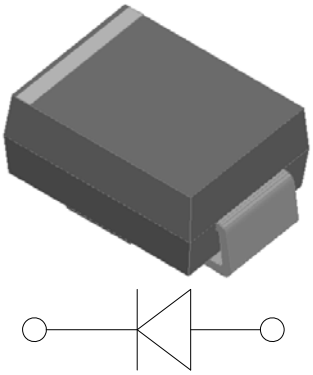
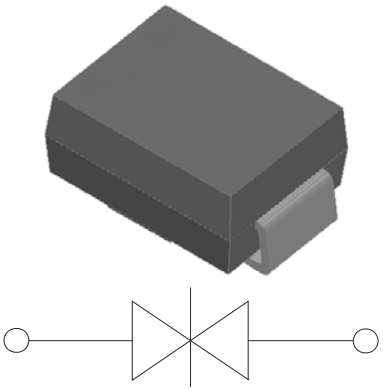
SMBJ SERIES

Surface Mount Transient Voltage Suppressors

Uni-directional



Bi-directional



Features

- Low profile package
- Ideal for automated placement
- Available in Uni-directional and Bi-directional
- 600 W peak pulse power capability with a 10/1000 μs waveform
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020C, LF maximum peak of 260 °C
- Part no. with suffix “Q” means AEC-Q101 qualified

Typical Applications

For 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, automotive, and 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-002 and JESD22-B102
- **Polarity:** For uni-directional types the band denotes cathode 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	600
Peak pulse current, with a 10/1000us waveform(1)	I_{PPM}	A	See Next Table
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

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

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage @ at 50A for unidirectional only (3)	V_F	V	3.5

■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:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T_A= 25℃per Fig.2.

(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 V_{BR}<190V.

■Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMBJ SERIES	F1	Approximate 0.1003	3000	6000	48000	13” 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} (6) (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}(5) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T(4)(mA)				
SMBJ10AQ	SMBJ10CAQ	11.10	12.30	1	5	10.0	35.3	17.0
SMBJ11AQ	SMBJ11CAQ	12.20	13.50	1	5	11.0	33.0	18.2
SMBJ12AQ	SMBJ12CAQ	13.30	14.70	1	5	12.0	30.2	19.9
SMBJ13AQ	SMBJ13CAQ	14.40	15.90	1	1	13.0	27.9	21.5
SMBJ14AQ	SMBJ14CAQ	15.60	17.20	1	1	14.0	25.9	23.2
SMBJ15AQ	SMBJ15CAQ	16.70	18.50	1	1	15.0	24.6	24.4
SMBJ16AQ	SMBJ16CAQ	17.80	19.70	1	1	16.0	23.1	26.0
SMBJ17AQ	SMBJ17CAQ	18.90	20.90	1	1	17.0	21.7	27.6
SMBJ18AQ	SMBJ18CAQ	20.00	22.10	1	1	18.0	20.6	29.2
SMBJ19AQ	SMBJ19CAQ	21.10	23.30	1	1	19.0	19.5	30.8
SMBJ20AQ	SMBJ20CAQ	22.20	24.50	1	1	20.0	18.5	32.4
SMBJ22AQ	SMBJ22CAQ	24.40	26.90	1	1	22.0	16.9	35.5
SMBJ24AQ	SMBJ24CAQ	26.70	29.50	1	1	24.0	15.4	38.9
SMBJ26AQ	SMBJ26CAQ	28.90	31.90	1	1	26.0	14.3	42.1
SMBJ28AQ	SMBJ28CAQ	31.10	34.40	1	1	28.0	13.2	45.4
SMBJ30AQ	SMBJ30CAQ	33.30	36.80	1	1	30.0	12.4	48.4
SMBJ33AQ	SMBJ33CAQ	36.70	40.60	1	1	33.0	11.3	53.3

