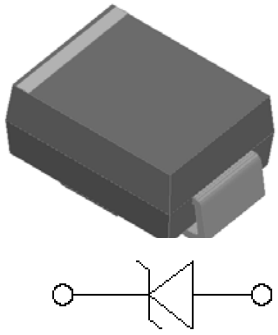
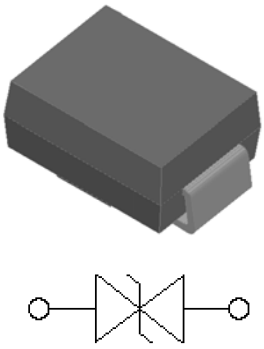
Surface Mount Transient Voltage Suppressors

Uni-directional



Bi-directional



Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 1500 W peak pulse power capability with a 10/1000 μs waveform
- Low incremental surge resistance, excellent clamping Capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to RoHS

Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial,telecommunication.

Mechanical Data

- **Package**: DO-214AA (SMB)
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals**: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D
- **Polarity**: For uni-directional types the band denotes athode end, no marking on bi-directional types

■Maximum Ratings (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Max
Peak power dissipation, with a 10/1000us waveform (1) (2) (Fig.1)	P_{PPM}	W	1500
Peak pulse current, with a 10/1000us waveform(1)	I_{PPM}	A	See Next Table
Power dissipation, on infinite heat sink at T_L=75℃	P_D	W	5.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (2)	I_{FSM}	A	100
Operating junction and storage temperature range	T_J,T_{STG}	℃	-55 to +150
Electrostatic Discharge（IEC61000-4-2 air discharge）	ESD	KV	±30
Electrostatic Discharge（IEC61000-4-2 contact discharge）			

■Electrical Characteristics（T_a=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage @ at 25A for unidirectional only	V_F	V	3.5

Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T_A= 25℃ per Fig.2.
(2) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.3" x 0.3" (8.0 mm x 8.0 mm) copper pad areas

■Thermal Characteristics （T_a=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal resistance(Typical)	$R_{\theta JL}$	℃/W	junction to lead	20
	$R_{\theta JA}$	℃/W	junction to ambient	100

Notes:

(3) Non-repetitive current pulse, per Fig. 3 and derated above T_A= 25℃per Fig.2.
(4) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.3" x 0.3" (8.0 mm x 8.0 mm) copper pad areas

■Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
1.5SMB SERIES	F1	Approximate 0.0975	3000	/	48000	13” reel
1.5SMB SERIES	F2	Approximate 0.0975	750	3000	24000	7” reel
1.5SMB SERIES	F3	Approximate 0.0975	500	2000	16000	7” reel

■Electrical Characteristics（T_a=25℃ Unless otherwise specified）

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R@ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}(4) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T(3)(mA)				
1.5SMB8.2A	1.5SMB8.2CA	7.79	8.61	10	200	7.0	123.97	12.1
1.5SMB9.1A	1.5SMB9.1CA	8.65	9.56	1	50	7.8	111.94	13.4
1.5SMB10A	1.5SMB10CA	9.50	10.50	1	10	8.6	103.45	14.5
1.5SMB11A	1.5SMB11CA	10.45	11.55	1	5	9.4	96.15	15.6
1.5SMB12A	1.5SMB12CA	11.40	12.60	1	5	10.2	89.82	16.7
1.5SMB13A	1.5SMB13CA	12.35	13.65	1	5	11.1	82.42	18.2
1.5SMB15A	1.5SMB15CA	14.25	15.75	1	5	12.8	70.75	21.2
1.5SMB16A	1.5SMB16CA	15.20	16.80	1	5	13.6	66.67	22.5
1.5SMB18A	1.5SMB18CA	17.10	18.90	1	5	15.3	59.52	25.2
1.5SMB20A	1.5SMB20CA	19.00	21.00	1	5	17.1	54.15	27.7
1.5SMB22A	1.5SMB22CA	20.90	23.10	1	5	18.8	49.02	30.6
1.5SMB24A	1.5SMB24CA	22.80	25.20	1	5	20.5	45.18	33.2
1.5SMB27A	1.5SMB27CA	25.65	28.35	1	5	23.1	40.00	37.5
1.5SMB30A	1.5SMB30CA	28.50	31.50	1	5	25.6	36.23	41.4
1.5SMB33A	1.5SMB33CA	31.35	34.65	1	5	28.2	32.82	45.7
1.5SMB36A	1.5SMB36CA	34.20	37.80	1	5	30.8	30.06	50.0
1.5SMB39A	1.5SMB39CA	37.05	40.95	1	5	33.3	27.83	53.9
1.5SMB43A	1.5SMB43CA	40.85	45.15	1	5	36.8	25.30	59.3
1.5SMB47A	1.5SMB47CA	44.65	49.35	1	5	40.2	23.15	64.8

1.5SMB51A	1.5SMB51CA	48.45	53.55	1	5	43.6	21.40	70.1
1.5SMB56A	1.5SMB56CA	53.20	58.80	1	5	47.8	19.48	77.0
1.5SMB62A	1.5SMB62CA	58.90	65.10	1	5	53.0	17.65	85.0
1.5SMB68A	1.5SMB68CA	64.60	71.40	1	5	58.1	16.30	92.0
1.5SMB75A	1.5SMB75CA	71.25	78.75	1	5	64.1	14.56	103.0
1.5SMB82A	1.5SMB82CA	77.90	86.10	1	5	70.1	13.27	113.0
1.5SMB91A	1.5SMB91CA	86.45	95.35	1	5	77.8	12.00	125.0

Notes:
(3) Pulse test: t_p≤50ms.
(4) Surge current waveform per Fig. 3 and derated per Fig.2.

