

SuperTVS – P6SMB SERIES

1. Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Meets MSL level 1, per J-STD-020
- IEC 61000-4-2(ESD) $\pm 30\text{KV}$ (air) $\pm 30\text{KV}$ (contact)
- 600W peak pulse power capability at 10/1000 μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical IR less than 1 μA above 10V
- Plastic package has underwriters laboratory flammability 94V-0
- High Temperature soldering: 260 $^{\circ}\text{C}$ /10 seconds at terminals

2. Mechanical Data

- Case: JEDEC DO-214AA. Molded plastic over glass passivated junction
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Standard Packaging: 12mm tape
- Weight: 0.10g

3. Marking Information

BI- directional	UNI-directional	Marking
		XXXX= Product type marking code (See Electrical Characteristics Table)
		

4. Maximum Ratings and Characteristics

Ratings at 25 $^{\circ}$ ambient temperature unless otherwise specified

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 μs waveform (Note1,2)	P _{PPM}	600	W
Peak pulse current of at 10/1000 μs waveform (Note1)	I _{PPM}	See Table	A
Steady state power dissipation at TA=50 $^{\circ}\text{C}$	P _{M(AV)}	5.0	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (Note3)	I _{FSM}	100	A

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Operating junction and Storage Temperature Range	T _J , T _{STG}	-65 to 150	°C
Typical thermal resistance junction to lead	R _{θJL}	20	°C/W
Typical thermal resistance junction to ambient	R _{θJA}	100	°C/W

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig.2.
2. Mounted on 5.0mm×5.0mm copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

5. Electrical Characteristics (TA=25°C)

Part Number	Part Number	Marking		Reverse Stand off Voltage V _R	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current I _T	Maximum Clamping Voltage V _C @ I _{PP}	Maximum Peak Pulse Current I _{PP}	Maximum Reverse Leakage I _R @ V _R	ROHS2.0
		UNI	BI		MIN	MAX					
P6SMB6.8A	P6SMB6.8CA	6V8A	6V8C	5.8	6.45	7.14	10	10.5	58.1	400	y
P6SMB7.5A	P6SMB7.5CA	7V5A	7V5C	6.4	7.13	7.88	10	11.1	54	400	y
P6SMB8.2A	P6SMB8.2CA	8V2A	8V2C	7.02	7.79	8.61	10	12.1	50.4	200	y
P6SMB9.1A	P6SMB9.1CA	9V1A	9V1C	7.78	8.65	9.55	1	13.4	45.5	50	y
P6SMB10A	P6SMB10CA	10A	10C	8.55	9.5	10.5	1	14.5	42.1	20	y
P6SMB11A	P6SMB11CA	11A	11C	9.4	10.5	11.6	1	15.6	39.1	10	y
P6SMB12A	P6SMB12CA	12A	12C	10.2	11.4	12.6	1	16.7	36.5	5	y
P6SMB13A	P6SMB13CA	13A	13C	11.1	12.4	13.7	1	18.2	33.5	1	y
P6SMB15A	P6SMB15CA	15A	15C	12.8	14.3	15.8	1	21.2	28.8	1	y
P6SMB16A	P6SMB16CA	16A	16C	13.6	15.2	16.8	1	22.5	27.1	1	y
P6SMB18A	P6SMB18CA	18A	18C	15.3	17.1	18.9	1	25.5	24.2	1	y
P6SMB20A	P6SMB20CA	20A	20C	17.1	19	21	1	27.7	22	1	y
P6SMB22A	P6SMB22CA	22A	22C	18.8	20.9	23.1	1	30.6	19.9	1	y
P6SMB24A	P6SMB24CA	24A	24C	20.5	22.8	25.2	1	33.2	18.4	1	y
P6SMB27A	P6SMB27CA	27A	27C	23.1	25.7	28.4	1	37.5	16.3	1	y
P6SMB30A	P6SMB30CA	30A	30C	25.6	28.5	31.5	1	41.4	14.7	1	y
P6SMB33A	P6SMB33CA	33A	33C	28.2	31.4	34.7	1	45.7	13.3	1	y
P6SMB36A	P6SMB36CA	36A	36C	30.8	34.2	37.8	1	49.9	12.2	1	y
P6SMB39A	P6SMB39CA	39A	39C	33.3	37.1	41	1	53.9	11.3	1	y
P6SMB43A	P6SMB43CA	43A	43C	36.8	40.9	45.2	1	59.3	10.3	1	y
P6SMB47A	P6SMB47CA	47A	47C	40.2	44.7	49.4	1	64.8	9.4	1	y
P6SMB51A	P6SMB51CA	51A	51C	43.6	48.5	53.6	1	70.1	8.7	1	y
P6SMB56A	P6SMB56CA	56A	56C	47.8	53.2	58.8	1	77	7.9	1	y
P6SMB58A	P6SMB58CA	58A	58C	52.78	55.1	60.9	1	79.8	7.7	1	y

