

1000W, 9V - 40V Surface Mount Transient Voltage Suppressor

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Excellent clamping capability
- Fast response time: Typically less than 1.0ps
- Meets ISO 7637-2 (Pulse 1/2a/2b/3a/3b)
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

KEY PARAMETERS

PARAMETER	VALUE	UNIT
V_{WM}	9 - 40	V
V_{BR}	10.0 - 49.1	V
P_{PK}	1,000	W
$T_{J\ MAX}$	175	°C
Package	DO-214AA (SMB)	
Configuration	Single die	

APPLICATIONS

- Protect sensitive circuit from damage by high voltage transients
- Lighting, ESD transient voltage protection of IC, system
- Inductive switching load protection of IC, system
- Electrical Fast Transient Immunity protection of IC, system



DO-214AA (SMB)

MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.110g (approximately)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation at $T_A = 25^\circ\text{C}$, $t_p = 1\text{ms}^{(1)}$	P_{PK}	1,000	W
Steady state power dissipation	P_D	5	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	100	A
Forward Voltage @ $I_F = 50\text{A}$ for Uni-directional only	V_F	3.5	V
Junction temperature	T_J	-55 to +175	°C
Storage temperature	T_{STG}	-55 to +175	°C

Note:

1. Non-repetitive current pulse per Fig.3 and derated above $T_A = 25^\circ\text{C}$ per Fig.2

Devices for Bipolar Applications

1. For bidirectional use CA suffix

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	20	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	100	°C/W

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)										
Device		Device Marking Code		Breakdown Voltage @ I_T		Test Current I_T (mA)	Stand-Off Voltage V_{WM} (V)	Maximum Reverse Leakage @ V_{WM} I_D (μA)	Maximum Peak Pulse Current I_{PPM} (A)	Maximum clamping voltage @ I_{PPM} V_C (V)
				V_{BR} (V)	Min					
UNI	BI	UNI	BI	Min	Max					
SMB10J9.0A	SMB10J9.0CA	1KV	KVC	10.0	11.1	1	9	10	64.9	15.4
SMB10J10A	SMB10J10CA	1KX	KXC	11.1	12.3	1	10	8	58.8	17.0
SMB10J11A	SMB10J11CA	1KZ	KZC	12.2	13.5	1	11	5	54.9	18.2
SMB10J12A	SMB10J12CA	1LE	LEC	13.3	14.7	1	12	5	50.3	19.9
SMB10J13A	SMB10J13CA	1LG	LGC	14.4	15.9	1	13	5	46.5	21.5
SMB10J14A	SMB10J14CA	1LK	LKC	15.6	17.2	1	14	5	43.1	23.2
SMB10J15A	SMB10J15CA	1LM	LMC	16.7	18.5	1	15	1	41.0	24.4
SMB10J16A	SMB10J16CA	1LP	LPC	17.8	19.7	1	16	1	38.5	26.0
SMB10J17A	SMB10J17CA	1LR	LRC	18.9	20.9	1	17	1	36.2	27.6
SMB10J18A	SMB10J18CA	1LT	LTC	20.0	22.1	1	18	1	34.2	29.2
SMB10J20A	SMB10J20CA	1LV	LVC	22.2	24.5	1	20	1	30.9	32.4
SMB10J22A	SMB10J22CA	1LX	LXC	24.4	26.9	1	22	1	28.2	35.5
SMB10J24A	SMB10J24CA	1LZ	LZC	26.7	29.5	1	24	1	25.7	38.9
SMB10J26A	SMB10J26CA	1ME	MEC	28.9	31.9	1	26	1	23.8	42.1
SMB10J28A	SMB10J28CA	1MG	MGC	31.1	34.4	1	28	1	22.0	45.4
SMB10J30A	SMB10J30CA	1MK	MKC	33.3	36.8	1	30	1	20.7	48.4
SMB10J33A	SMB10J33CA	1MM	MMC	36.7	40.6	1	33	1	18.8	53.3
SMB10J36A	SMB10J36CA	1MP	MPC	40.0	44.2	1	36	1	17.2	58.1
SMB10J40A	SMB10J40CA	1MR	MRC	44.4	49.1	1	40	1	15.5	64.5

ORDERING INFORMATION		
ORDERING CODE⁽¹⁾	PACKAGE	PACKING
SMB10Jx	DO-214AA (SMB)	3,000 / Tape & Reel

Notes:

- "x" defines voltage from 9V(SMB10J9.0A) to 40V(SMB10J40CA)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Peak Pulse Power Rating Curve

