

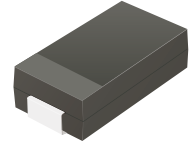
## SMBJ5.0(C)A-HF Thru. SMBJ250(C)A-HF

Working Peak Reverse Voltage: 5.0 to 250 Volts

Power Dissipation: 600 Watts

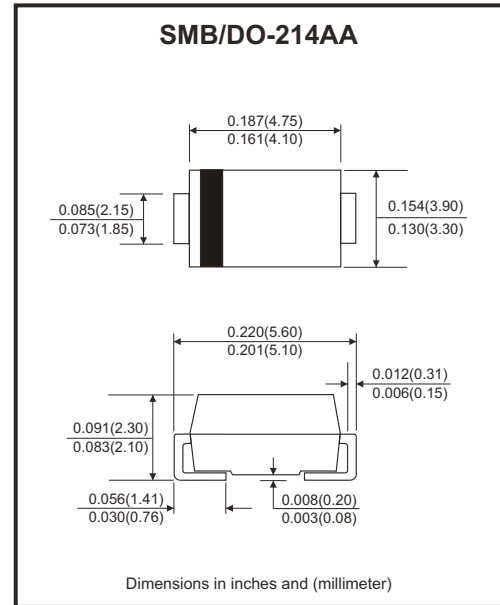
RoHS Device

Halogen Free



### Features

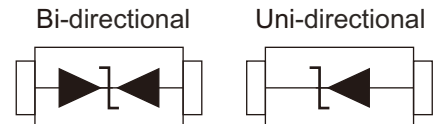
- 600W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetitive rate (duty cycle):0.01%.
- For surface mounted applications to optimize board space.
- Low incremental surge impedance.
- Excellent clamping capability.
- Very fast response time.
- Uni and Bidirectional unit.
- Plastic package has underwriters laboratory flammability 94V-0.
- Meet Halogen free and RoHS compliant.



### Mechanical data

- Case: SMB/DO-214AA, molded plastic.
- Terminals: solderable per MIL-STD-750, method 2026.
- Polarity: Color band denotes positive end (cathode) except bi-directional models.

### Circuit Diagram



### Maximum Ratings and Electrical Characteristics

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

Characteristics	Symbol	Value	Units
Peak power dissipation on a 10/1000 $\mu$ s waveform (Note 1)	P <sub>PP</sub>	600	W
Peak pulse current on a 10/1000 $\mu$ s waveform (Note 1)	I <sub>PP</sub>	See Next Table	A
Steady state power dissipation at T <sub>L</sub> =50°C	P <sub>D</sub>	5.0	W
Peak forward surge current, 8.3ms single half sine-wave uni-directional only (Note 2)	I <sub>FSM</sub>	100	A
Maximum instantaneous forward voltage at 50A for uni-directional only	V <sub>F</sub>	3.5/5.0	V
Operation junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes: 1. Non-repetitive current pulse, and derated above T<sub>A</sub>=25°C  
2. Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal  
3. V<sub>F</sub><3.5V for devices of V<sub>BR</sub><200V and V<sub>F</sub><5.0V for devices of V<sub>BR</sub>>201V

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# SMD Transient Voltage Suppressor

