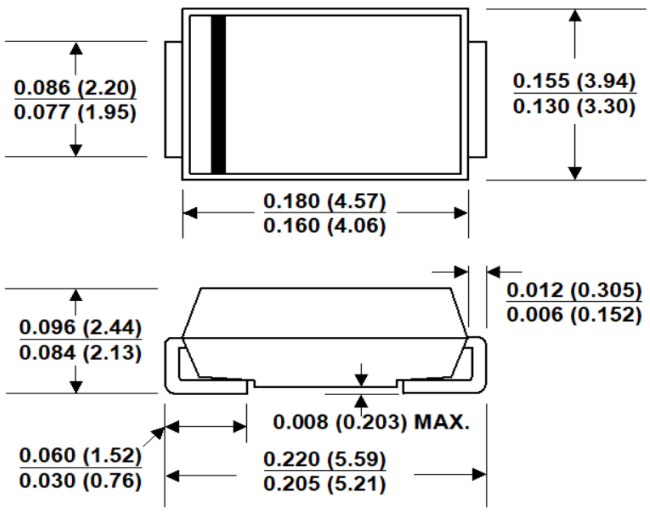
ALPHA & OMEGA SEMICONDUCTOR

SMBJ5.0 thru SMBJ440

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

DO-214AA (SMB J-Bend)



Dimensions in inches and(millimeters)

Agency	Agency File Number
	E521119

PRIMARY CHARACTERISTICS	
V_{RWM}	5.0V to 440V
V_{BR}	6.4V to 543V
P_{PPM}	600W
T_J max	150°C
Polarity	Uni-directional & Bi-directional
Package	DO-214AA

FEATURES

- For surface mounted applications in order to optimize board space
- Typical maximum temperature coefficient △VBR=0.1%xVBR@25°C x△T
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Excellent clamping capability
- Repetition Rate (duty cycle):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to BV
- Meet MSL1 Level, per J-STD-020, LF maximum peak of 260 ℃
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte Tin Lead-free plated

Green

MECHANICAL DATA

Case: JEDEC DO-214AA. Molded plastic
Terminal: Solderable per MIL-STD-750, Method 2026
Polarity: Color band denoted positive end (cathode) except Bidirectional

DEVICES FOR BIPOLAR APPLICATION

- For Bidirectional use C or CA Suffix for types SMBJ5.0 thru types SMBJ440 (e.g. SMBJ5.0C , SMBJ440CA)
- Electrical characteristics apply in both directions

MAXIMUM RATINGS (25°C ambient temperature unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000μs waveform (Note 1，2)	P_{PPM}	600	Watts
Peak Pulse Current of on 10/1000μs waveform(Note 1)	I_{PPM}	See Next Table	Amps
Peak Forward Surge Current,8.3ms Single Half Sine-Wave(Note 2，3)	I_{FSM}	100	Amps
Operating junction and Storage Temperature Range	T_J T_{STG}	-55 to +150	°C
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	20	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	100	°C/W

Note

(1) Non-repetitive current pulse above TA = 25 °C
(2) Mounted on 5.0mm x 5.0mm Copper Pads to each terminal
(3) 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

