

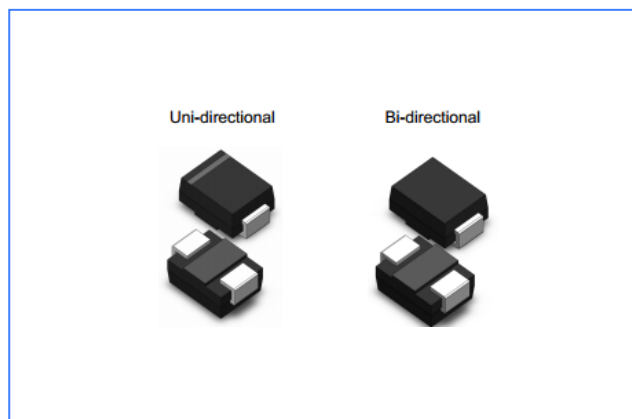
## P6SMB Series

### Description

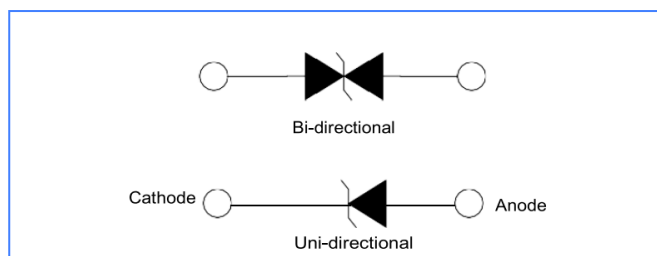
The P6SMB series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The P6SMB series is supplied in YINT Semiconductor's exclusive, cost-effective, highly reliable and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer Applications.

### Features

- Case: DO-214AA(SMB)
- Excellent clamping capability
- 600 W peak pulse power capability with a 10/1000  $\mu$ s waveform
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Fast response time: typically less than 1.0ps from 0 Volts to VB min.
- IEC61000-4-2 (ESD)  $\pm$ 30kV (air),  $\pm$ 30kV (contact).



### Functional Diagram



### Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

### Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at $T_A=25^{\circ}\text{C}$ by 10/1000 $\mu$ s Waveform	$P_{PK}$	600	W
Power Dissipation on Infinite Heat Sink at $T_L=50^{\circ}\text{C}$	$P_D$	5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave <sup>1</sup>	$I_{FSM}$	100	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only <sup>2</sup>	$V_F$	3.5	V
Operating Temperature Range	$T_J$	-55 to +150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^{\circ}\text{C}$

#### NOTES:

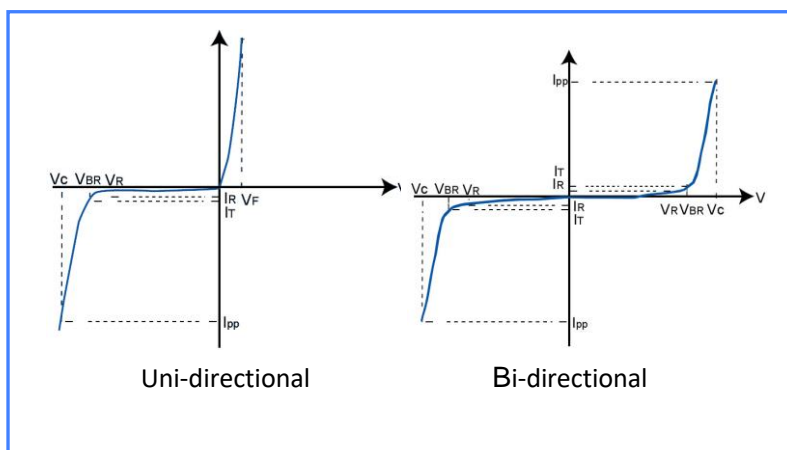
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

