

Transient Voltage Suressor

Working Peak Reverse Voltage: 5.0 to 440 Volts

Power Dissipation: 600Watts

RoHS Device

Halogen Free

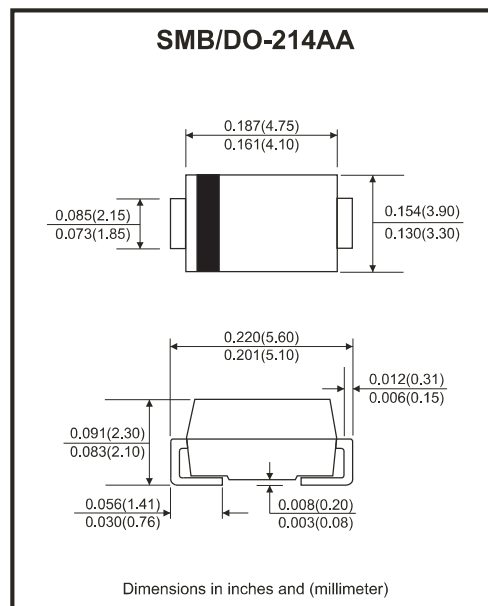


Features

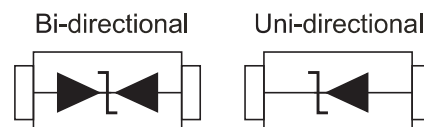
- 600W peak pulse power capability with a 10/1000us waveform, repetitive rate (duty cycle):0.01%
- For surface mounted applications to optimize board space
- Low incremental surge impedance
- Excellent clamping capability
- Very fast response time
- Uni and Bidirectional unit
- Plastic package has underwriters 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 10/1000μs waveform (Note 1)	P _{PP}	600	W
Peak pulse current on a 10/1000μs waveform (Note 1)	I _{PP}	See Next Table	A
Steady state power dissipation at T _L =50°C	P _D	5.0	W
Peak forward surge current, 8.3ms single half sine-wave uni-directional only (Note 2)	I _{FSM}	100	A
Maximum instantaneous forward voltage at 50A for uni-directional only	V _F	3.5/5.0	V
Operation junction and storage temperature range	T _J , T _{STG}	-55 to +150	°C

Notes: 1. Non-repetitive current pulse, and derated above T_A=25°C

2. Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal

3. V_F<3.5V for devices of VBR<200V and V_F<5.0V for devices of VBR>201V

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Rev:1.0

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	6.40	7.25	10	800	5.0	65.2	9.2	KE	AE
SMBJ6.0(C)A	6.67	7.37	10	800	6.0	58.3	10.3	KG	AG
SMBJ6.5(C)A	7.22	7.98	10	500	6.5	53.6	11.2	KK	AK
SMBJ7.0(C)A	7.78	8.60	10	200	7.0	50.0	12.0	KM	AM
SMBJ7.5(C)A	8.33	9.21	1	100	7.5	46.5	12.9	KP	AP
SMBJ8.0(C)A	8.89	9.83	1	50	8.0	44.1	13.6	KR	AR
SMBJ8.5(C)A	9.44	10.40	1	10	8.5	41.7	14.4	KT	AT
SMBJ9.0(C)A	10.00	11.10	1	5	9.0	39.0	15.4	KV	AV
SMBJ10(C)A	11.10	12.30	1	5	10.0	35.3	17.0	KX	AX
SMBJ11(C)A	12.20	13.50	1	5	11.0	33.0	18.2	KZ	AZ
SMBJ12(C)A	13.30	14.70	1	5	12.0	30.2	19.9	LE	BE
SMBJ13(C)A	14.40	15.90	1	5	13.0	27.9	21.5	LG	BG
SMBJ14(C)A	15.60	17.20	1	5	14.0	25.9	23.2	LK	BK
SMBJ15(C)A	16.70	18.50	1	5	15.0	24.6	24.4	LM	BM
SMBJ16(C)A	17.80	19.70	1	5	16.0	23.1	26.0	LP	BP
SMBJ17(C)A	18.90	20.90	1	5	17.0	21.7	27.6	LR	BR
SMBJ18(C)A	20.00	22.10	1	5	18.0	20.5	29.2	LT	BT
SMBJ20(C)A	22.20	24.50	1	5	20.0	18.5	32.4	LV	BV
SMBJ22(C)A	24.40	26.90	1	5	22.0	16.9	35.5	LX	BX
SMBJ24(C)A	26.70	29.50	1	5	24.0	15.4	38.9	LZ	BZ
SMBJ26(C)A	28.90	31.90	1	5	26.0	14.3	42.1	ME	CE
SMBJ28(C)A	31.10	34.40	1	5	28.0	13.2	45.4	MG	CG
SMBJ30(C)A	33.30	36.80	1	5	30.0	12.4	48.4	MK	CK
SMBJ33(C)A	36.70	40.60	1	5	33.0	11.3	53.3	MM	CM
SMBJ36(C)A	40.00	44.20	1	5	36.0	10.3	58.1	MP	CP
SMBJ40(C)A	44.40	49.10	1	5	40.0	9.3	64.5	MR	CR
SMBJ43(C)A	47.80	52.80	1	5	43.0	8.6	69.4	MT	CT
SMBJ45(C)A	50.00	55.30	1	5	45.0	8.3	72.7	MV	CV
SMBJ48(C)A	53.30	58.90	1	5	48.0	7.8	77.4	MX	CX
SMBJ51(C)A	56.70	62.70	1	5	51.0	7.3	82.4	MZ	CZ
SMBJ54(C)A	60.00	66.30	1	5	54.0	6.9	87.1	NE	DE
SMBJ58(C)A	64.40	71.20	1	5	58.0	6.4	93.6	NG	DG
SMBJ60(C)A	66.70	73.70	1	5	60.0	6.2	96.8	NK	DK
SMBJ64(C)A	71.10	78.60	1	5	64.0	5.8	103.0	NM	DM
SMBJ70(C)A	77.80	86.00	1	5	70.0	5.3	113.0	NP	DP
SMBJ75(C)A	83.30	92.10	1	5	75.0	5.0	121.0	NR	DR
SMBJ78(C)A	86.70	95.80	1	5	78.0	4.8	126.0	NT	DT
SMBJ85(C)A	94.40	104.00	1	5	85.0	4.4	137.0	NV	DV
SMBJ90(C)A	100.00	111.00	1	5	90.0	4.1	146.0	NX	DX
SMBJ100(C)A	111.00	123.00	1	5	100.0	3.7	162.0	NZ	DZ

