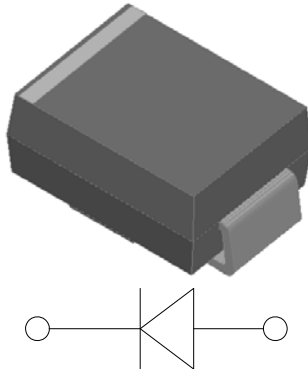


Surface Mount Transient Voltage Suppressors

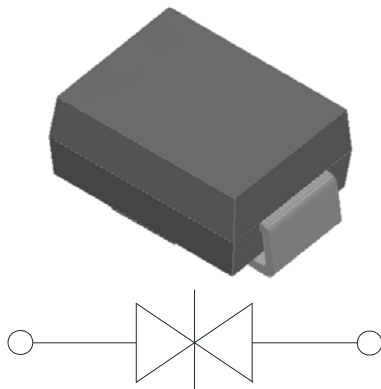
Uni-directional



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 μ s 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
- ESD protection of data lines in accordance with IEC 61000-4-2, 30kV(Air), 30kV (Contact)
- Part no. with suffix "Q" means AEC-Q101 qualified

Bi-directional



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 ($T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Max
Peak pulse 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
Power dissipation, on infinite heat sink at $T_L=75^\circ\text{C}$	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	T_J	$^\circ\text{C}$	-55 to +175
Storage temperature range	T_{STG}	$^\circ\text{C}$	-55 to +175

■Electrical Characteristics ($T_a=25^\circ\text{C}$ Unless otherwise specified)

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



SMBJ5.0AVQ THRU SMBJ85CAVQ

■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} ⁽⁵⁾ (A)	Maximum Clamping Voltage V _c @ I _{PP} (V)	Marking code	
		Min(V)	Max (V)	I _T ⁽⁴⁾ (mA)					Uni	Bi
SMBJ5.0AVQ	SMBJ5.0CAVQ	6.4	7.07	10	800	5	65.2	9.2	5.0AV	5.0CAV
SMBJ6.0AVQ	SMBJ6.0CAVQ	6.67	7.37	10	800	6	58.3	10.3	6.0AV	6.0CAV
SMBJ6.5AVQ	SMBJ6.5CAVQ	7.22	7.98	10	500	6.5	53.6	11.2	6.5AV	6.5CAV
SMBJ7.0AVQ	SMBJ7.0CAVQ	7.78	8.6	10	200	7	50	12	7.0AV	7.0CAV
SMBJ7.5AVQ	SMBJ7.5CAVQ	8.33	9.21	1	100	7.5	46.5	12.9	7.5AV	7.5CAV
SMBJ8.0AVQ	SMBJ8.0CAVQ	8.89	9.83	1	50	8	44.1	13.6	8.0AV	8.0CAV
SMBJ8.5AVQ	SMBJ8.5CAVQ	9.44	10.4	1	10	8.5	41.7	14.4	8.5AV	8.5CAV
SMBJ9.0AVQ	SMBJ9.0CAVQ	10	11.1	1	5	9	39.0	15.4	9.0AV	9.0CAV
SMBJ10AVQ	SMBJ10CAVQ	11.10	12.30	1	5	10.0	35.3	17.0	10AV	10CAV
SMBJ11AVQ	SMBJ11CAVQ	12.20	13.50	1	5	11.0	33.0	18.2	11AV	11CAV
SMBJ12AVQ	SMBJ12CAVQ	13.30	14.70	1	5	12.0	30.2	19.9	12AV	12CAV
SMBJ13AVQ	SMBJ13CAVQ	14.40	15.90	1	1	13.0	27.9	21.5	13AV	13CAV
SMBJ14AVQ	SMBJ14CAVQ	15.60	17.20	1	1	14.0	25.9	23.2	14AV	14CAV
SMBJ15AVQ	SMBJ15CAVQ	16.70	18.50	1	1	15.0	24.6	24.4	15AV	15CAV
SMBJ16AVQ	SMBJ16CAVQ	17.80	19.70	1	1	16.0	23.1	26.0	16AV	16CAV
SMBJ17AVQ	SMBJ17CAVQ	18.90	20.90	1	1	17.0	21.7	27.6	17AV	17CAV
SMBJ18AVQ	SMBJ18CAVQ	20.00	22.10	1	1	18.0	20.6	29.2	18AV	18CAV
SMBJ19AVQ	SMBJ19CAVQ	21.10	23.30	1	1	19.0	19.5	30.8	19AV	19CAV
SMBJ20AVQ	SMBJ20CAVQ	22.20	24.50	1	1	20.0	18.5	32.4	20AV	20CAV
SMBJ22AVQ	SMBJ22CAVQ	24.40	26.90	1	1	22.0	16.9	35.5	22AV	22CAV
SMBJ24AVQ	SMBJ24CAVQ	26.70	29.50	1	1	24.0	15.4	38.9	24AV	24CAV
SMBJ26AVQ	SMBJ26CAVQ	28.90	31.90	1	1	26.0	14.3	42.1	26AV	26CAV
SMBJ28AVQ	SMBJ28CAVQ	31.10	34.40	1	1	28.0	13.2	45.4	28AV	28CAV
SMBJ30AVQ	SMBJ30CAVQ	33.30	36.80	1	1	30.0	12.4	48.4	30AV	30CAV
SMBJ33AVQ	SMBJ33CAVQ	36.70	40.60	1	1	33.0	11.3	53.3	33AV	33CAV
SMBJ36AVQ	SMBJ36CAVQ	40.00	44.20	1	1	36.0	10.3	58.1	36AV	36CAV
SMBJ40AVQ	SMBJ40CAVQ	44.40	49.10	1	1	40.0	9.3	64.5	40AV	40CAV
SMBJ43AVQ	SMBJ43CAVQ	47.80	52.80	1	1	43.0	8.7	69.4	43AV	43CAV
SMBJ45AVQ	SMBJ45CAVQ	50.00	55.30	1	1	45.0	8.3	72.7	45AV	45CAV
SMBJ48AVQ	SMBJ48CAVQ	53.30	58.90	1	1	48.0	7.8	77.4	48AV	48CAV
SMBJ51AVQ	SMBJ51CAVQ	56.70	62.70	1	1	51.0	7.3	82.4	51AV	51CAV
SMBJ54AVQ	SMBJ54CAVQ	60.00	66.30	1	1	54.0	6.9	87.1	54AV	54CAV
SMBJ58AVQ	SMBJ58CAVQ	64.40	71.20	1	1	58.0	6.4	93.6	58AV	58CAV
SMBJ60AVQ	SMBJ60CAVQ	66.70	73.70	1	1	60.0	6.2	96.8	60AV	60CAV
SMBJ64AVQ	SMBJ64CAVQ	71.10	78.60	1	1	64.0	5.8	103.0	64AV	64CAV
SMBJ70AVQ	SMBJ70CAVQ	77.80	86.00	1	1	70.0	5.3	113.0	70AV	70CAV
SMBJ75AVQ	SMBJ75CAVQ	83.30	92.10	1	1	75.0	5.0	121.0	75AV	75CAV
SMBJ78AVQ	SMBJ78CAVQ	86.70	95.80	1	1	78.0	4.8	126.0	78AV	78CAV
SMBJ80AVQ	SMBJ80CAVQ	88.80	97.60	1	1	80.0	4.6	129.6	80AV	80CAV
SMBJ85AVQ	SMBJ85CAVQ	94.40	104.00	1	1	85.0	4.4	137.0	85AV	85CAV