■ **Characteristics** (Typical)

FIG1:Peak Pulse Power Rating Curve

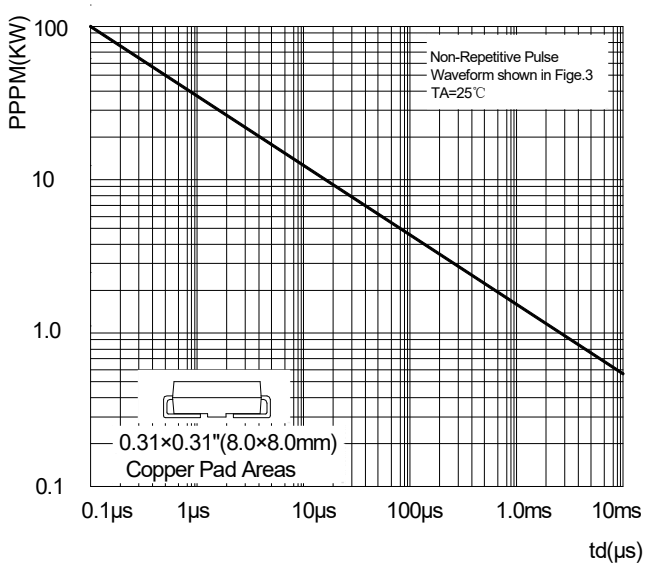


FIG2: Pulse Power or Current vs. Initial Junction Temperature

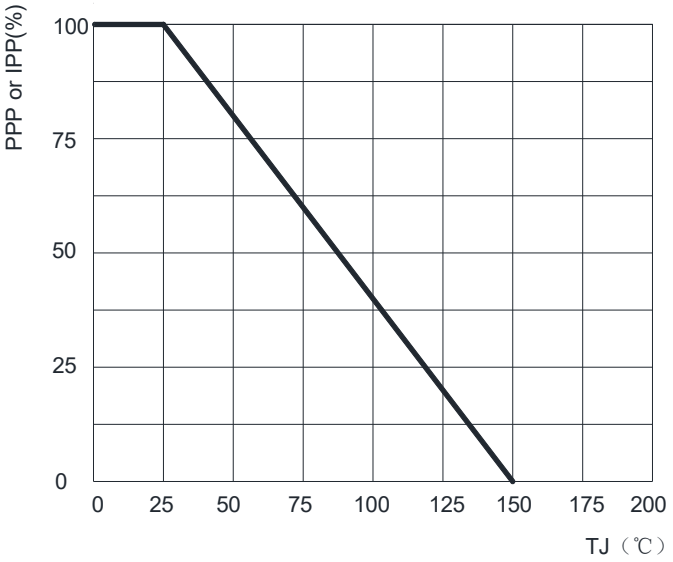


FIG3: Pulse Waveform

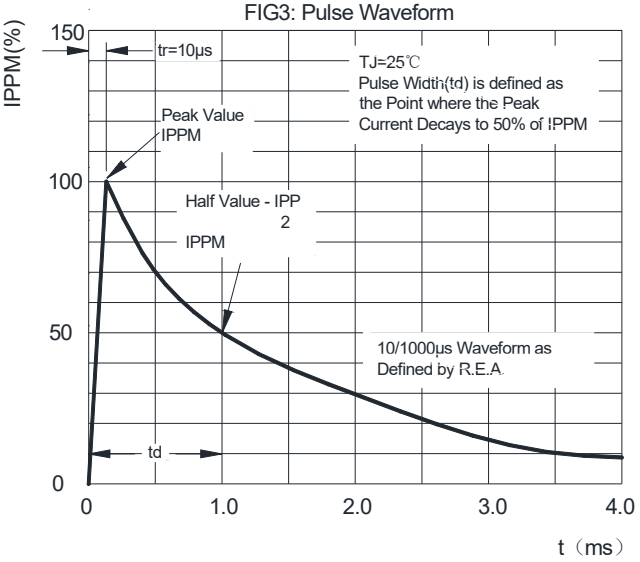


FIG4: Maximum Non-Repetitive Surge Current

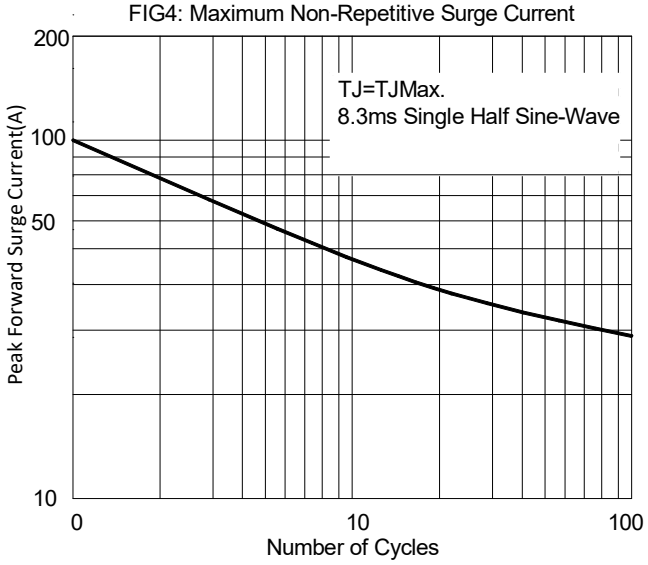
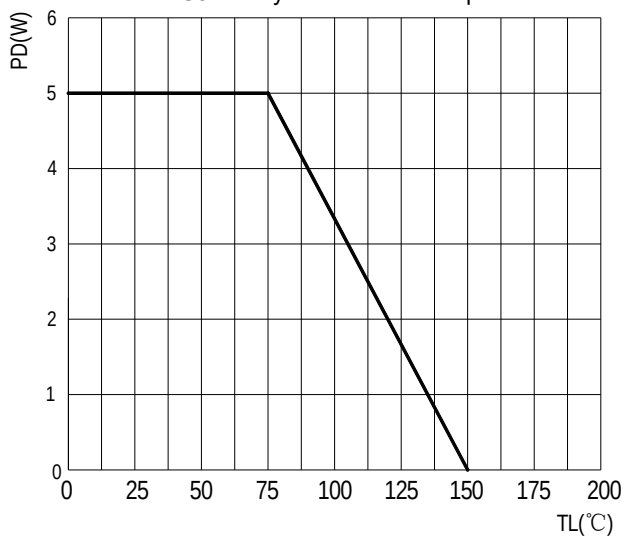