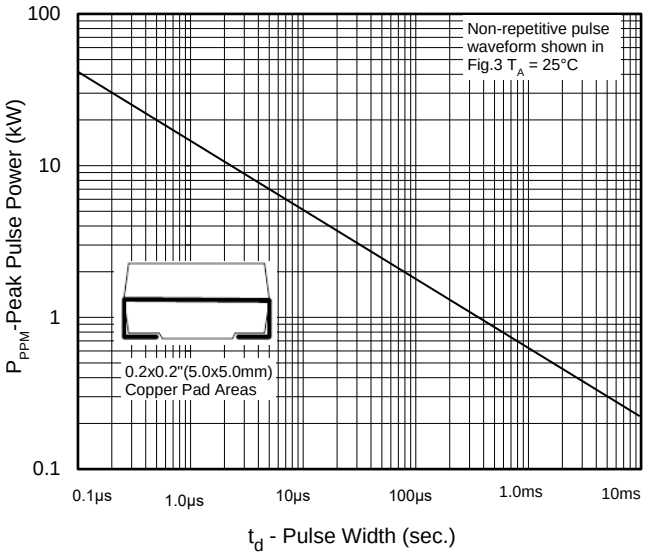
ELECTRICAL CHARACTERISTICS

PART NUMBER		MARKING CODE		TEST CURRENT IT (mA)	BREAKDOWN VOLTAGE VBR(V) @IT		REVERSE STAND-OFF VOLTAGE V_{RWM}(V)	MAXIMUM CLAMPING VOLTAGE @Ipp Vc(V)	MAXIMUM PEAK PULSE CURRENT Ipp (A)	MAXIMUM REVERSE LEAKAGE @ V_{RWM} I_R (µA)
UNI- POLAR	BI-POLAR	UNI	BI		MIN	MAX				
SMBJ5.0A	SMBJ5.0CA	KE	AE	10	6.40	7.00	5.0	9.2	67.20	800.0
SMBJ6.0A	SMBJ6.0CA	KG	AG	10	6.67	7.37	6.0	10.3	60.00	800.0
SMBJ6.5A	SMBJ6.5CA	KK	AK	10	7.22	7.98	6.5	11.2	55.20	500.0
SMBJ7.0A	SMBJ7.0CA	KM	AM	10	7.78	8.60	7.0	12.0	51.50	200.0
SMBJ7.5A	SMBJ7.5CA	KP	AP	1	8.33	9.21	7.5	12.9	47.90	100.0
SMBJ8.0A	SMBJ8.0CA	KR	AR	1	8.89	9.83	8.0	13.6	45.40	50.0
SMBJ8.5A	SMBJ8.5CA	KT	AT	1	9.44	10.40	8.5	14.4	42.90	20.0
SMBJ9.0A	SMBJ9.0CA	KV	AV	1	10.00	11.10	9.0	15.4	40.10	10.0
SMBJ10A	SMBJ10CA	KX	AX	1	11.10	12.30	10.0	17.0	36.40	5.0
SMBJ11A	SMBJ11CA	KZ	AZ	1	12.20	13.50	11.0	18.2	34.00	1.0
SMBJ12A	SMBJ12CA	LE	BE	1	13.30	14.70	12.0	19.9	31.10	1.0
SMBJ13A	SMBJ13CA	LG	BG	1	14.40	15.90	13.0	21.5	28.70	1.0
SMBJ14A	SMBJ14CA	LK	BK	1	15.60	17.20	14.0	23.2	26.60	1.0
SMBJ15A	SMBJ15CA	LM	BM	1	16.70	18.50	15.0	24.4	25.30	1.0
SMBJ16A	SMBJ16CA	LP	BP	1	17.80	19.70	16.0	26.0	23.80	1.0
SMBJ17A	SMBJ17CA	LR	BR	1	18.90	20.90	17.0	27.6	22.40	1.0
SMBJ18A	SMBJ18CA	LT	BT	1	20.00	22.10	18.0	29.2	21.20	1.0
SMBJ20A	SMBJ20CA	LV	BV	1	22.20	24.50	20.0	32.4	19.10	1.0
SMBJ22A	SMBJ22CA	LX	BX	1	24.40	26.90	22.0	35.5	17.40	1.0
SMBJ24A	SMBJ24CA	LZ	BZ	1	26.70	29.50	24.0	38.9	15.90	1.0
SMBJ26A	SMBJ26CA	ME	CE	1	28.90	31.90	26.0	42.1	14.70	1.0
SMBJ28A	SMBJ28CA	MG	CG	1	31.10	34.40	28.0	45.4	13.60	1.0
SMBJ30A	SMBJ30CA	MK	CK	1	33.30	36.80	30.0	48.4	12.80	1.0
SMBJ33A	SMBJ33CA	MM	CM	1	36.70	40.60	33.0	53.3	11.60	1.0
SMBJ36A	SMBJ36CA	MP	CP	1	40.00	44.20	36.0	58.1	10.60	1.0
