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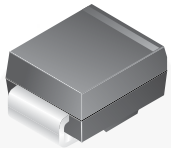
November 2014

SMBJ5V0(C)A - SMBJ170(C)A
600 Watt Transient Voltage Suppressors

Features

- Glass-Passivated Junction
- 600 W Peak Pulse Power Capability on 10/1000 µs Waveform.
- Excellent Clamping Capability
- Low-Incremental Surge Resistance
- Fast Response Time: Typically Less than 1.0 ps from 0 V to BV minimum for Unidirectional and 5.0 ns for Bidirectional
- Typical I_R Less than 1.0 µA Above 10 V
- UL Certificate #E258596



SMB/DO-214AA

Band denotes cathode on unidirectional devices only. No band on bi-directional devices. Bi-directional types have CA suffix where electrical characteristics apply in both directions suitable for bi-directional applications.

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
P_{PPM}	Peak Pulse Power Dissipation on 10/1000 µs Waveform	600	W
I_{PPM}	Peak Pulse Current on 10/1000 µs Waveform	See Table	A
I_{FSM}	Non-Repetitive Peak Forward Surge Current Superimposed on Rated Load (JEDEC Method)(1)	100	A
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Note:

1. Measured on 8.3 ms single half-sine wave or equivalent square wave: duty cycle = 4 pulses per minute maximum.

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Uni-Directional Bi-Directional (C) Device	Part Marking[2]	Reverse Stand-Off Voltage V_{RWM} (V)	Breakdown Voltage V_{BR} (V)		Test Current I_T (mA)	Clamping Voltage at I_{PPM} V_C (V)	Peak Pulse Current I_{PPM} (A)	Reverse Leakage at V_{RWM} I_R (µA)[3]
			Min.	Max.				
SMBJ5V0(C)A	KE	5.0	6.40	7.00	10	9.2	65.2	800
SMBJ6V0(C)A	KG	6.0	6.67	7.37	10	10.3	58.3	800
SMBJ6V5(C)A	KK	6.5	7.22	7.98	10	11.2	53.6	500
SMBJ7V0(C)A	KM	7.0	7.78	8.60	10	12.0	50.0	200
SMBJ7V5(C)A	KP	7.5	8.33	9.21	1	12.9	46.5	100
SMBJ8V0(C)A	KR	8.0	8.89	9.83	1	13.6	44.1	50
SMBJ8V5(C)A	KT	8.5	9.44	10.4	1	14.4	41.7	20
SMBJ9V0(C)A	KV	9.0	10.0	11.1	1	15.4	39.0	10
SMBJ10(C)A	KX	10	11.1	12.8	1	17.0	35.3	5
SMBJ11(C)A	KZ	11	12.2	13.5	1	18.2	33.0	5
SMBJ12(C)A	LE	12	13.3	14.7	1	19.9	30.2	5
SMBJ13(C)A	LG	13	14.4	15.9	1	21.5	27.9	5
SMBJ14(C)A	LK	14	15.6	17.2	1	23.2	25.9	5
SMBJ15(C)A	LM	15	16.7	18.5	1	24.4	24.6	5
SMBJ16(C)A	LP	16	17.8	19.7	1	26.0	23.1	5
SMBJ17(C)A	LR	17	18.9	20.9	1	27.6	21.7	5
SMBJ18(C)A	LT	18	20.0	22.1	1	29.2	20.5	5
SMBJ20(C)A	LV	20	22.2	24.5	1	32.4	18.5	5
SMBJ22(C)A	LX	22	24.4	26.9	1	35.5	16.9	5
SMBJ24(C)A	LZ	24	26.7	29.5	1	38.9	15.4	5
SMBJ26(C)A	ME	26	28.9	31.9	1	42.1	14.3	5
SMBJ28(C)A	MG	28	31.1	34.4	1	45.4	13.2	5
SMBJ30(C)A	MK	30	33.3	36.8	1	48.4	12.4	5
SMBJ33(C)A	MM	33	36.7	40.6	1	53.3	11.3	5
SMBJ36(C)A	MP	36	40.0	44.2	1	58.1	10.3	5
SMBJ40(C)A	MR	40	44.4	49.1	1	64.5	9.3	5
SMBJ43(C)A	MT	43	47.8	52.8	1	69.4	8.6	5
SMBJ45(C)A	MV	45	50.0	55.3	1	72.7	8.3	5
SMBJ48(C)A	MX	48	53.3	58.9	1	77.4	7.8	5
SMBJ51(C)A	MZ	51	56.7	62.7	1	82.4	7.3	5
SMBJ54(C)A	NE	54	60.0	66.3	1	87.1	6.9	5
SMBJ58(C)A	NG	58	64.4	71.2	1	93.6	6.4	5
SMBJ60(C)A	NK	60	66.7	73.7	1	96.8	6.2	5
SMBJ64(C)A	NM	64	71.1	78.6	1	103.0	5.8	5
SMBJ70(C)A	NP	70	77.8	86.0	1	113.0	5.3	5
SMBJ75(C)A	NR	75	83.3	92.1	1	121.0	5.0	5
SMBJ78(C)A	NT	78	86.7	95.8	1	126.0	4.8	5