**Electrical characteristics (TA = 25 °C unless otherwise noted)**

Part Number (Bi)	Part Number (Uni)	MARKING		Reverse Stand off Voltage V <sub>R</sub> (Volts)	Breakdown Voltage V <sub>BR</sub> (Volts)@I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Reverse Leakage I <sub>R</sub> @ V <sub>R</sub> (μA)	Maximum Peak Pulse Current I <sub>pp</sub> (A)	Maximum Clamping Voltage V <sub>C</sub> @I <sub>pp</sub> (V)
		BI	UNI		Min .V	Max .V				
P6SMB6.8CA	P6SMB6.8A	6V8C	6V8A	5.8	6.45	7.14	10	800	58.1	10.5
P6SMB7.5CA	P6SMB7.5A	7V5C	7V5A	6.4	7.13	7.88	10	500	54.0	11.3
P6SMB8.2CA	P6SMB8.2A	8V2C	8V2A	7.02	7.79	8.61	10	200	50.4	12.1
P6SMB9.1CA	P6SMB9.1A	9V1C	9V1A	7.78	8.65	9.55	10	50	45.5	13.4
P6SMB10CA	P6SMB10A	10C	10A	8.55	9.50	10.50	10	10	42.1	14.5
P6SMB11CA	P6SMB11A	11C	11A	9.40	10.50	11.60	1	5	39.1	15.6
P6SMB12CA	P6SMB12A	12C	12A	10.20	11.40	12.60	1	5	36.5	16.7
P6SMB13CA	P6SMB13 A	13C	13A	11.10	12.40	13.70	1	1	33.5	18.2
P6SMB15CA	P6SMB15A	15C	15A	12.80	14.30	15.80	1	1	28.8	21.2
P6SMB16CA	P6SMB16A	16C	16A	13.60	15.20	16.80	1	1	27.1	22.5
P6SMB18CA	P6SMB18A	18C	18A	15.30	17.10	18.90	1	1	24.2	25.2
P6SMB20CA	P6SMB20A	20C	20A	17.10	19.00	21.00	1	1	22.0	27.7
P6SMB22CA	P6SMB22A	22C	22A	18.80	20.90	23.10	1	1	19.9	30.6
P6SMB24CA	P6SMB24A	24C	24A	20.50	22.80	25.20	1	1	18.4	33.2
P6SMB27CA	P6SMB27A	27C	27A	23.10	25.70	28.40	1	1	16.3	37.5
P6SMB30CA	P6SMB30A	30C	30A	25.60	28.50	31.50	1	1	14.7	41.4
P6SMB33CA	P6SMB33A	33C	33A	28.20	31.40	34.70	1	1	13.3	45.7
P6SMB36CA	P6SMB36A	36C	36A	30.80	34.20	37.80	1	1	12.2	49.9
P6SMB39CA	P6SMB39A	39C	39A	33.30	37.10	41.00	1	1	11.3	53.9
P6SMB43CA	P6SMB43A	43C	43A	36.80	40.90	45.20	1	1	10.3	59.3
P6SMB47CA	P6SMB47A	47C	47A	40.20	44.70	49.40	1	1	9.4	64.8
P6SMB51CA	P6SMB51A	51C	51A	43.60	48.50	53.60	1	1	8.7	70.1
P6SMB56CA	P6SMB56A	56C	56A	47.80	53.20	58.80	1	1	7.9	77.0
P6SMB62CA	P6SMB62A	62C	62A	53.00	58.90	65.10	1	1	7.2	85.0
P6SMB68CA	P6SMB68A	68C	68A	58.10	64.60	71.40	1	1	6.6	92.0
P6SMB75CA	P6SMB75A	75C	75A	64.10	71.30	78.00	1	1	5.9	103.0
P6SMB82CA	P6SMB82A	82C	82A	70.10	77.90	86.10	1	1	5.4	113.0
P6SMB91CA	P6SMB91A	91C	91A	77.80	86.50	95.50	1	1	4.9	125.0
P6SMB100CA	P6SMB100A	100C	100A	85.50	95.0	105.0	1	1	4.5	137.0
P6SMB110CA	P6SMB110A	110C	110A	94.00	105.0	116.0	1	1	4.0	152.0
P6SMB120CA	P6SMB120A	120C	120A	102.0	114.0	126.0	1	1	3.7	165.0
P6SMB130CA	P6SMB130A	130C	130A	111.0	124.0	137.0	1	1	3.4	179.0
P6SMB150CA	P6SMB150A	150C	150A	128.0	143.0	158.0	1	1	2.9	207.0
P6SMB160CA	P6SMB160A	160C	160A	136.0	152.0	168.0	1	1	2.8	219.0
P6SMB170CA	P6SMB170A	170C	170A	145.0	162.0	179.0	1	1	2.6	234.0