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

Part No.	Breakdown voltage V _{BR} @ I _T			Maximum Reverse Leakage @V _{RWM} I _R (μA)	Working Peak Reverse Voltage V _{RWM} (V)	Maximum Reverse Surge Current I _{PP} (A)	Maximum Clamping Voltage @I _{PP} V _C (V)	Marking Code	
	Min. (V)	Max. (V)	I _T (mA)					UNI	BI
SMBJ110(C)A	122.0	135.0	1	5	110.0	3.4	177.0	PE	EE
SMBJ120(C)A	133.0	147.0	1	5	120.0	3.1	193.0	PG	EG
SMBJ130(C)A	144.0	159.0	1	5	130.0	2.9	209.0	PK	EK
SMBJ150(C)A	167.0	185.0	1	5	150.0	2.5	243.0	PM	EM
SMBJ160(C)A	178.0	197.0	1	5	160.0	2.3	259.0	PP	EP
SMBJ170(C)A	189.0	209.0	1	5	170.0	2.2	275.0	PR	ER
SMBJ180(C)A	200.0	220.0	1	5	180.0	2.1	291.6	PT	ET
SMBJ190(C)A	211.0	232.0	1	5	190.0	1.9	307.8	PA	EC
SMBJ200(C)A	224.0	247.0	1	5	200.0	1.8	324.0	PV	EV
SMBJ220(C)A	246.0	272.0	1	5	220.0	1.7	356.0	PX	EX
SMBJ250(C)A	279.0	309.0	1	5	250.0	1.5	405.0	PZ	EZ
SMBJ300(C)A	335.0	371.0	1	5	300.0	1.2	486.0	QE	FE
SMBJ350(C)A	391.0	432.0	1	5	350.0	1.0	567.0	QG	FG
SMBJ400(C)A	447.0	494.0	1	5	400.0	0.9	648.0	QK	FK
SMBJ440(C)A	492.0	543.0	1	5	440.0	0.8	713.0	QM	FM

Notes: 1. For Bi-directional type having V_{RWM} of 10V and less, the I_R Limit is double.
2. For Bi-directional devices, use suffix CA.