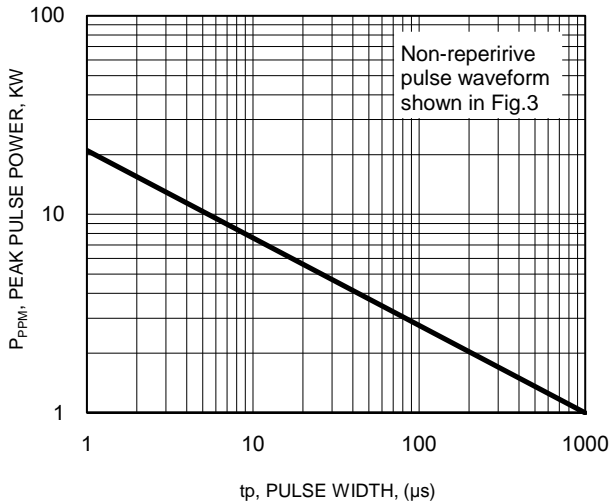


Fig.2 Pulse Derating Curve

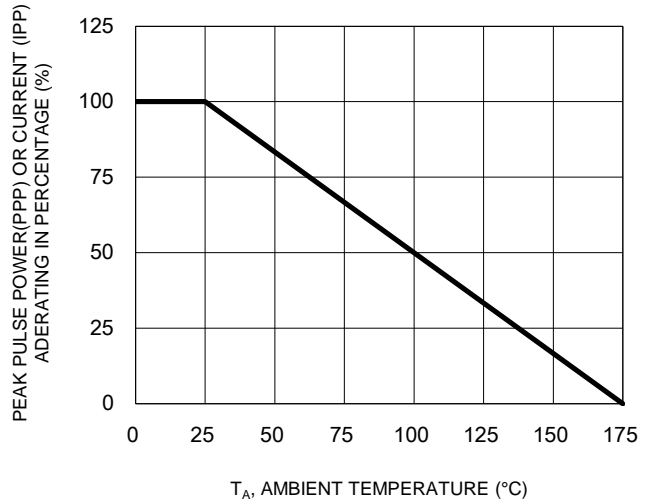


Fig.3 Clamping Power Pulse Waveform

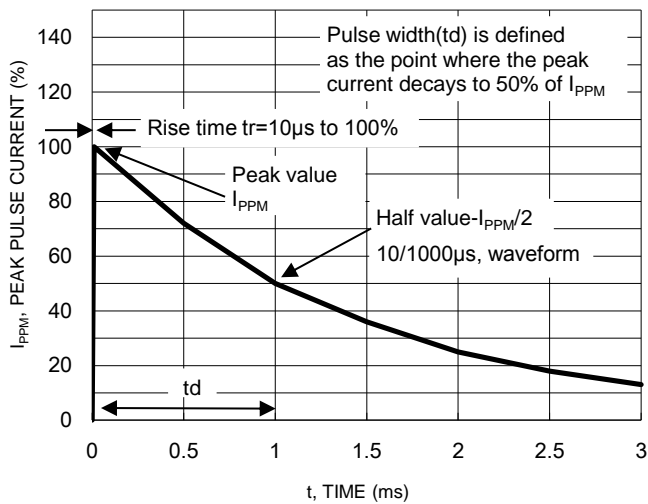
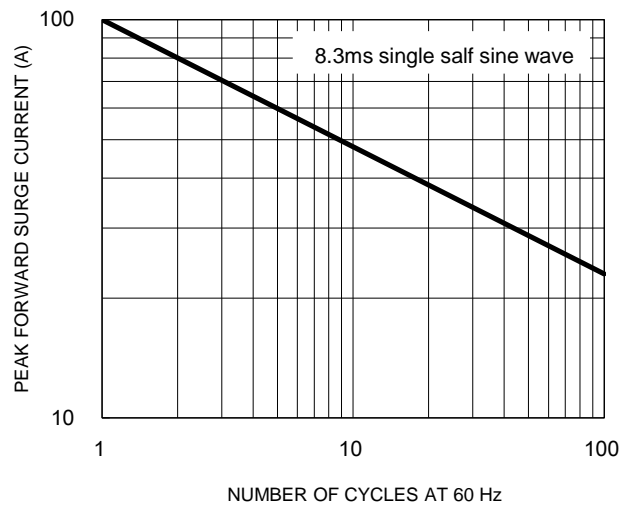
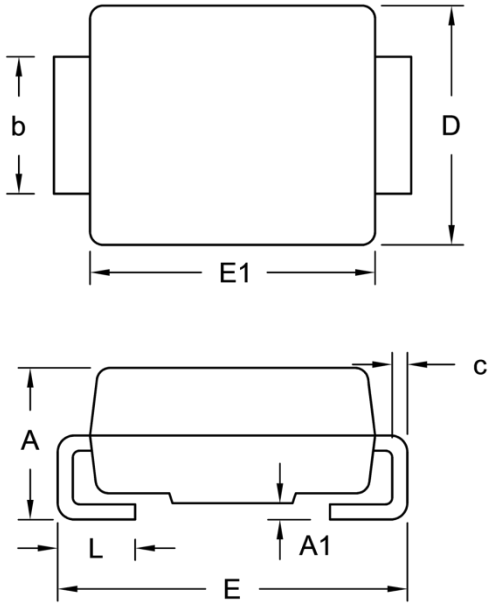


Fig.4 Maximum Non-Repetitive Forward Surge Current Unidirectional Only



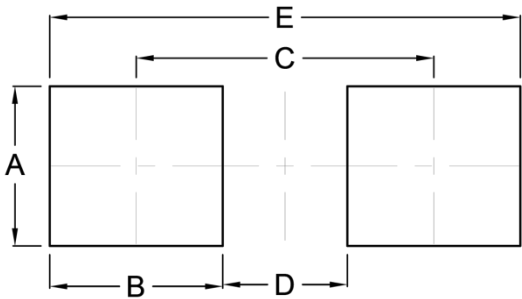
PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.95	2.65	0.077	0.104
A1	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.31	0.006	0.012
D	3.30	3.95	0.130	0.156
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
L	0.75	1.60	0.030	0.063

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	2.30	0.091
B	2.50	0.098
C	4.30	0.169
D	1.80	0.071
E	6.80	0.268

MARKING DIAGRAM



- P/N = Marking Code
- G = Green Compound
- YW = Date Code
- F = Factory Code

Cathode band for uni-directional products only