## Electrical Characteristics (at TA=25°C, unless otherwise specified)

Part No.	Breakdown voltage VBR @ IT			Maximum Reverse Leakage @VRWM IR (µA)	Working Peak Reverse Voltage VRWM (V)	Maximum Reverse Surge Current IPP (A)	Maximum Clamping Voltage @IPP Vc (V)	Marking Code	
	Min. (V)	Max. (V)	IT (mA)					UNI	BI
SMBJ5.0(C)A-HF	6.40	7.25	10	800	5.0	65.2	9.2	KE	AE
SMBJ6.0(C)A-HF	6.67	7.37	10	800	6.0	58.3	10.3	KG	AG
SMBJ6.5(C)A-HF	7.22	7.98	10	500	6.5	53.6	11.2	KK	AK
SMBJ7.0(C)A-HF	7.78	8.60	10	200	7.0	50.0	12.0	KM	AM
SMBJ7.5(C)A-HF	8.33	9.21	1	100	7.5	46.5	12.9	KP	AP
SMBJ8.0(C)A-HF	8.89	9.83	1	50	8.0	44.1	13.6	KR	AR
SMBJ8.5(C)A-HF	9.44	10.40	1	10	8.5	41.7	14.4	KT	AT
SMBJ9.0(C)A-HF	10.00	11.10	1	5	9.0	39.0	15.4	KV	AV
SMBJ10(C)A-HF	11.10	12.30	1	5	10.0	35.3	17.0	KX	AX
SMBJ11(C)A-HF	12.20	13.50	1	5	11.0	33.0	18.2	KZ	AZ
SMBJ12(C)A-HF	13.30	14.70	1	5	12.0	30.2	19.9	LE	BE
SMBJ13(C)A-HF	14.40	15.90	1	5	13.0	27.9	21.5	LG	BG
SMBJ14(C)A-HF	15.60	17.20	1	5	14.0	25.9	23.2	LK	BK
SMBJ15(C)A-HF	16.70	18.50	1	5	15.0	24.6	24.4	LM	BM
SMBJ16(C)A-HF	17.80	19.70	1	5	16.0	23.1	26.0	LP	BP
SMBJ17(C)A-HF	18.90	20.90	1	5	17.0	21.7	27.6	LR	BR
SMBJ18(C)A-HF	20.00	22.10	1	5	18.0	20.5	29.2	LT	BT
SMBJ20(C)A-HF	22.20	24.50	1	5	20.0	18.5	32.4	LV	BV
SMBJ22(C)A-HF	24.40	26.90	1	5	22.0	16.9	35.5	LX	BX
SMBJ24(C)A-HF	26.70	29.50	1	5	24.0	15.4	38.9	LZ	BZ
SMBJ26(C)A-HF	28.90	31.90	1	5	26.0	14.3	42.1	ME	CE
SMBJ28(C)A-HF	31.10	34.40	1	5	28.0	13.2	45.4	MG	CG
SMBJ30(C)A-HF	33.30	36.80	1	5	30.0	12.4	48.4	MK	CK
SMBJ33(C)A-HF	36.70	40.60	1	5	33.0	11.3	53.3	MM	CM
SMBJ36(C)A-HF	40.00	44.20	1	5	36.0	10.3	58.1	MP	CP
SMBJ40(C)A-HF	44.40	49.10	1	5	40.0	9.3	64.5	MR	CR
SMBJ43(C)A-HF	47.80	52.80	1	5	43.0	8.6	69.4	MT	CT
SMBJ45(C)A-HF	50.00	55.30	1	5	45.0	8.3	72.7	MV	CV
SMBJ48(C)A-HF	53.30	58.90	1	5	48.0	7.8	77.4	MX	CX
SMBJ51(C)A-HF	56.70	62.70	1	5	51.0	7.3	82.4	MZ	CZ
SMBJ54(C)A-HF	60.00	66.30	1	5	54.0	6.9	87.1	NE	DE
SMBJ58(C)A-HF	64.40	71.20	1	5	58.0	6.4	93.6	NG	DG
SMBJ60(C)A-HF	66.70	73.70	1	5	60.0	6.2	96.8	NK	DK
SMBJ64(C)A-HF	71.10	78.60	1	5	64.0	5.8	103.0	NM	DM
SMBJ70(C)A-HF	77.80	86.00	1	5	70.0	5.3	113.0	NP	DP
SMBJ75(C)A-HF	83.30	92.10	1	5	75.0	5.0	121.0	NR	DR
SMBJ78(C)A-HF	86.70	95.80	1	5	78.0	4.8	126.0	NT	DT
SMBJ85(C)A-HF	94.40	104.00	1	5	85.0	4.4	137.0	NV	DV
SMBJ90(C)A-HF	100.00	111.00	1	5	90.0	4.1	146.0	NX	DX
SMBJ100(C)A-HF	111.00	123.00	1	5	100.0	3.7	162.0	NZ	DZ