SMBJ36AQ	SMBJ36CAQ	40.00	44.20	1	1	36.0	10.3	58.1
SMBJ40AQ	SMBJ40CAQ	44.40	49.10	1	1	40.0	9.3	64.5
SMBJ43AQ	SMBJ43CAQ	47.80	52.80	1	1	43.0	8.7	69.4
SMBJ45AQ	SMBJ45CAQ	50.00	55.30	1	1	45.0	8.3	72.7
SMBJ48AQ	SMBJ48CAQ	53.30	58.90	1	1	48.0	7.8	77.4
SMBJ51AQ	SMBJ51CAQ	56.70	62.70	1	1	51.0	7.3	82.4
SMBJ54AQ	SMBJ54CAQ	60.00	66.30	1	1	54.0	6.9	87.1
SMBJ58AQ	SMBJ58CAQ	64.40	71.20	1	1	58.0	6.4	93.6
SMBJ60AQ	SMBJ60CAQ	66.70	73.70	1	1	60.0	6.2	96.8
SMBJ64AQ	SMBJ64CAQ	71.10	78.60	1	1	64.0	5.8	103.0
SMBJ70AQ	SMBJ70CAQ	77.80	86.00	1	1	70.0	5.3	113.0
SMBJ75AQ	SMBJ75CAQ	83.30	92.10	1	1	75.0	5.0	121.0
SMBJ78AQ	SMBJ78CAQ	86.70	95.80	1	1	78.0	4.8	126.0
SMBJ80AQ	SMBJ80CAQ	88.80	97.60	1	1	80.0	4.6	129.6
SMBJ85AQ	SMBJ85CAQ	94.40	104.00	1	1	85.0	4.4	137.0
SMBJ90AQ	SMBJ90CAQ	100.00	111.00	1	1	90.0	4.1	146.0
SMBJ100AQ	SMBJ100CAQ	111.00	123.00	1	1	100.0	3.7	162.0
SMBJ110AQ	SMBJ110CAQ	122.00	135.00	1	1	110.0	3.4	177.0
SMBJ120AQ	SMBJ120CAQ	133.00	147.00	1	1	120.0	3.1	193.0
SMBJ130AQ	SMBJ130CAQ	144.00	159.00	1	1	130.0	2.9	209.0
SMBJ140AQ	SMBJ140CAQ	155.00	171.00	1	1	140.0	2.7	226.8
SMBJ150AQ	SMBJ150CAQ	167.00	185.00	1	1	150.0	2.5	243.0
SMBJ160AQ	SMBJ160CAQ	178.00	197.00	1	1	160.0	2.3	259.0
SMBJ170AQ	SMBJ170CAQ	189.00	209.00	1	1	170.0	2.2	275.0
SMBJ180AQ	SMBJ180CAQ	200.00	220.00	1	1	180.0	2.1	291.6
SMBJ190AQ	SMBJ190CAQ	211.00	232.00	1	1	190.0	2.0	307.8

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

■ Characteristics (Typical)

