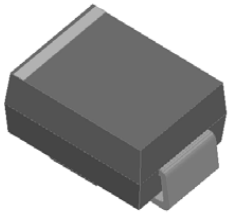
P6SMB SERIES

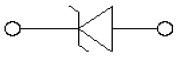
Transient Voltage Suppressor Diodes

Features

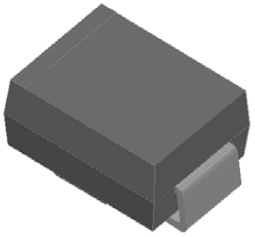
- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 600 W peak pulse power capability with a 10/1000 μs waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature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

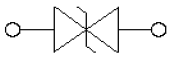
Uni-directional





Bi-directional





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

■Electrical Characteristics (T_A =25℃ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	V_{BR}@I_T Breakdown Voltage V_{BR}@I_T			I_R @V_{WM} Maximum Reverse Leakage I_R (3) (μ A)	V_{RWM} Working Peak Reverse Voltage V_{RWM} (V)	IPP Maximum Reverse Surge Current IPP(2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	IT(1)(mA)				
P6SMB6.8A	P6SMB6.8CA	6.46	7.14	10	1000	5.8	57.1	10.5
P6SMB7.5A	P6SMB7.5CA	7.13	7.88	10	500	6.4	53.1	11.3
P6SMB8.2A	P6SMB8.2CA	7.79	8.61	10	200	7.0	49.6	12.1
P6SMB9.1A	P6SMB9.1CA	8.65	9.56	1	50	7.8	44.7	13.4
P6SMB10A	P6SMB10CA	9.50	10.50	1	10	8.6	41.3	14.5
P6SMB11A	P6SMB11CA	10.45	11.55	1	5	9.4	38.4	15.6
P6SMB12A	P6SMB12CA	11.40	12.60	1	5	10.2	35.9	16.7
P6SMB13A	P6SMB13CA	12.35	13.65	1	5	11.1	32.9	18.2
P6SMB15A	P6SMB15CA	14.25	15.75	1	5	12.8	28.3	21.2
P6SMB16A	P6SMB16CA	15.20	16.80	1	5	13.6	26.6	22.5
P6SMB18A	P6SMB18CA	17.10	18.90	1	5	15.3	23.8	25.2
P6SMB20A	P6SMB20CA	19.00	21.00	1	5	17.1	21.6	27.7
P6SMB22A	P6SMB22CA	20.90	23.10	1	5	18.8	19.6	30.6
P6SMB24A	P6SMB24CA	22.80	25.20	1	5	20.5	18.1	33.2
P6SMB27A	P6SMB27CA	25.65	28.35	1	5	23.1	16.0	37.5
P6SMB30A	P6SMB30CA	28.50	31.50	1	5	25.6	14.5	14.4
P6SMB33A	P6SMB33CA	31.35	34.65	1	5	28.2	13.1	45.7
P6SMB36A	P6SMB36CA	34.20	37.80	1	5	30.8	12.0	49.9
P6SMB39A	P6SMB39CA	37.05	40.95	1	5	33.3	11.1	53.9
P6SMB43A	P6SMB43CA	40.85	45.15	1	5	36.8	10.1	59.3
P6SMB47A	P6SMB47CA	44.65	49.35	1	5	40.2	9.2	64.8
P6SMB51A	P6SMB51CA	48.45	53.55	1	5	43.6	8.5	70.1
P6SMB56A	P6SMB56CA	53.20	58.80	1	5	47.8	7.8	77.0
P6SMB62A	P6SMB62CA	58.90	65.10	1	5	53.0	7.0	85.0
P6SMB68A	P6SMB68CA	64.60	71.40	1	5	58.1	6.5	92.0
P6SMB75A	P6SMB75CA	71.25	78.75	1	5	64.1	5.8	103.0
P6SMB82A	P6SMB82CA	77.90	86.10	1	5	70.1	5.3	113.0
P6SMB91A	P6SMB91CA	86.45	95.35	1	5	77.8	4.8	125.0
P6SMB100A	P6SMB100CA	95.00	105.00	1	5	85.5	4.3	137.0
P6SMB110A	P6SMB110CA	104.50	115.50	1	5	94.0	3.9	152.0
P6SMB120A	P6SMB120CA	114.00	126.00	1	5	102.0	3.6	165.0
P6SMB130A	P6SMB130CA	123.50	136.50	1	5	111.0	3.3	179.0
P6SMB150A	P6SMB150CA	142.50	157.50	1	5	128.0	2.9	207.0
P6SMB160A	P6SMB160CA	152.00	168.00	1	5	136.0	2.7	219.0
P6SMB170A	P6SMB170CA	161.50	178.50	1	5	145.0	2.5	234.0
P6SMB180A	P6SMB180CA	171.00	189.00	1	5	154.0	2.4	246.0

