P6SMB6.8A thru P6SMB200CA

600W Surface Mount Transient Voltage Suppressors

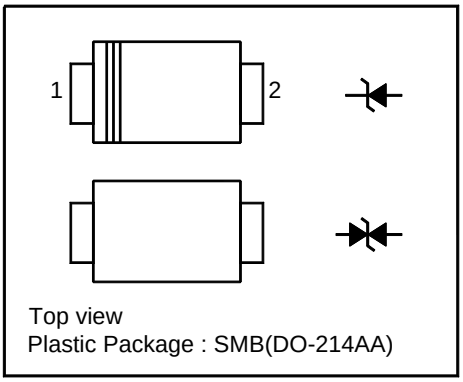
Features

- AEC-Q101 Qualified
- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 600 W peak pulse power capability with a 10/1000 μs
- 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

SMB (DO-214AA)

PINNING

PIN	DESCRIPTION
1	Cathode
2	Anode



Top view
Plastic Package : SMB(DO-214AA)

PRIMARY CHARACTERISTICS	
V_{BR}	6.46V to 210V
V_{WM}	9.4V to 171V
PPPM (10 x 1000 us)	600 W
T_J max.	150 °C
Polarity	Uni & bidirectional
Package	SMB (DO-214AA)

Description

- Devices for bidirectional applications
- For bidirectional use CA suffix
- Electrical characteristics apply in both directions

Typical Applications

Use is 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 and automotive.

Absolute Maximum Ratings (T_a = 25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with a 10/1000 μs Waveform [1) 2)] (Fig.1)	P_{PPM}	600	W
Peak Pulse Current with a 10/1000 μs Waveform [1)]	I_{PPM}	See Next Table	A
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave unidirectional only [2)]	I_{FSM}	100	A
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 65 to + 150	℃

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}<200V and V_F<5.0V for devices of V_{BR}>201V.

Electrical Characteristics (Ta=25℃ Unless otherwise specified)

Parameter	Symbol	Value	Unit
Maximum instantaneous forward voltage @ at 50A for unidirectional only 3)	V_F	3.5	V

Thermal Characteristics (Ta=25℃ Unless otherwise specified)

Parameter	Symbol	Value	Unit
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	20	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	100	°C/W

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}<200V and V_F<5.0V for devices of V_{BR}>201V.

Characteristics at T_a = 25℃ unless otherwise specified

Type	Marking		Working Peak Reverse Voltage	Breakdown Voltage			Maximum Clamping Voltage		Maximum Reverse Current	Maximum Temperature Coefficient of V_{BR}
	UNI	BI		V_{BR}		at I_T	V_C	at I_{PPM}	I_R at V_{RWM}	θV_{BR}
			V_{RWM} (V)	Min. (V)	Max. (V)	(mA)	Max. (V)	(A)	Max. (μA)	%/℃
P6SMB6.8A / CA	A6.8A	A6.8C	5.8	6.46	7.14	10	10.5	57.1	1000	0.057
P6SMB7.5A / CA	A7.5A	A7.5C	6.4	7.13	7.88	10	11.3	53.1	500	0.061
P6SMB8.2A / CA	A8.2A	A8.2C	7.0	7.79	8.61	10	12.1	49.6	200	0.065
P6SMB9.1A / CA	A9.1A	A9.1C	7.8	8.65	9.56	1	13.4	44.7	50	0.068
P6SMB10A / CA	A10A	A10C	8.6	9.50	10.50	1	14.5	41.3	10	0.073
P6SMB11A / CA	A11A	A11C	9.4	10.5	11.6	1	15.6	38.5	5	0.075
P6SMB12A / CA	A12A	A12C	10.2	11.4	12.6	1	16.7	35.9	5	0.078
P6SMB13A / CA	A13A	A13C	11.1	12.4	13.7	1	18.2	33.0	1	0.081
P6SMB15A / CA	A15A	A15C	12.8	14.3	15.8	1	21.2	28.3	1	0.084
P6SMB16A / CA	A16A	A16C	13.6	15.2	16.8	1	22.5	26.7	1	0.086
P6SMB18A / CA	A18A	A18C	15.3	17.1	18.9	1	25.2	23.8	1	0.088
P6SMB20A / CA	A20A	A20C	17.1	19.0	21.0	1	27.7	21.7	1	0.090
P6SMB22A / CA	A22A	A22C	18.8	20.9	23.1	1	30.6	19.6	1	0.092
P6SMB24A / CA	A24A	A24C	20.5	22.8	25.2	1	33.2	18.1	1	0.094
P6SMB27A / CA	A27A	A27C	23.1	25.7	28.4	1	37.5	16.0	1	0.096
P6SMB30A / CA	A30A	A30C	25.6	28.5	31.5	1	41.4	14.5	1	0.097
P6SMB33A / CA	A33A	A33C	28.2	31.4	34.7	1	45.7	13.1	1	0.098
P6SMB36A / CA	A36A	A36C	30.8	34.2	37.8	1	49.9	12.0	1	0.099
P6SMB39A / CA	A39A	A39C	33.3	37.1	41.0	1	53.9	11.1	1	0.100
P6SMB43A / CA	A43A	A43C	36.8	40.9	45.2	1	59.3	10.1	1	0.101
P6SMB47A / CA	A47A	A47C	40.2	44.7	49.4	1	64.8	9.3	1	0.101
P6SMB51A / CA	A51A	A51C	43.6	48.5	53.6	1	70.1	8.6	1	0.102
P6SMB56A / CA	A56A	A56C	47.8	53.2	58.8	1	77.0	7.8	1	0.103
P6SMB62A / CA	A62A	A62C	53	58.9	65.1	1	85.0	7.1	1	0.104
P6SMB68A / CA	A68A	A68C	58.1	64.6	71.4	1	92.0	6.5	1	0.104
P6SMB75A / CA	A75A	A75C	64.1	71.3	78.8	1	103	5.8	1	0.105
P6SMB82A / CA	A82A	A82C	70.1	77.9	86.1	1	113	5.3	1	0.105
P6SMB91A / CA	A91A	A91C	77.8	86.5	95.5	1	125	4.8	1	0.106
P6SMB100A / CA	A100A	A100C	85.5	95	105	1	137	4.4	1	0.106
P6SMB110A / CA	A110A	A110C	94	105	116	1	152	3.9	1	0.107
P6SMB120A / CA	A120A	A120C	102	114	126	1	165	3.6	1	0.107