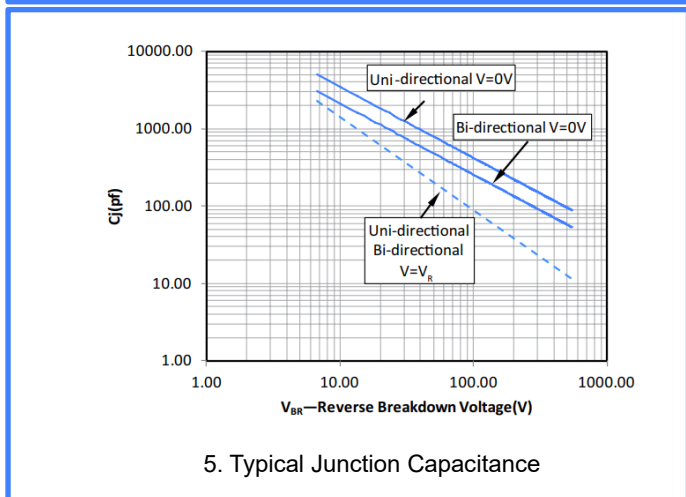
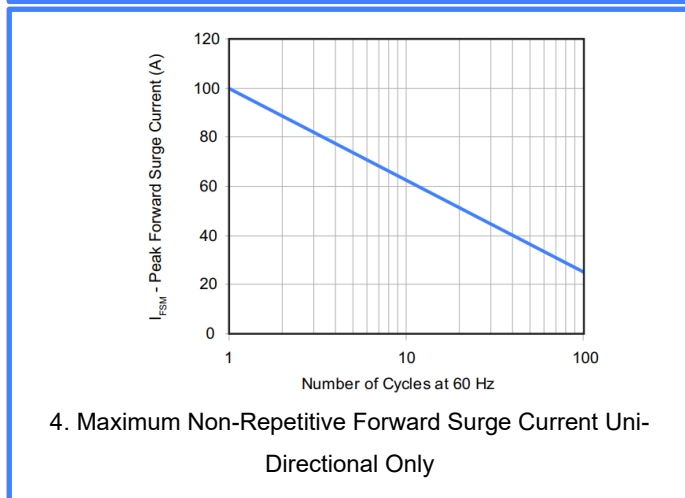
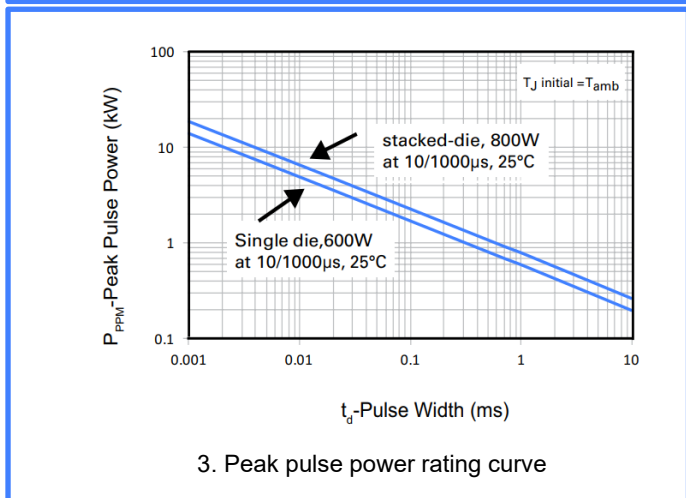
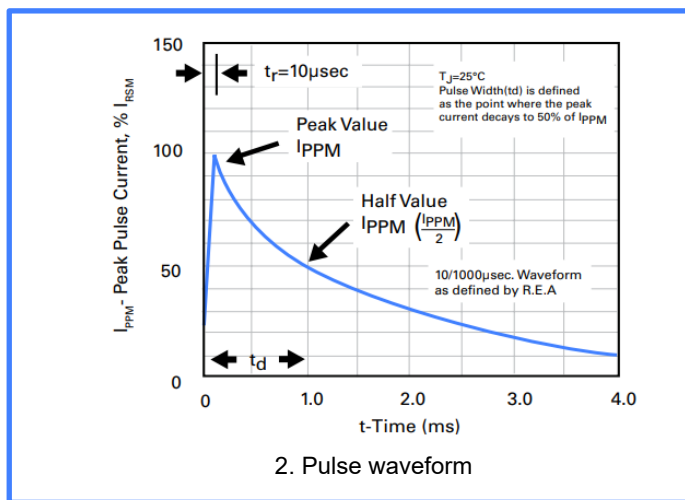
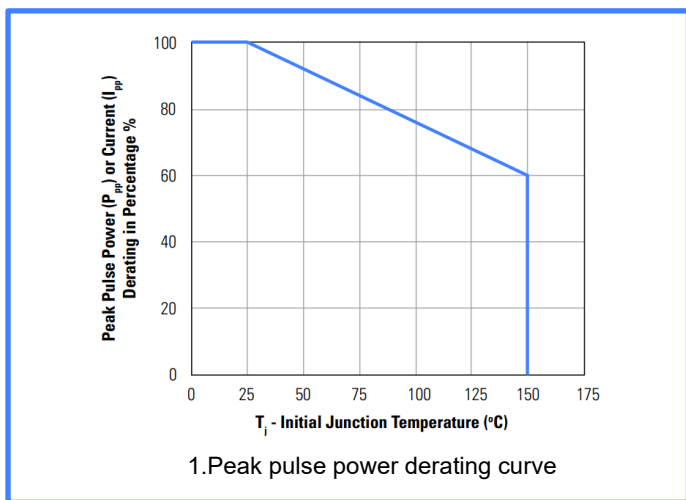
P6SMB180CA	P6SMB180A	180C	180A	154.0	171.0	189.00	1	1	2.5	246.0
P6SMB200CA	P6SMB200A	200C	200A	171.0	190.0	210.0	1	1	2.2	274.0
P6SMB220CA	P6SMB220A	220C	220A	185.0	209.0	231.0	1	1	1.9	328.0
P6SMB250CA	P6SMB250A	250C	250A	214.0	237.0	263.0	1	1	1.8	344.0
P6SMB300CA	P6SMB300A	300C	300A	256.0	285.0	315.0	1	1	1.5	414.0
P6SMB350CA	P6SMB350A	350C	350A	300.0	332.0	368.0	1	1	1.3	482.0
P6SMB400CA	P6SMB400A	400C	400A	342.0	380.0	420.0	1	1	1.1	548.0
P6SMB440CA	P6SMB440A	440C	440A	376.0	418.0	462.0	1	1	1.0	602.0
P6SMB480CA	P6SMB480A	480C	480A	408.0	456.0	504.0	1	1	0.9	658.0
P6SMB510CA	P6SMB510A	510C	510A	434.0	485.0	535.0	1	1	0.9	698.0
P6SMB540CA	P6SMB540A	540C	540A	460.0	513.0	567.0	1	1	0.8	740.0
P6SMB550CA	P6SMB550A	550C	550A	470.3	522.5	577.5	1	1	0.79	759.0
P6SMB600CA	P6SMB600A	600C	600A	512.0	570.0	630.0	1	1	0.75	828.0