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Part Number	Part Number	Marking		Reverse Stand off Voltage V_R	Breakdown Voltage V_{BR} (Volts) @ I_T		Test Current I_T	Maximum Clamping Voltage $V_C @ I_{PP}$ (V)	Maximum Peak Pulse Current I_{PP}	Maximum Reverse Leakage $I_R @ V_R$	ROHS2.0
UNI	BI	UNI	BI	(V)	MIN	MAX	(mA)	(V)	(A)	(μA)	
P6SMB62A	P6SMB62CA	62A	62C	53	58.9	65.1	1	85	7.2	1	y
P6SMB68A	P6SMB68CA	68A	68C	58.1	64.6	71.4	1	92	6.6	1	y
P6SMB75A	P6SMB75CA	75A	75C	64.1	71.3	78.8	1	103	5.9	1	y
P6SMB82A	P6SMB82CA	82A	82C	70.1	77.9	86.1	1	113	5.4	1	y
P6SMB91A	P6SMB91CA	91A	91C	77.8	86.5	95.5	1	125	4.9	1	y
P6SMB100A	P6SMB100CA	100A	100C	85.5	95	105	1	137	4.5	1	y
P6SMB110A	P6SMB110CA	110A	110C	94	105	116	1	152	4	1	y
P6SMB120A	P6SMB120CA	120A	120C	102	114	126	1	165	3.7	1	y
P6SMB130A	P6SMB130CA	130A	130C	111	124	137	1	179	3.4	1	y
P6SMB150A	P6SMB150CA	150A	150C	128	143	158	1	207	2.9	1	y
P6SMB160A	P6SMB160CA	160A	160C	136	152	168	1	219	2.8	1	y
P6SMB170A	P6SMB170CA	170A	170C	145	162	179	1	234	2.6	1	y
P6SMB180A	P6SMB180CA	180A	180C	154	171	189	1	246	2.5	1	y
P6SMB200A	P6SMB200CA	200A	200C	171	190	210	1	274	2.2	1	y
P6SMB220A	P6SMB220CA	220A	220C	185	209	231	1	328	1.9	1	y
P6SMB250A	P6SMB250CA	250A	250C	214	237	263	1	344	1.8	1	y
P6SMB300A	P6SMB300CA	300A	300C	256	285	315	1	414	1.5	1	y
P6SMB350A	P6SMB350CA	350A	350C	300	332	368	1	482	1.3	1	y
P6SMB400A	P6SMB400CA	400A	400C	342	380	420	1	548	1.1	1	y
P6SMB440A	P6SMB440CA	440A	440C	376	418	462	1	602	1	1	y
P6SMB480A	P6SMB480CA	480A	480C	408	456	504	1	658	0.9	1	y
P6SMB510A	P6SMB510CA	510A	510C	434	485	535	1	698	0.9	1	y
P6SMB530A	P6SMB530CA	530A	530C	451	503.5	556.5	1	725	0.8	1	y
P6SMB540A	P6SMB540CA	540A	540C	460	513	567	1	740	0.8	1	y
P6SMB550A	P6SMB550CA	550A	550C	468	522.5	577.5	1	760	0.8	1	y

For bidirectional type having V_R of 10 volts and less, the I_R limit is double.