Characteristics at T_a = 25℃ unless otherwise specified

Type	Marking		Working Peak Reverse Voltage	Breakdown Voltage			Maximum Clamping Voltage		Maximum Reverse Current	Maximum Temperature Coefficient of V_{BR}
	UNI	BI		V_{BR}		at I_T	V_C	at I_{PPM}	I_R at V_{RWM}	θV_{BR}
			V_{RWM} (V)	Min. (V)	Max. (V)	(mA)	Max. (V)	(A)	Max. (μA)	%/℃
P6SMB130A / CA	A130A	A130C	111.0	123.50	136.50	1	179.0	3.3	1	0.107
P6SMB150A / CA	A150A	A150C	128.0	142.50	157.50	1	207.0	2.9	1	0.108
P6SMB160A / CA	A160A	A160C	136.0	152.00	168.00	1	219.0	2.7	1	0.108
P6SMB170A / CA	A170A	A170C	145.0	161.50	178.50	1	234.0	2.5	1	0.108
P6SMB180A / CA	A180A	A180C	154.0	171.00	189.00	1	246.0	2.4	1	0.108
P6SMB200A / CA	A200A	A200C	171.0	190.00	210.00	1	274.0	2.2	1	0.108

1) t_p≤50ms Pulse test: t_p≤50ms

2) Surge current waveform per Fig. 3 and derated per Fig.2.

3) For bi-directional types having VWM of 10 V and less, the I_R limit is doubled