Notes:

2. Color band denotes cathode on unidirectional devices only. No color band on bidirectional devices.

3. For bidirectional parts with V_{RWM} < 10 V, the I_R max limit is doubled.

Electrical Characteristics (Continued)

Values are at T_A = 25°C unless otherwise noted.

Uni-Directional Bi-Directional (C) Device	Part Marking[2]	Reverse Stand-Off Voltage V_{RWM} (V)	Breakdown Voltage V_{BR} (V)		Test Current I_T (mA)	Clamping Voltage at I_{PPM} V_C (V)	Peak Pulse Current I_{PPM} (A)	Reverse Leakage at V_{RWM} I_R (µA)[3]
			Min.	Max.				
SMBJ85(C)A	NV	85	94.4	104.0	1	137.0	4.4	5
SMBJ90(C)A	NX	90	100.0	111.0	1	146.0	4.1	5
SMBJ100(C)A	NZ	100	111.0	123.0	1	162.0	3.7	5
SMBJ110(C)A	PE	110	122.0	135.0	1	177.0	3.4	5
SMBJ120(C)A	PG	120	133.0	147.0	1	193.0	3.1	5
SMBJ130(C)A	PK	130	144.0	159.0	1	209.0	2.9	5
SMBJ150(C)A	PM	150	167.0	185.0	1	243.0	2.5	5
SMBJ160(C)A	PP	160	178.0	197.0	1	259.0	2.3	5
SMBJ170(C)A	PR	170	189.0	209.0	1	275.0	2.2	5

Notes:

2. Color band denotes cathode on unidirectional devices only. No color band on bidirectional devices.
3. For bidirectional parts with V_{RWM} < 10 V, the I_R max limit is doubled.