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6. Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

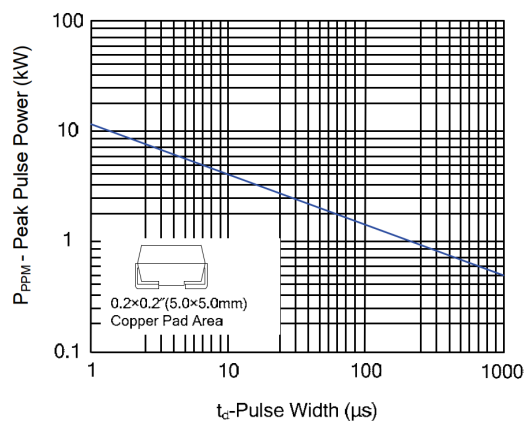


Figure 2 Pulse Derating Curve

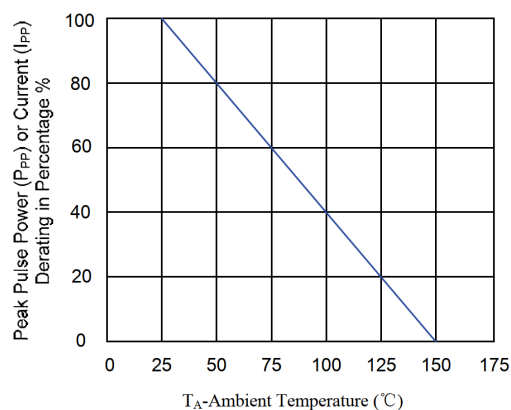


Figure 3 Pulse Waveform

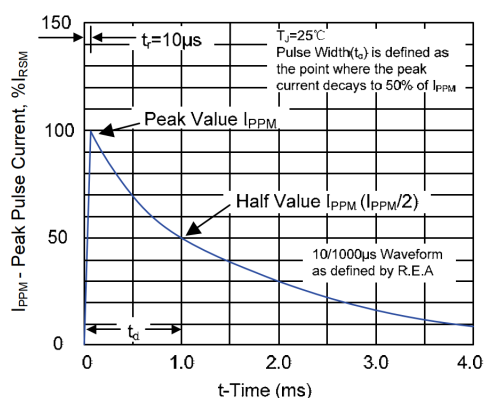


Figure 4 Typical Junction Capacitance

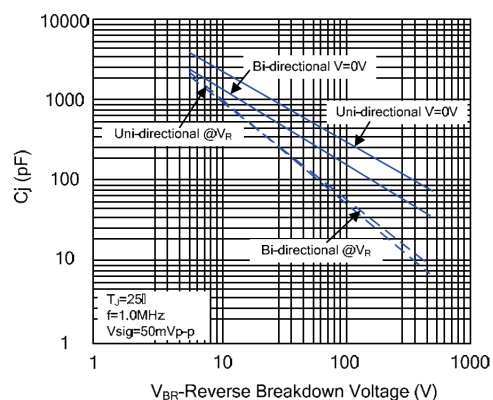
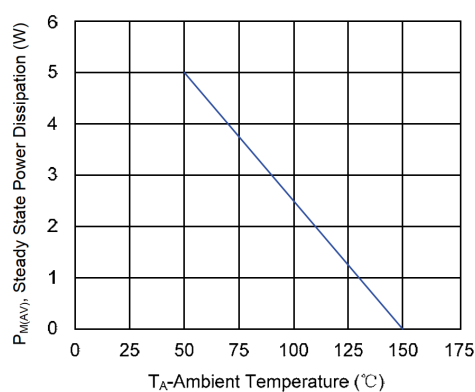
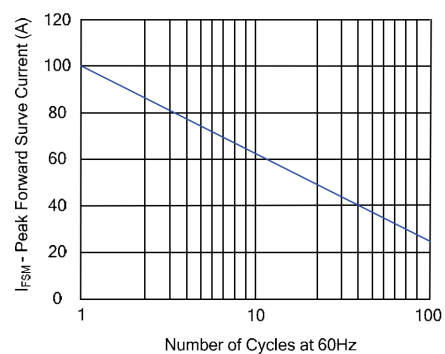