SMBJ40A	SMBJ40CA	MR	CR	1	44.40	49.10	40.0	64.5	9.60	1.0
SMBJ43A	SMBJ43CA	MT	CT	1	47.80	52.80	43.0	69.4	8.90	1.0
SMBJ45A	SMBJ45CA	MV	CV	1	50.00	55.30	45.0	72.7	8.50	1.0
SMBJ48A	SMBJ48CA	MX	CX	1	53.30	58.90	48.0	77.4	8.00	1.0
SMBJ51A	SMBJ51CA	MZ	CZ	1	56.70	62.70	51.0	82.4	7.50	1.0
SMBJ54A	SMBJ54CA	NE	DE	1	60.00	66.30	54.0	87.1	7.10	1.0
SMBJ58A	SMBJ58CA	NG	DG	1	64.40	71.20	58.0	93.6	6.60	1.0
SMBJ60A	SMBJ60CA	NK	DK	1	66.70	73.70	60.0	96.8	6.40	1.0
SMBJ64A	SMBJ64CA	NM	DM	1	71.10	78.60	64.0	103.0	6.00	1.0
SMBJ70A	SMBJ70CA	NP	DP	1	77.80	86.00	70.0	113.0	5.50	1.0
SMBJ75A	SMBJ75CA	NR	DR	1	83.30	92.10	75.0	121.0	5.10	1.0
SMBJ78A	SMBJ78CA	NT	DT	1	86.70	95.80	78.0	126.0	4.90	1.0
SMBJ85A	SMBJ85CA	NV	DV	1	94.40	104.00	85.0	137.0	4.50	1.0
SMBJ90A	SMBJ90CA	NX	DX	1	100.00	111.00	90.0	146.0	4.20	1.0
SMBJ100A	SMBJ100CA	NZ	DZ	1	111.00	123.00	100.0	162.0	3.80	1.0
SMBJ110A	SMBJ110CA	PE	EE	1	122.00	135.00	110.0	177.0	3.50	1.0
SMBJ120A	SMBJ120CA	PG	EG	1	133.00	147.00	120.0	193.0	3.20	1.0
SMBJ130A	SMBJ130CA	PK	EK	1	144.00	159.00	130.0	209.0	3.00	1.0
SMBJ150A	SMBJ150CA	PM	EM	1	167.00	185.00	150.0	243.0	2.50	1.0
SMBJ160A	SMBJ160CA	PP	EP	1	178.00	197.00	160.0	259.0	2.35	1.0
SMBJ170A	SMBJ170CA	PR	ER	1	189.00	209.00	170.0	275.0	2.20	1.0
SMBJ180A	SMBJ180CA	PT	ET	1	201.00	222.00	180.0	292.0	2.10	1.0
SMBJ200A	SMBJ200CA	PV	EV	1	224.00	247.00	200.0	324.0	1.90	1.0
SMBJ220A	SMBJ220CA	PX	EX	1	246.00	272.00	220.0	356.0	1.70	1.0
SMBJ250A	SMBJ250CA	PZ	EZ	1	279.00	309.00	250.0	405.0	1.50	1.0
SMBJ300A	SMBJ300CA	QE	FE	1	335.00	371.00	300.0	486.0	1.30	1.0
SMBJ350A	SMBJ350CA	QG	FG	1	391.00	432.00	350.0	567.0	1.10	1.0
SMBJ400A	SMBJ400CA	QK	FK	1	447.00	494.00	400.0	648.0	0.93	1.0
SMBJ440A	SMBJ440CA	QM	FM	1	492.00	543.00	440.0	713.0	0.90	1.0