**I-V Curve characteristics**

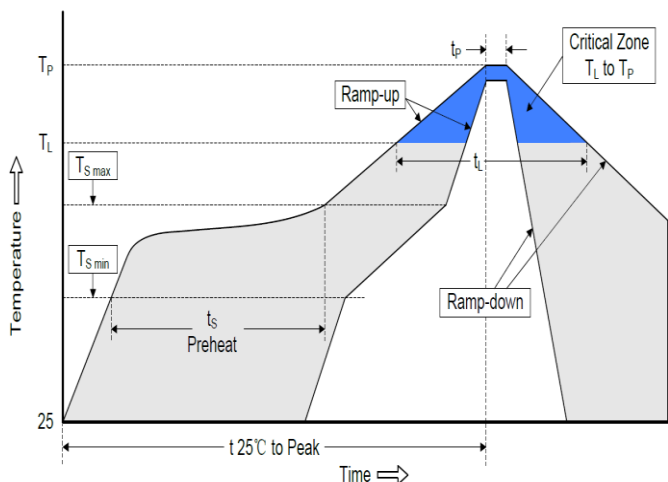


Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$ (Test Current)

**Rating & Characteristic Curves**



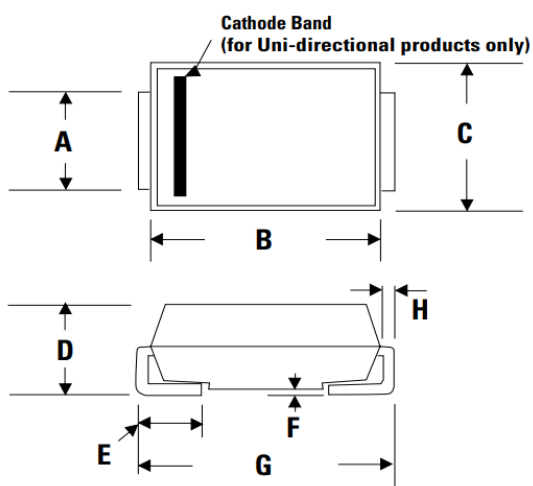
### Soldering parameters



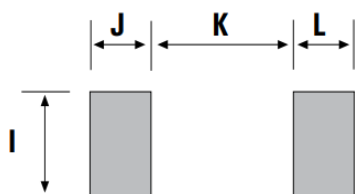
Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat	
-Temperature Min ( $T_{S\ min}$ )	150°C
-Temperature Max ( $T_{S\ max}$ )	200°C
-Time (min to max)( $t_s$ )	60-180 seconds
$T_{S\ max}$ to $T_L$	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
- Temperature ( $T_L$ )	217°C
- Time ( $t_L$ )	60-150 seconds
Peak Temperature ( $T_P$ )	260°C
Time within 5°C of actual Peak Temperature ( $t_P$ )	20-40 seconds
Ramp-down Rate	6°C /second max.
Time 25°C to Peak Temperature	8 minutes max.

### Package outline dimensions in millimeters

**DO-214AA (SMB J-Bend)**

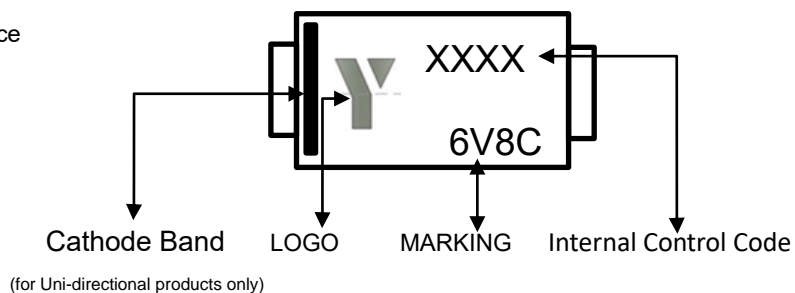
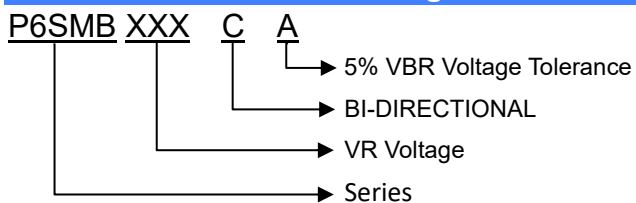


Mounting Pad Layout



Dimensions	Millimeter	
	Min	Max
A	1.930	2.200
B	4.060	4.750
C	3.300	3.940
D	1.990	2.610
E	0.760	1.520
F	-	0.203
G	5.210	5.590
H	0.152	0.305
I	2.260	-
J	2.160	-
K	-	2.740
L	2.160	-

### Part number code & Marking code



### Disclaimer

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.