Typical Performance Characteristics

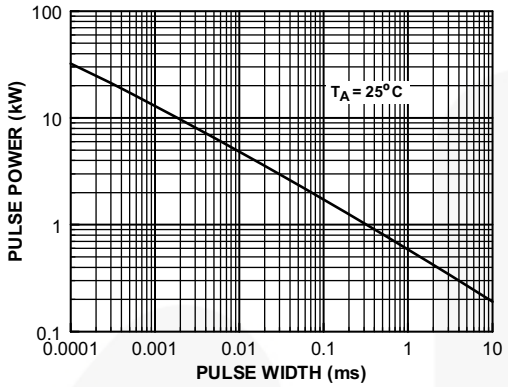


Figure 1. Peak Pulse Power Rating Curve

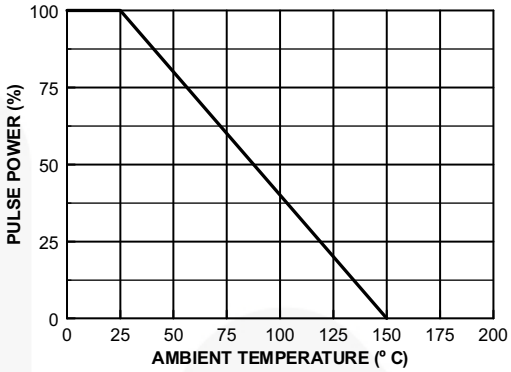


Figure 2. Pulse Derating Curve

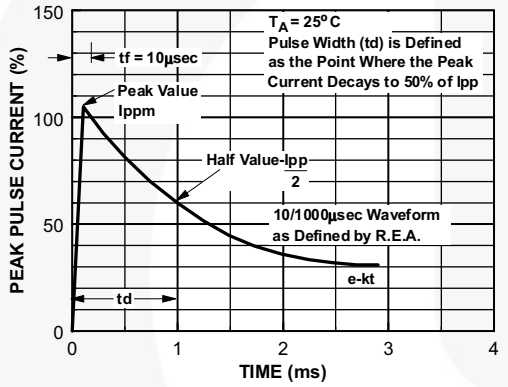


Figure 3. Pulse Waveform

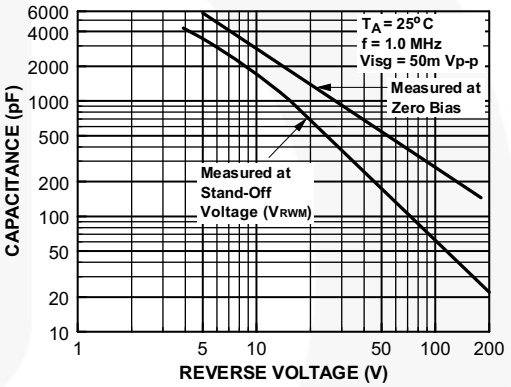


Figure 4. Junction Capacitance

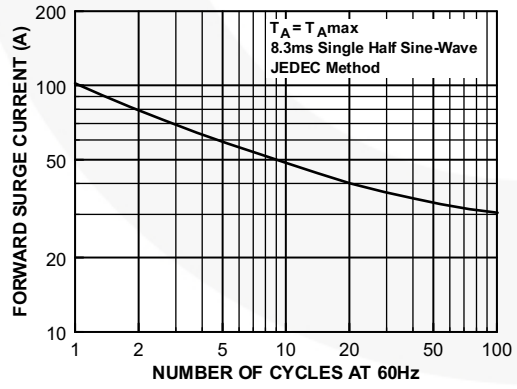
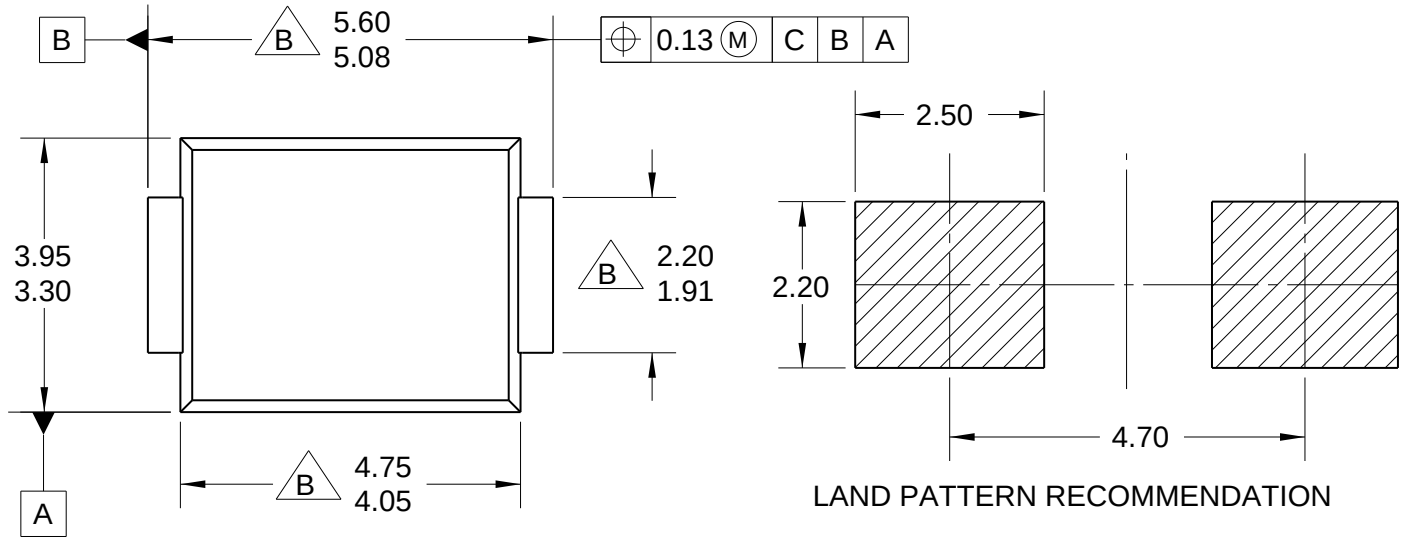