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Part No.	Breakdown voltage VBR @ IT			Maximum Reverse Leakage @VRWM IR (µA)	Working Peak Reverse Voltage VRWM (V)	Maximum Reverse Surge Current IPP (A)	Maximum Clamping Voltage @IPP Vc (V)	Marking Code	
	Min. (V)	Max. (V)	IT (mA)					UNI	BI
SMBJ110(C)A-HF	122.0	135.0	1	5	110.0	3.4	177.0	PE	EE
SMBJ120(C)A-HF	133.0	147.0	1	5	120.0	3.1	193.0	PG	EG
SMBJ130(C)A-HF	144.0	159.0	1	5	130.0	2.9	209.0	PK	EK
SMBJ150(C)A-HF	167.0	185.0	1	5	150.0	2.5	243.0	PM	EM
SMBJ160(C)A-HF	178.0	197.0	1	5	160.0	2.3	259.0	PP	EP
SMBJ170(C)A-HF	189.0	209.0	1	5	170.0	2.2	275.0	PR	ER
SMBJ180(C)A-HF	200.0	220.0	1	5	180.0	2.1	291.6	PT	ET
SMBJ188(C)A-HF	209.0	231.0	1	5	188.0	2.0	304.0	PB	EB
SMBJ200(C)A-HF	224.0	247.0	1	5	200.0	1.8	324.0	PV	EV
SMBJ220(C)A-HF	246.0	272.0	1	5	220.0	1.7	356.0	PX	EX
SMBJ250(C)A-HF	279.0	309.0	1	5	250.0	1.5	405.0	PZ	EZ

Notes: 1. For Bi-directional type having VRWM of 10V and less, the IR Limit is double.  
2. For Bi-directional devices, use suffix CA.