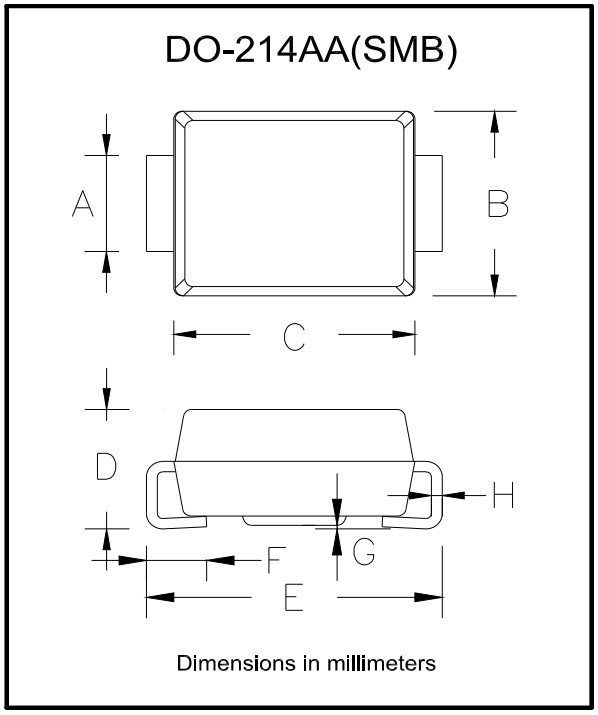


FIG5:Steady State Power Dissipation

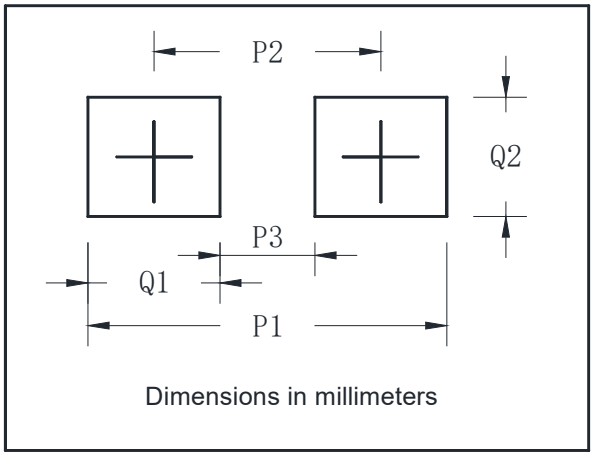


■ Outline Dimensions



DO-214AA(SMB)		
Dim	Min	Max
A	1.85	2.15
B	3.30	3.94
C	4.05	4.75
D	1.99	2.61
E	5.21	5.59
F	0.90	1.41
G	0.05	0.20
H	0.15	0.31

■ Suggested pad layout



DO-214AA(SMB)	
Dim	Millimeters
P1	6.8
P2	4.3
P3	1.8
Q1	2.5
Q2	2.3

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