse Current
	$V_{RWM}$ V	$V_{BR}$		$I_T$ mA	$I_R$		$V_C$ V	$I_{PP}$ A
		Min. V	Max. V		UNI- $\mu$ A	BI- $\mu$ A		
SMBJ250A	250	279	309	1	5		405	1.48
SMBJ300A	300	335	371	1	5		486	1.23
SMBJ350A	350	391	432	1	5		567	1.06
SMBJ400A	400	447	494	1	5		648	0.93
SMBJ440A	440	492	543	1	5		713	0.84

NOTES:1.  $V_{BR}$  measured after  $I_T$  applied for 300 $\mu$ s.  $I_T$ = Square Wave Pulse or equivalent.

2. For Bidirectional use "C" or "CA" Suffix for all types (e.g.: SMBJ5.0C, SMBJ.0CA, SMBJ220C, SMBJ220CA).  
Electrical characteristics apply in both directions.

3. For bidirectional types having  $V_{RWM}$  of 10 volts and less, the  $I_D$  limit is doubled.