## Rating and Characteristic Curves (SMBJ5.0(C)A-HF Thru. SMBJ250(C)A-HF)

Fig.1 - Pulse Derating Curve

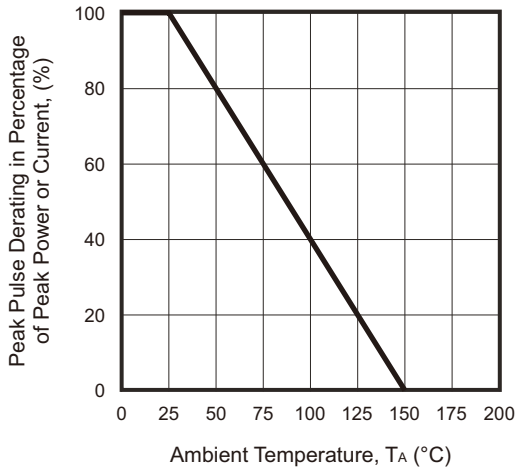


Fig.2 - Maximum Non-Repetitive Surge Current

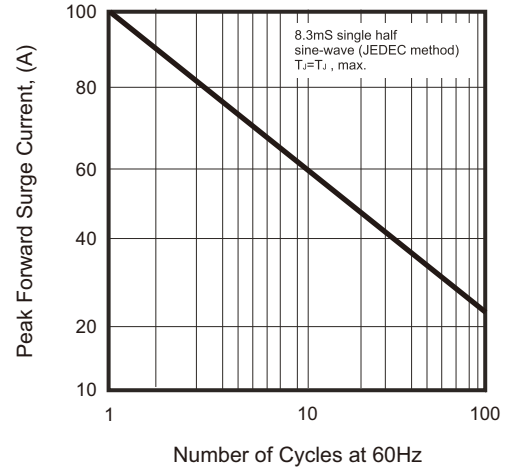


Fig.3 - Steady State Power Derating Curve

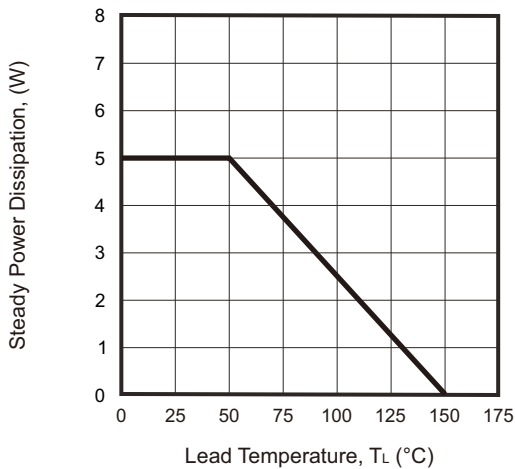


Fig.4 - Peak Pulse Power Rating Curve

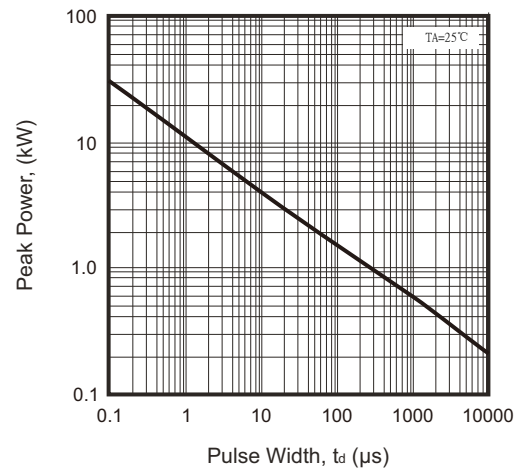
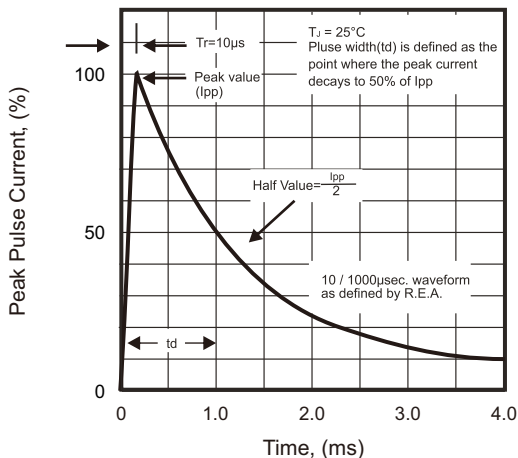
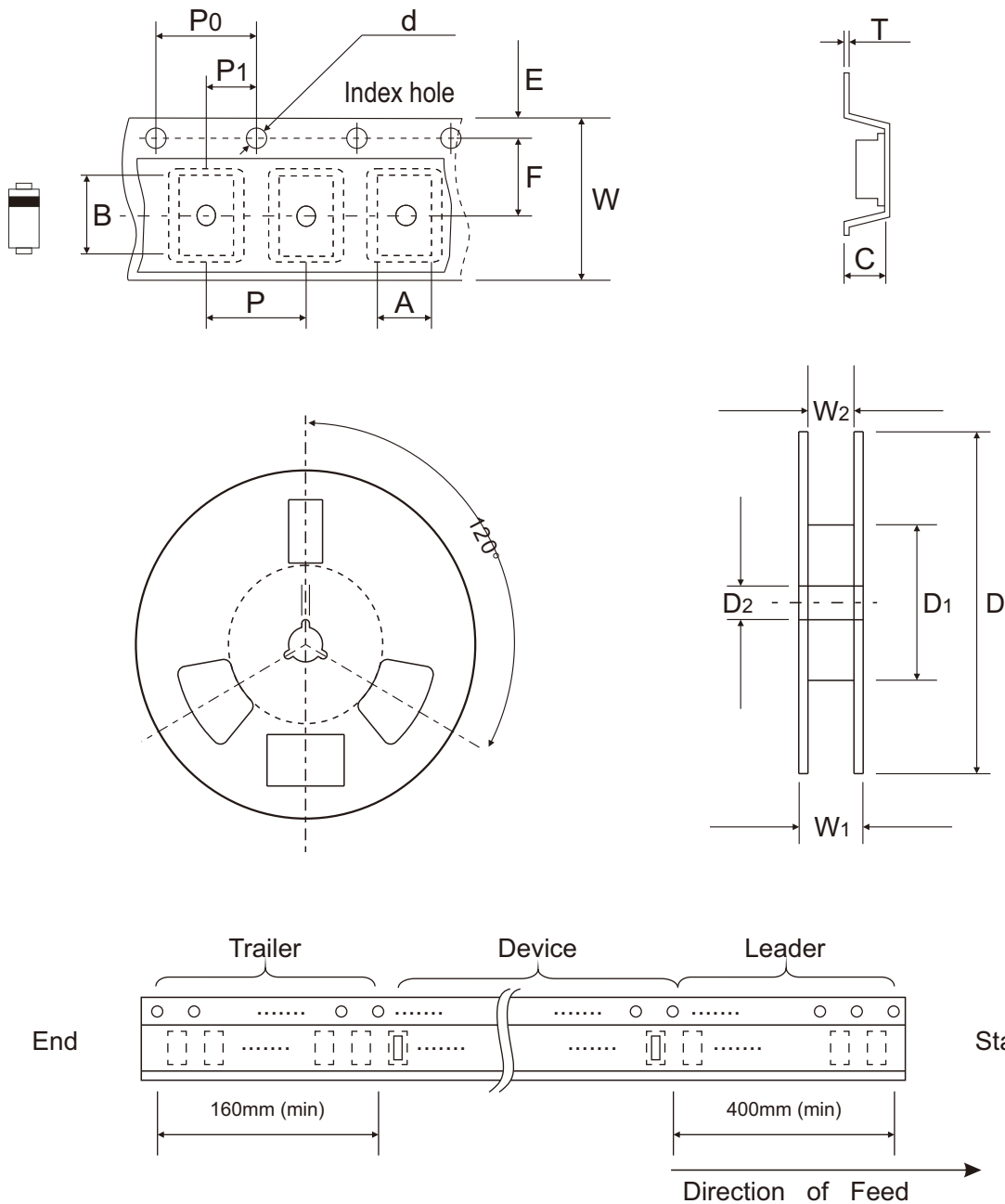