SMBJ5.0AVQ THRU SMBJ85CAVQ

■ Thermal Characteristics (T_a=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal resistance(Typical)	R _{θJL}	°C/W	junction to lead	20
	R _{θJA}	°C/W	junction to ambient	100

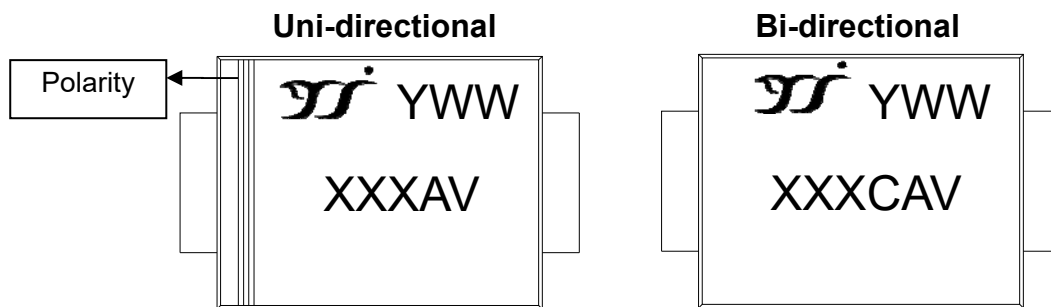
Notes:

- (1) Non-repetitive current pulse, per Fig.3 and derated above T_J= 50°C per Fig.2.
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal.
- (3) VF<3.5V for devices of VBR<85V.
- (4) Pulse test: t_p≤50ms
- (5) Surge current waveform per Fig.3 and derated per Fig.2.

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMBJ SERIES	F1	Approximate 0.1003	3000	48000	13" reel

■ Marking Information



Note:

1. All marking is at middle of the product body
2. All marking is in laser printing
3. XXX is marking code, like SMBJ85AVQ/85CAVQ marking code is 85
4. Body color: Black
5. YWW is date code, "Y" is year. "WW" is week.