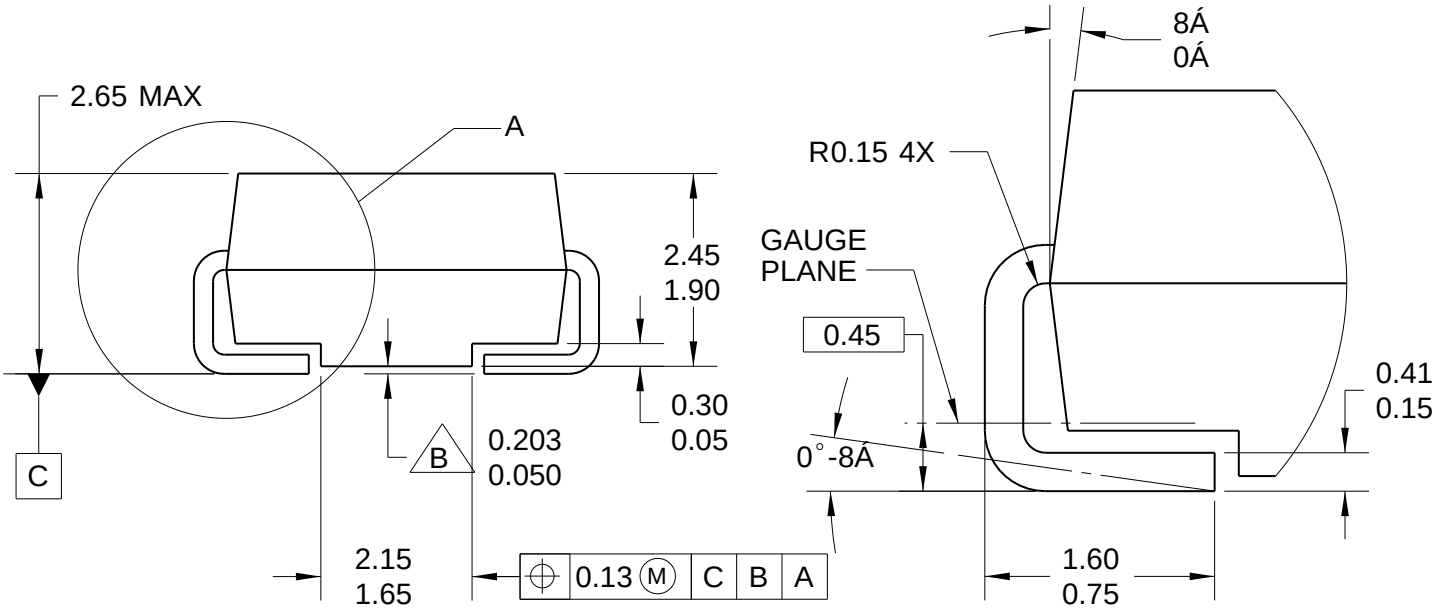
Figure 5. Non-Repetitive Surge Current

REVISIONS

NBR	DESCRIPTION	DATE	BY/APP'D
1	RELEASED TO DCC	19MAY2008	SDLEE / FSSZ



LAND PATTERN RECOMMENDATION



DETAIL A
SCALE 20 : 1

NOTES:

A. EXCEPT WHERE NOTED CONFORMS TO JEDEC DO214 VARIATION AA.
B DOES NOT COMPLY JEDEC STD. VALUE.
C. ALL DIMENSIONS ARE IN MILLIMETERS.
D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
E. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
F. LAND PATTERN STD. DIOM5336X240M.
G. DRAWING FILE NAME: DO214AAREV1

APPROVALS	DATE
DRAWN: BOBOY MALDO	19MAY2008
CHECKED: SD LEE	
APPROVED: FRED REN	
APPROVED: HOWARD ALLEN	

PROJECTION [MM] INCH

FAIRCHILD SEMICONDUCTOR™

2LD, SMB, JEDEC
DO214 VARIATION AA

SCALE	SIZE	DRAWING NUMBER	REV
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FORMERLY: N/A

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