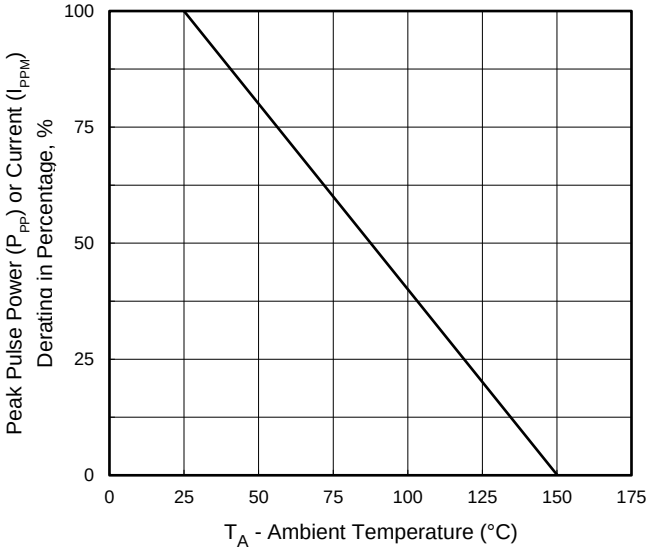
For bidirectional type having Vrwm of 10 volts and less, the IR limit is double

RATINGS AND CHARACTERISTICS CURVES (T_A = 25℃ unless otherwise noted)