■ Electrical Characteristics (T_A =25℃ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	V_{BR}@I_T Breakdown Voltage V_{BR}@I_T			I_R @V_{WM} Maximum Reverse Leakage I_R (3) (μ A)	V_{RWM} Working Peak Reverse Voltage V_{RWM} (V)	IPP Maximum Reverse Surge Current IPP(2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	IT(1)(mA)				
P6SMB200A	P6SMB200CA	190.00	210.00	1	5	171.0	2.2	274.0
P6SMB220A	P6SMB220CA	209.00	231.00	1	5	185.0	1.8	328.0
P6SMB250A	P6SMB250CA	237.50	262.50	1	5	214.0	1.7	344.0
P6SMB300A	P6SMB300CA	285.00	315.00	1	5	256.0	1.4	414.0
P6SMB350A	P6SMB350CA	332.50	367.50	1	5	299.3	1.2	482.0
P6SMB380A	P6SMB380CA	361.00	399.00	1	5	324.9	1.1	524.4
P6SMB400A	P6SMB400CA	380.00	420.00	1	5	342.0	1.1	548.0
P6SMB440A	P6SMB440CA	418.00	462.00	1	5	376.2	1.0	607.2
P6SMB500A	P6SMB500CA	475.00	525.00	1	5	427.5	0.8	690.0
P6SMB520A	P6SMB520CA	494.00	546.00	1	5	444.6	0.8	717.6
P6SMB550A	P6SMB550CA	522.50	577.50	1	5	470.3	0.8	759.0
P6SMB600A	P6SMB600CA	570.00	630.00	1	5	513.0	0.7	828.0

Notes:

(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

■ Characteristics(Typical)