FIG1:Peak Pulse Power Rating Curve

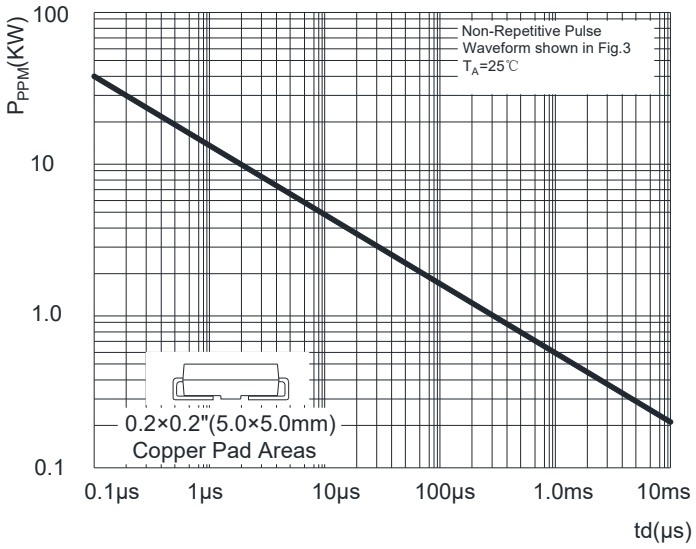


FIG2: Pulse Power or Current vs. Initial Junction Temperature

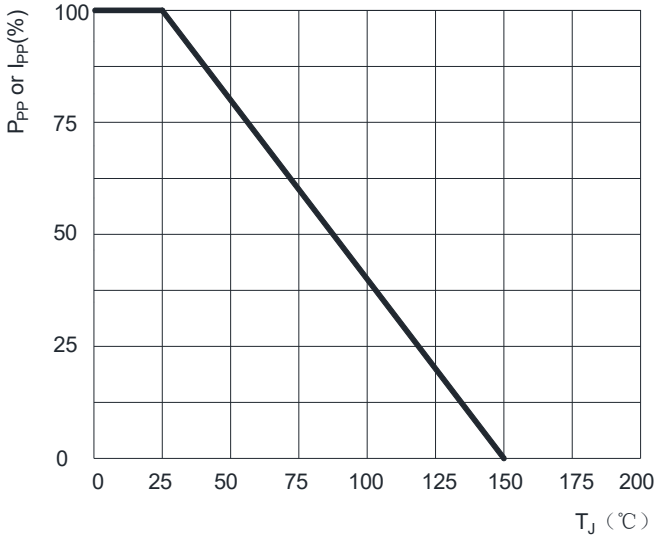


FIG3: Pulse Waveform

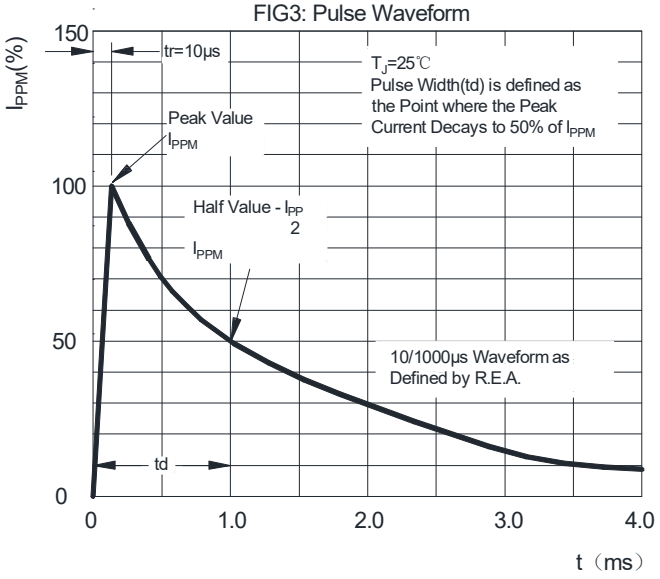


FIG4:Typical Transient Thermal Impedance

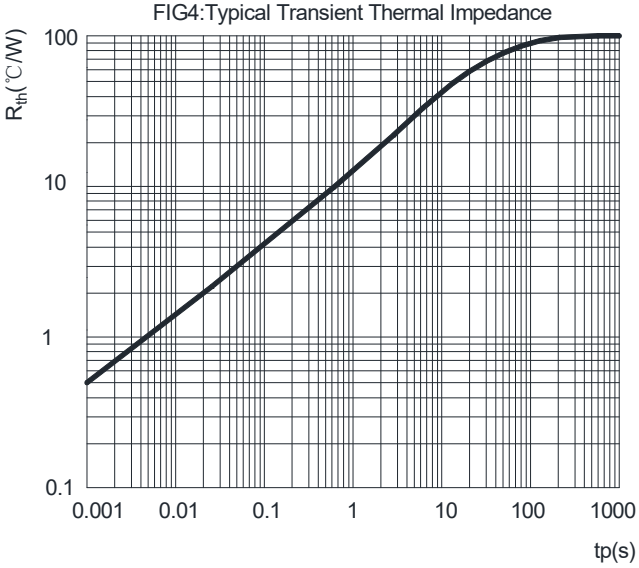
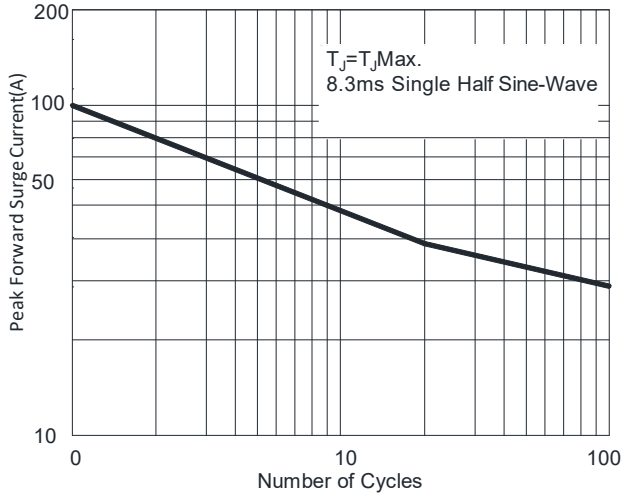