Rating and Characteristic Curves (SMBJ5.0(C)A THRU SMBJ440(C)A)

Fig.1 - Pulse Derating Curve

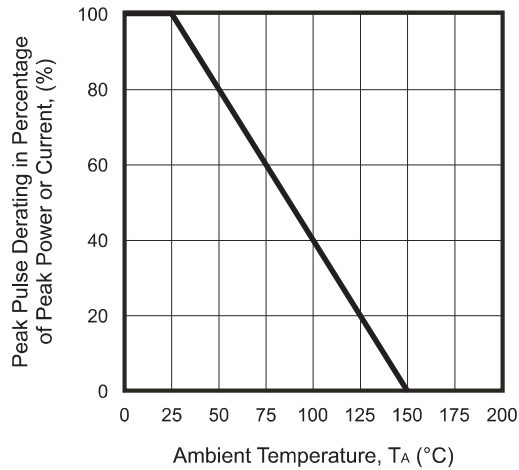


Fig.2 - Maximum Non-Repetitive Surge Current

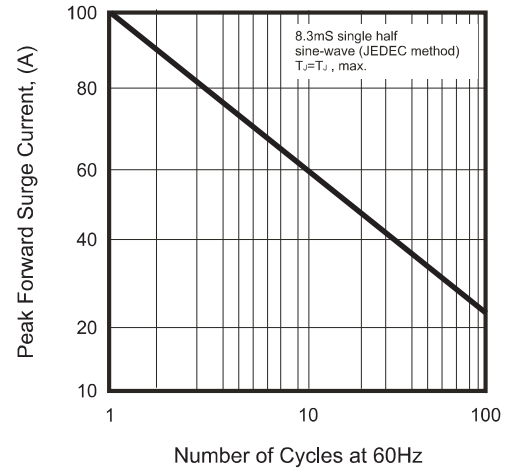


Fig.3 - Steady State Power Derating Curve

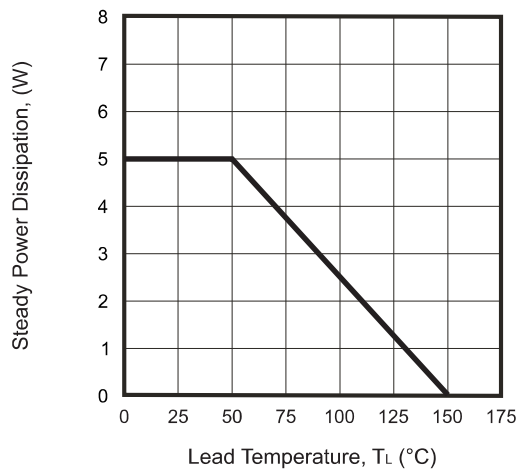


Fig.4 - Peak Pulse Power Rating Curve

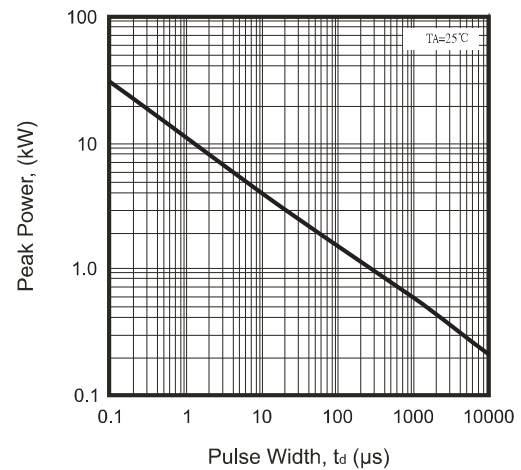
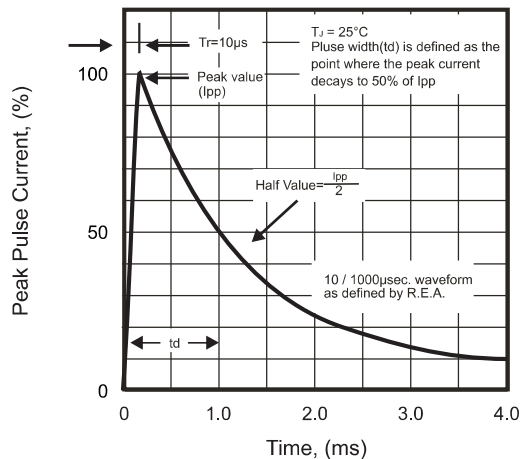
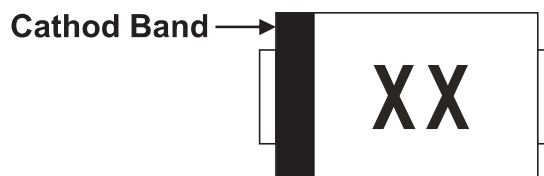