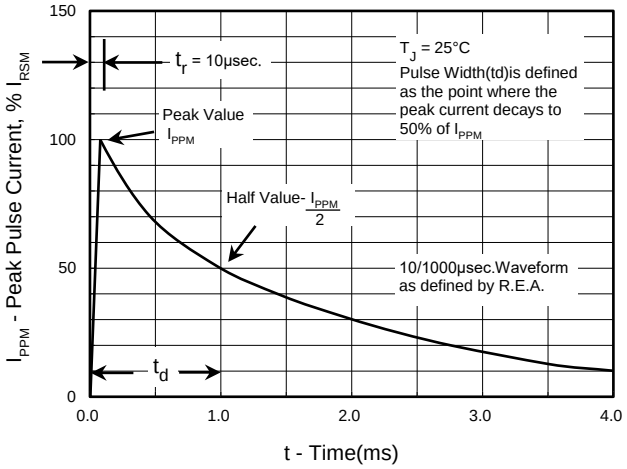
Peak Pulse Power Rating



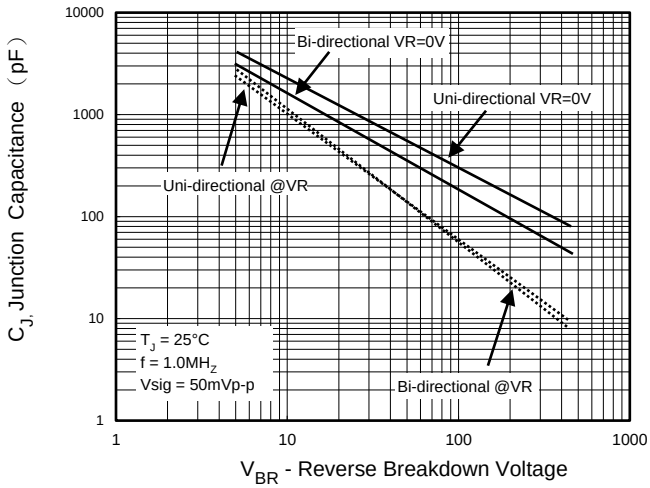
Pulse Derating Curve



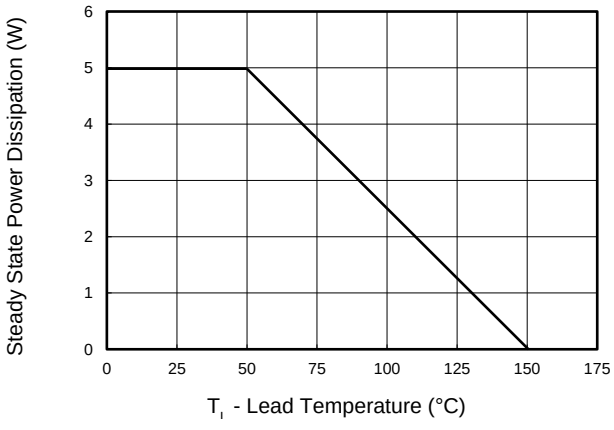
Pulse Waveform



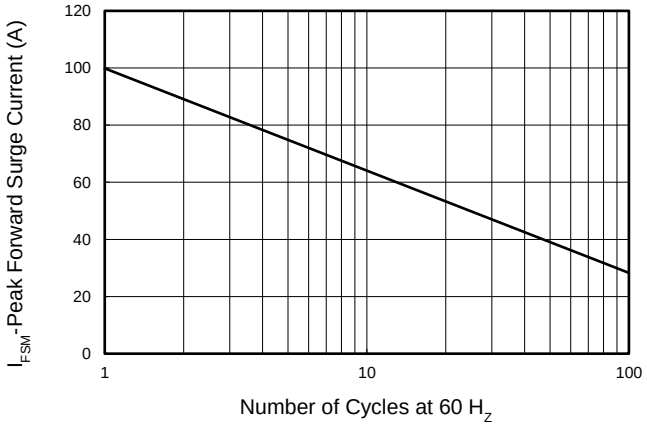
Typical Junction Capacitance



Steady State Power Derating Curve



Maximum Non-repetitive Forward Surge current uni-directional only

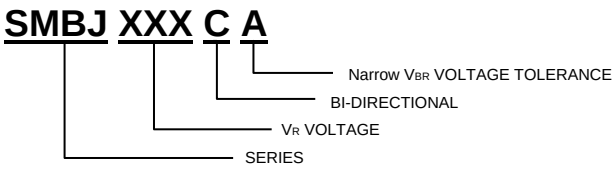
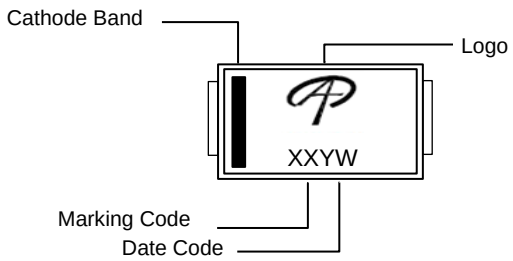


Ordering Information

Part Number	Quantity	Packing Option	Component Package	Packing Specification
SMBJxxxA	3000	Tape & Reel - 12mm/13" tape	DO-214AA	EIA STD RS-481

AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
Please visit www.aosmd.com/media/AOSGreenPolicy.pdf for additional information.

Note: Green Product means Pb-free, RoHS and Halogens free compliant.

Part Number	Part Marking
	

LEGAL DISCLAIMER

APPLICATIONS OR USES AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS ARE NOT AUTHORIZED. AOS DOES NOT ASSUME ANY LIABILITY ARISING OUT OF SUCH APPLICATIONS OR USES OF ITS PRODUCTS. AOS RESERVES THE RIGHT TO MAKE CHANGES TO PRODUCT SPECIFICATIONS WITHOUT NOTICE. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO EVALUATE SUITABILITY OF THE PRODUCT FOR THEIR INTENDED APPLICATION. CUSTOMER SHALL COMPLY WITH APPLICABLE LEGAL REQUIREMENTS, INCLUDING ALL APPLICABLE EXPORT CONTROL RULES, REGULATIONS AND LIMITATIONS.

AOS' products are provided subject to AOS' terms and conditions of sale which are set forth at:
http://www.aosmd.com/terms_and_conditions_of_sale

LIFE SUPPORT POLICY

ALPHA AND OMEGA SEMICOND UCTOR PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.

2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.