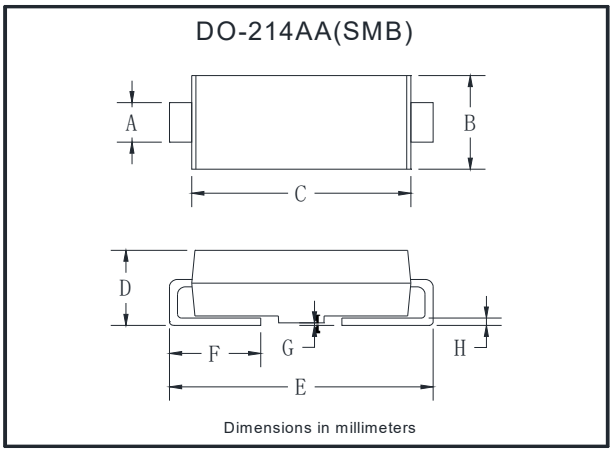


FIG5: Maximum Non-Repetitive Surge Current

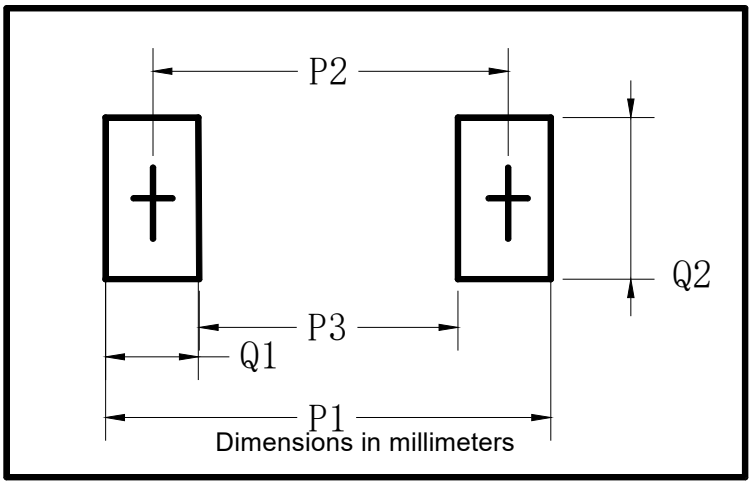


■ Outline Dimensions



DO-214AA(SMB)		
Dim	Min	Max
A	1.85	2.15
B	3.30	3.94
C	4.25	4.75
D	1.99	2.61
E	5.21	5.59
F	0.90	1.41
G	0.10	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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