Fig.5 - Pulse Waveform



Marking Code

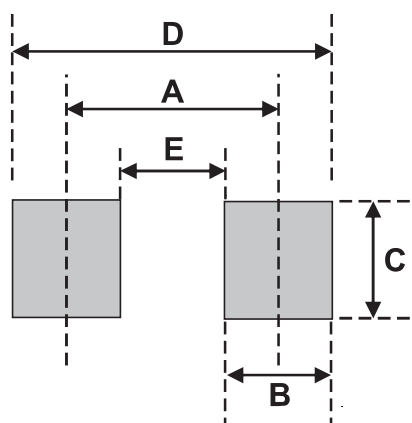
Part Number	Marking Code
SMBJ - Series	See Page 2~3



XX = Marking code (see Page 2~3)

Suggested PAD Layout

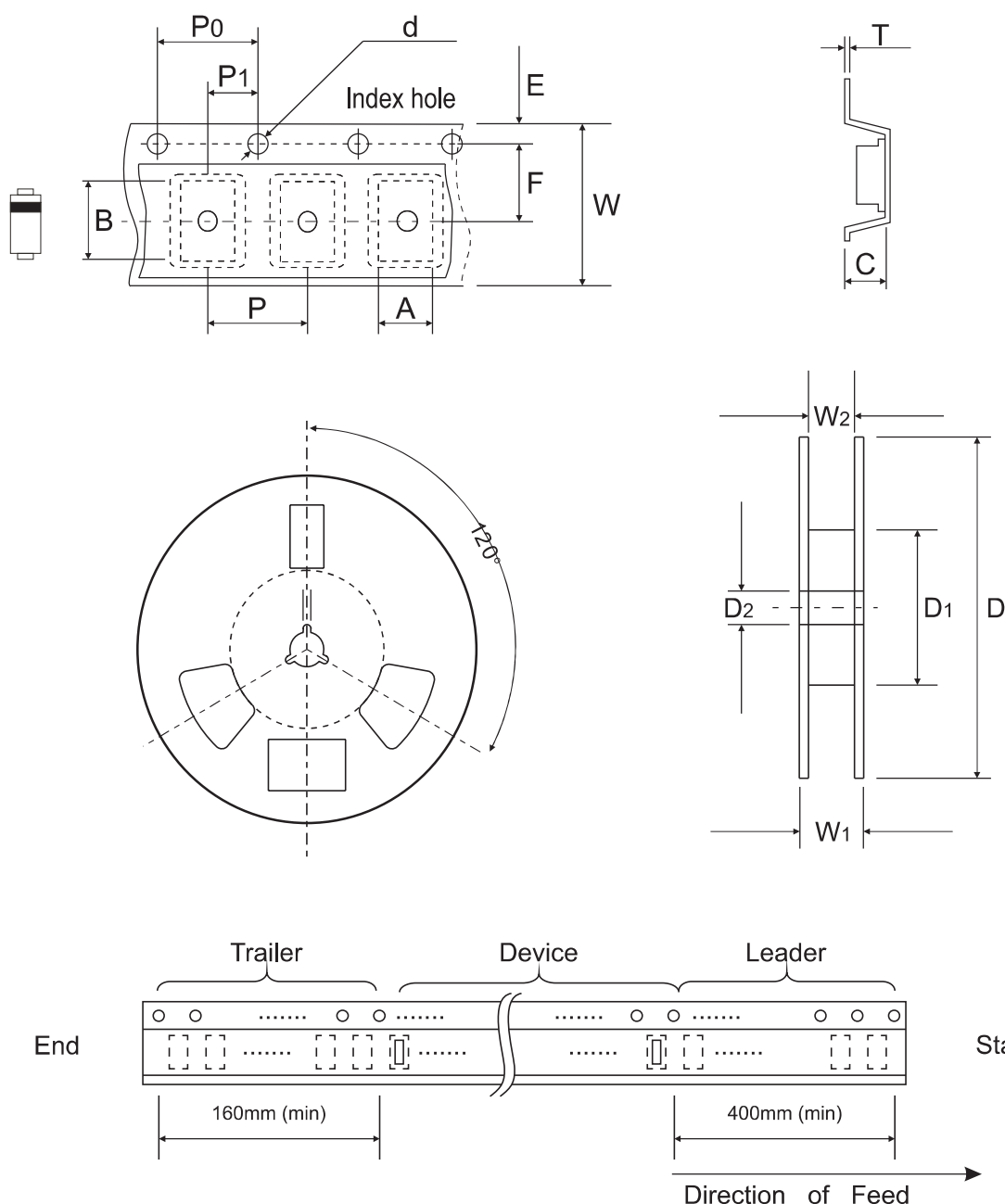
SIZE	DO-214AA (SMB)	
	(mm)	(inch)
A	4.30	0.169
B	2.50	0.098
C	2.30	0.091
D	6.80	0.268
E	1.80	0.071



Standard Packaging

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

Reel Taping Specification



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

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

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