Electrical Characteristics Curves

Fig1:Peak Pulse Power Rating Curve

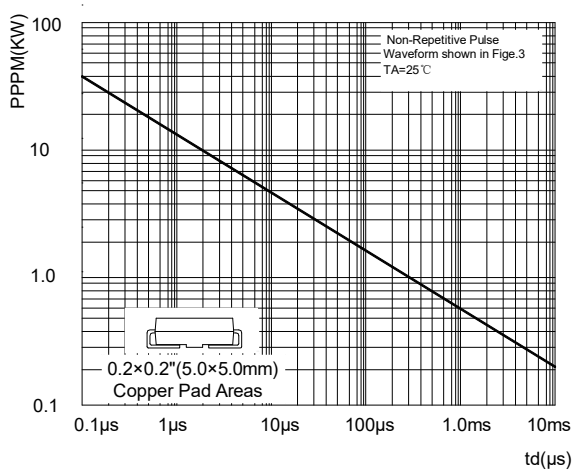


Fig2: Pulse Power or Current vs. Initial Junction Temperature

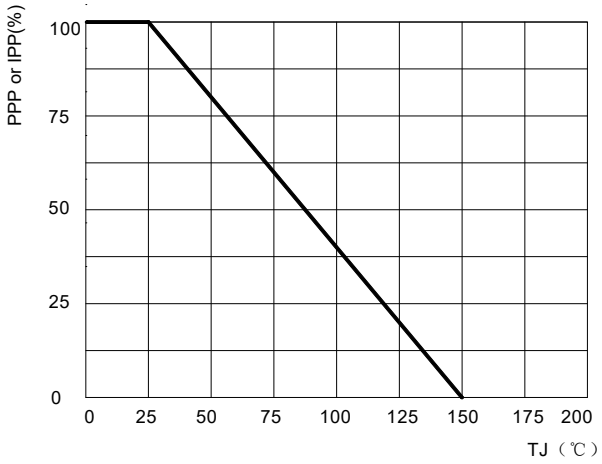


Fig 3: Pulse Waveform

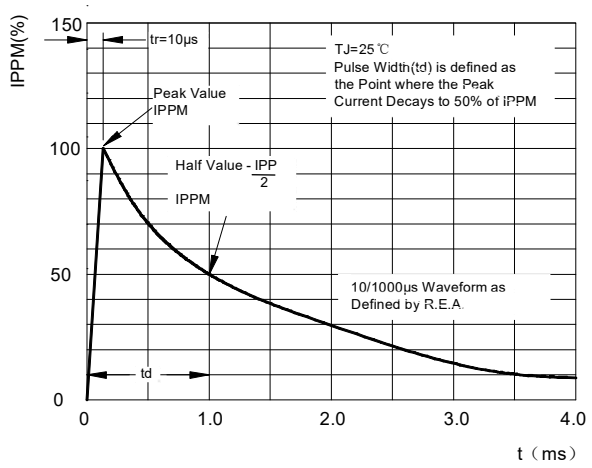


Fig4:Typical Transient Thermal Impedance

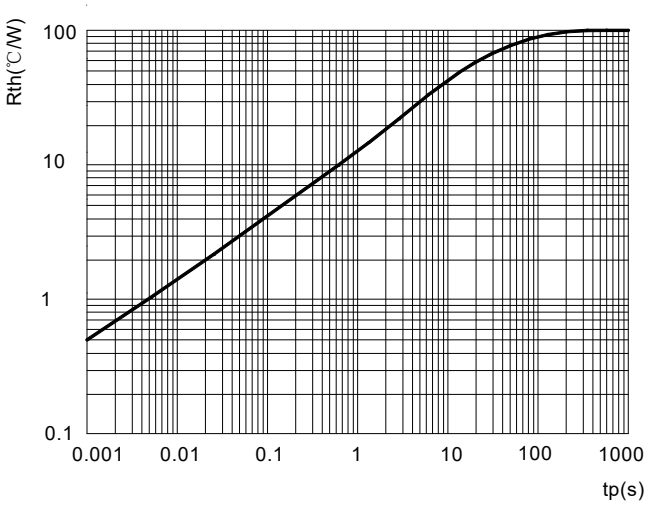
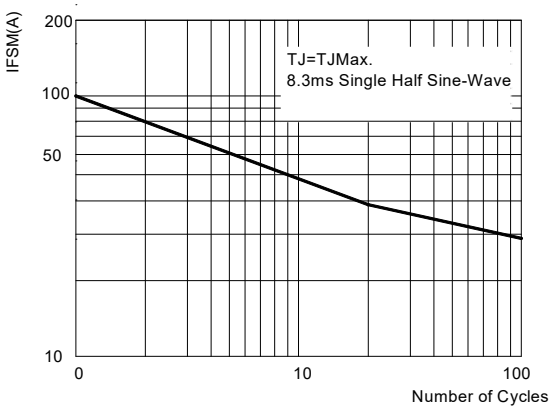
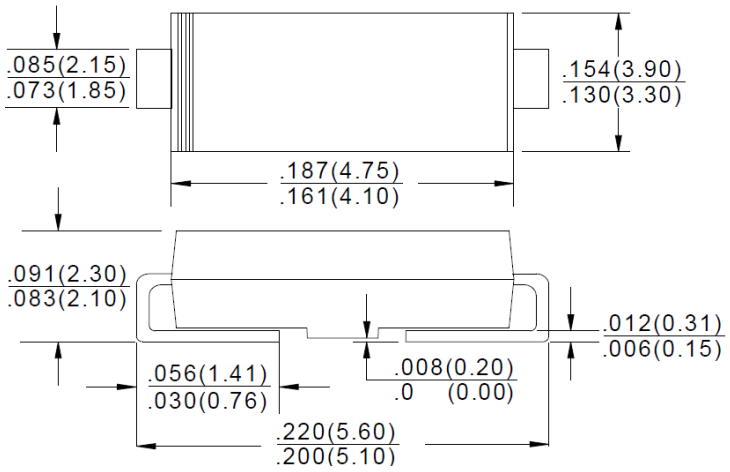


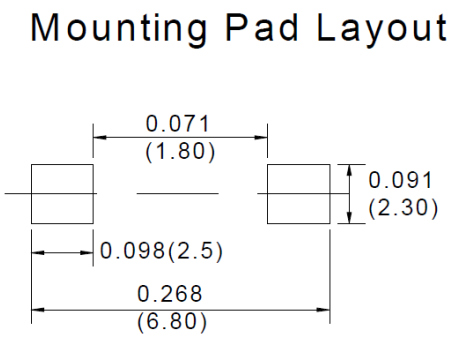
Fig5: Maximum Non-Repetitive Surge Current



Package Outline Dimensions in inches (millimeters)

SMB(DO-214AA)





Packing Information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SMB	12	8±0.1	0.315±0.004	330	13	3000

Marking information

" A6.8A " = Part No.

" YWW " = Date Code Marking

" Y " = Last digit of year (ex: 2 = 2022)

" WW " = Week Code (ex: 24 = the 24th week of the year)

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