Fig.5 - Pulse Waveform



## Reel Taping Specification



DO-214AA (SMB)	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	$3.67 \pm 0.10$	$5.69 \pm 0.10$	4.50 (max)	$1.55 \pm 0.10$	330.00	50.00 (min)	$13.00 \pm 0.20$
	(inch)	$0.144 \pm 0.004$	$0.224 \pm 0.004$	0.177 (max)	$0.061 \pm 0.004$	13.000	1.969 (min)	$0.512 \pm 0.008$

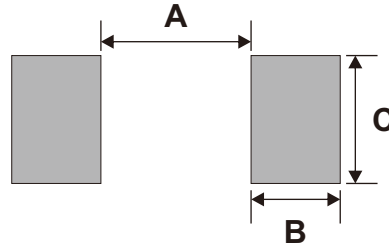
DO-214AA (SMB)	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	$1.75 \pm 0.10$	$5.50 \pm 0.05$	$8.00 \pm 0.10$	$4.00 \pm 0.10$	$2.00 \pm 0.05$	$12.00 \pm 0.30$	18.40 (max)
	(inch)	$0.069 \pm 0.004$	$0.217 \pm 0.002$	$0.315 \pm 0.004$	$0.157 \pm 0.004$	$0.079 \pm 0.002$	$0.472 \pm 0.012$	0.724 (max)

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## Suggested P.C.B. PAD Layout

SIZE	DO-214AA(SMB)	
	(mm)	(inch)
A	2.74max	0.108max
B	2.16min	0.085min
C	2.26min	0.089min



## Standard Packaging

Case Type	REEL PACK	
	REEL ( pcs )	Reel Size (inch)
DO-214AA (SMB)	3,000	13