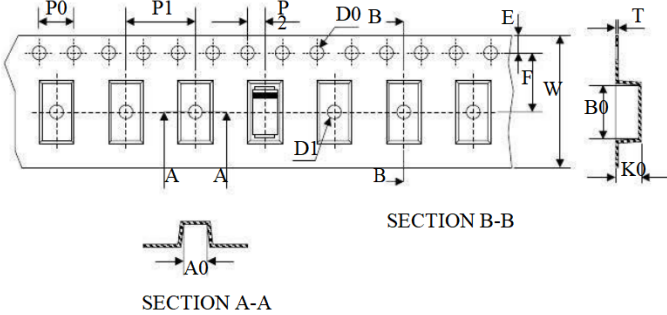
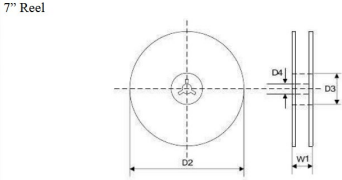
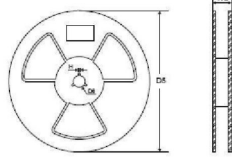
Figure 5 Steady State Power Dissipation Derating Curve

Figure 6 Maximum Non-Repetitive Forward Surge Current
Uni-Directional Only

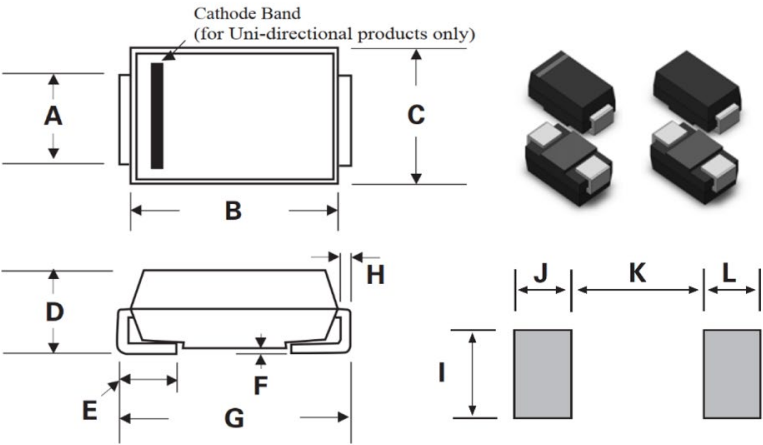
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7. Packaging

	Symbol	Dimension
	W	12.0±0.20
	P0	4.0±0.10
	P1	8.00±0.10
	P2	2.0±0.10
	D0	φ1.55±0.10
	D1	φ1.5±0.10
	E	1.75±0.10
	F	5.50±0.10
	A0	3.86±0.15
	B0	5.65±0.10
	K0	2.75±0.15
	T	0.25±0.05
	D2	φ178.0±2.0
	D3	φ50.0min.
	D4	φ13.0±0.5
	W1	16.0±2.0
	Quantity: 500PCS	
	D5	330.0±2.0
	D6	13.5±0.5
	H	2.5±1.0
	W2	16.0±2.0
	Quantity: 3000PCS	

8. Dimension (SMB/DO-214AA)



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.077	0.086	1.95	2.2
B	0.16	0.18	4.06	4.57
C	0.13	0.155	3.3	3.94
D	0.084	0.096	2.13	2.44
E	0.03	0.06	0.76	1.52
F	-	0.008	-	0.203
G	0.205	0.22	5.21	5.59
H	0.006	0.012	0.152	0.305
I	0.089	-	2.26	-
J	0.085	-	2.16	-
K	-	0.107	-	2.74
L	0.085	-	2.16	-

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