For instance:

The 17th week of 2024, date code is 417

The 17th week of 2025, date code is 517



SMBJ5.0AVQ THRU SMBJ85CAVQ

■ Characteristics (Typical)

Fig.1 Peak Pulse Power Rating Curve

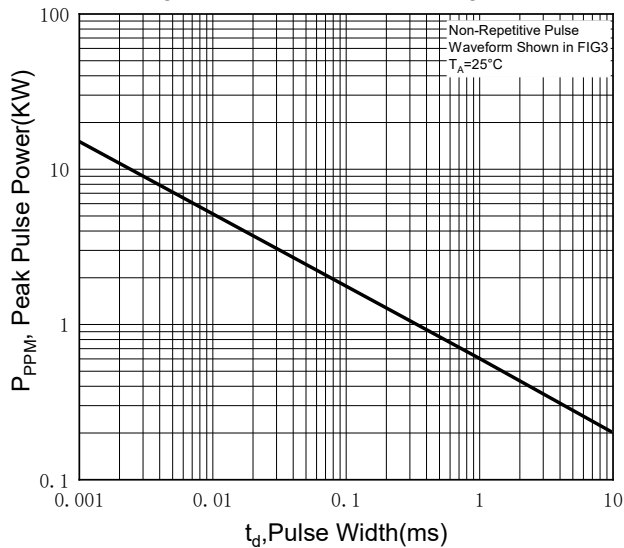


Fig.2 Pulse Power or Current vs. Initial Junction Temperature

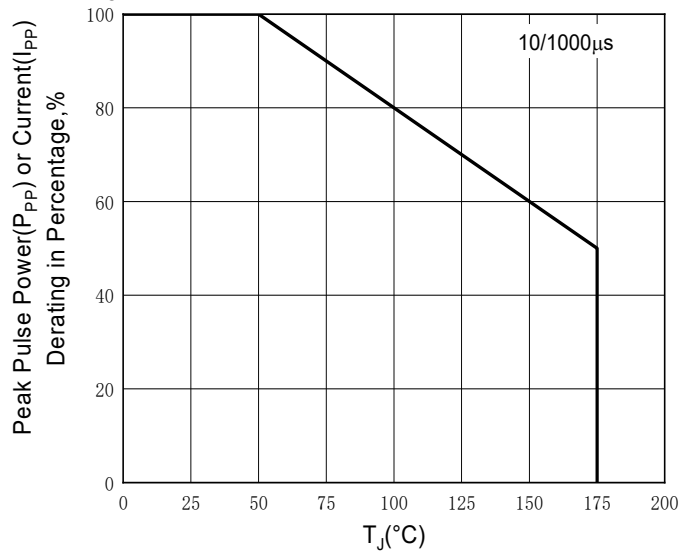


Fig.3 Pulse Waveform

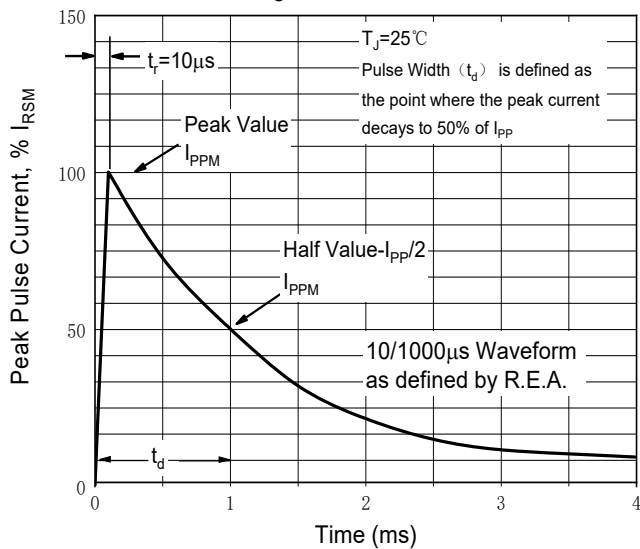


Fig.4 Typical Transient Thermal Impedance

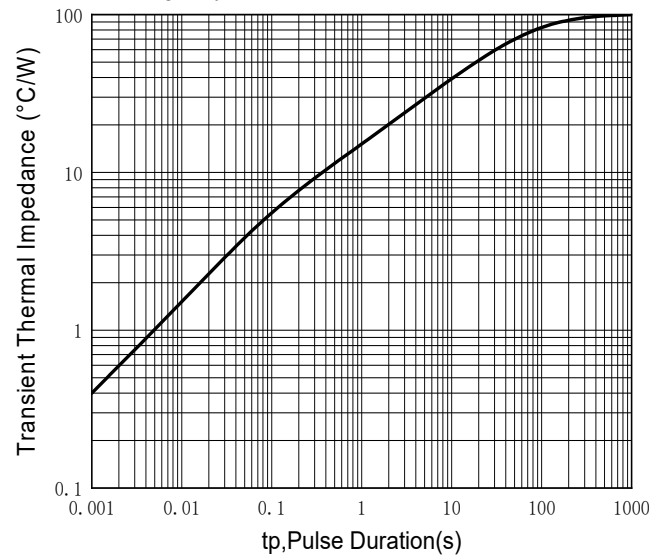


Fig.5 Maximum Non-Repetitive Forward Surge Current