FIG1:Peak Pulse Power Rating Curve

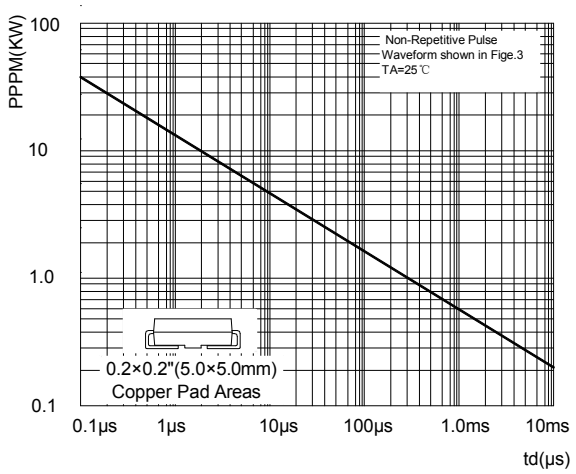


FIG2: Pulse Power or Current vs. Initial Junction Temperature

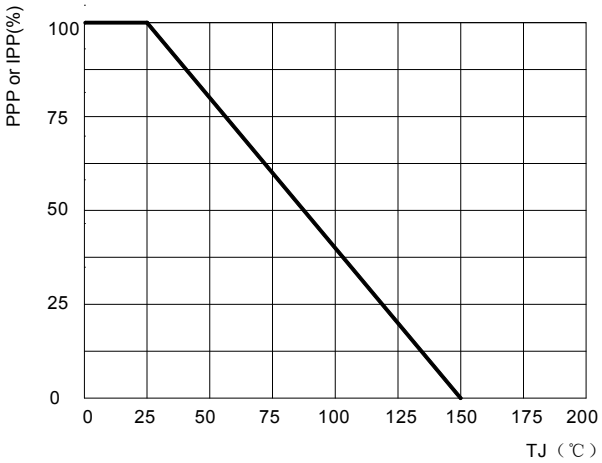


FIG3: Pulse Waveform

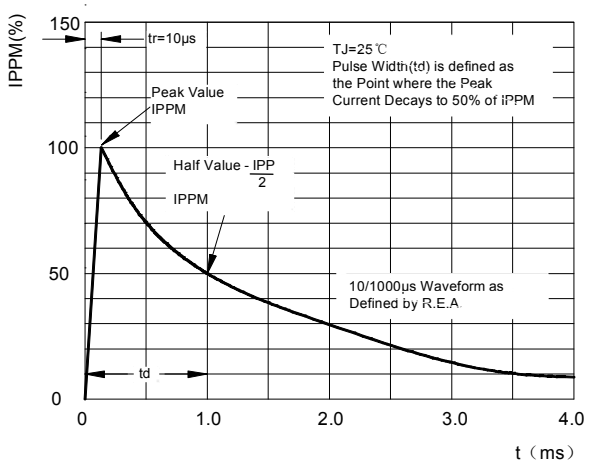


FIG4:Typical Transient Thermal Impedance

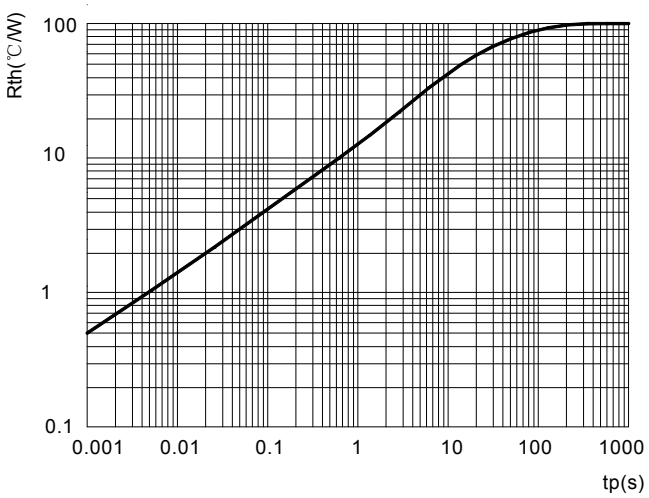
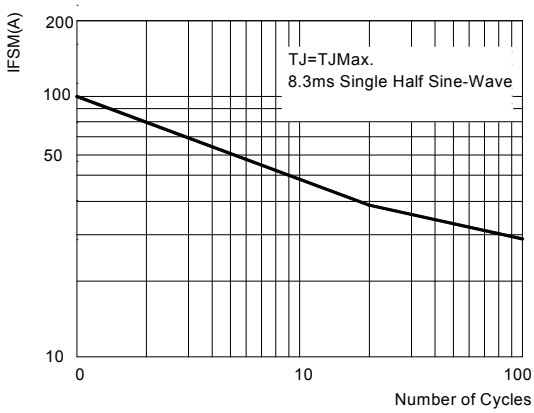


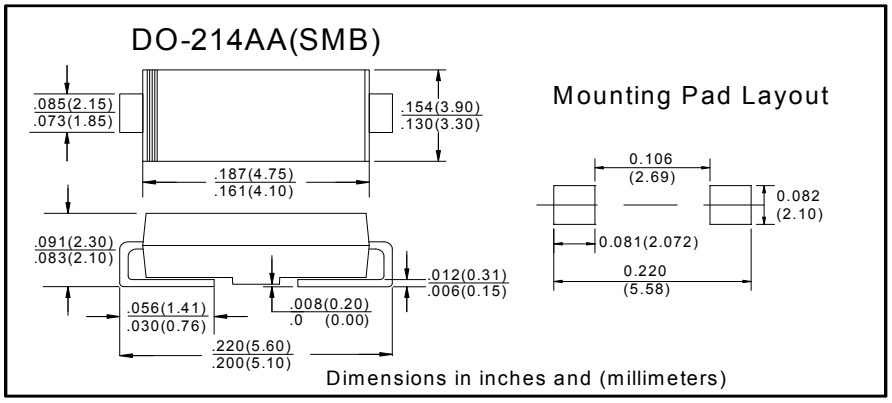
FIG5: Maximum Non-Repetitive Surge Current



■ Ordering Information (Example)

PREFERED	PACKAGE CODE	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
P6SMB Series	SMB	3000	6000	48000	13” reel

■ Outline Dimensions



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