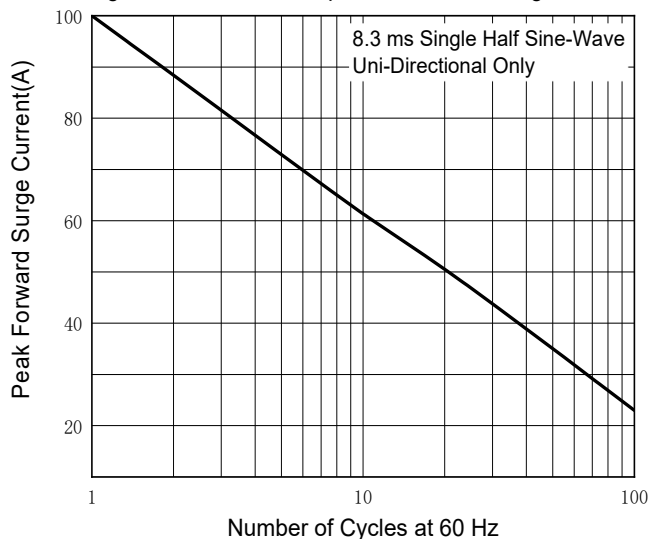
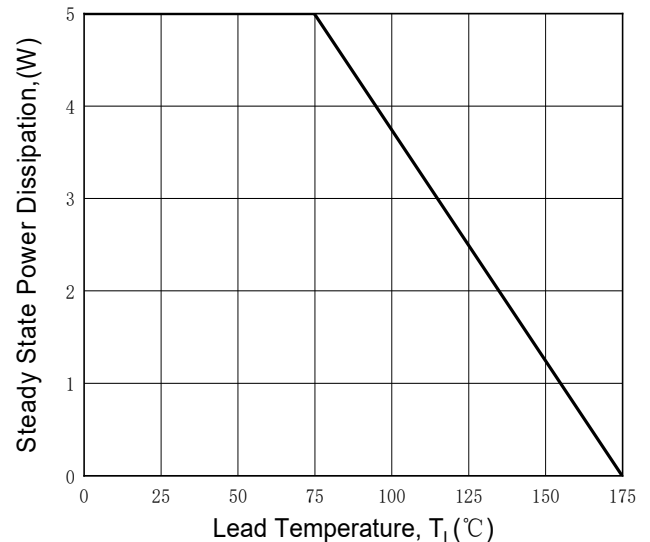


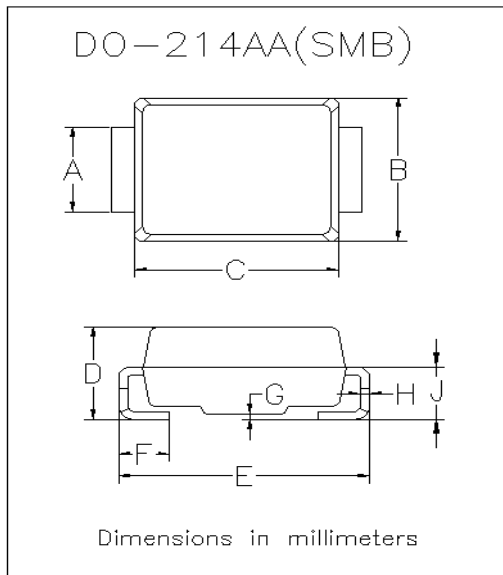
Fig.6 Steady State Power Derating Curve





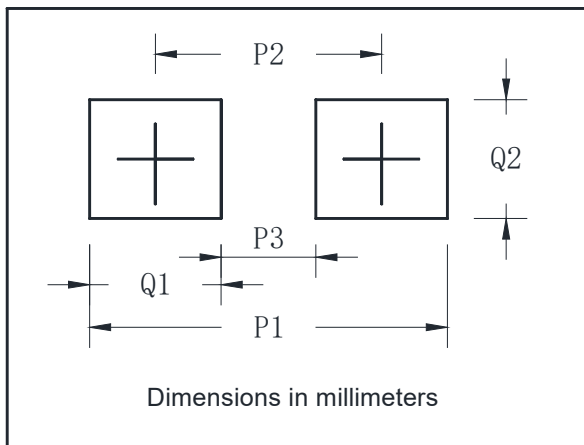
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■ Outline Dimensions



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
J	1.05	1.55

■ Suggested pad layout



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



SMBJ5.0AVQ THRU SMBJ85CAVQ

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