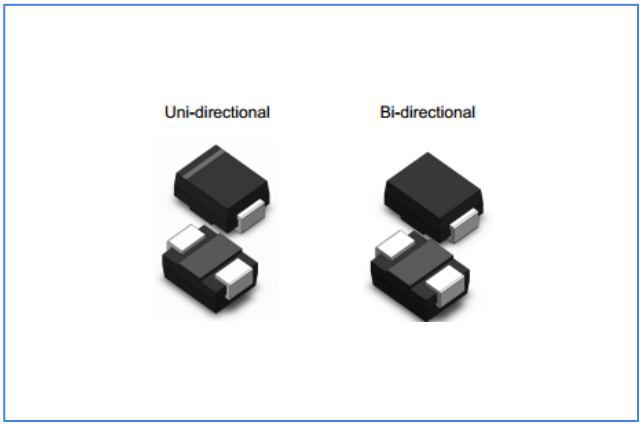
P6SMB-H Series

Description

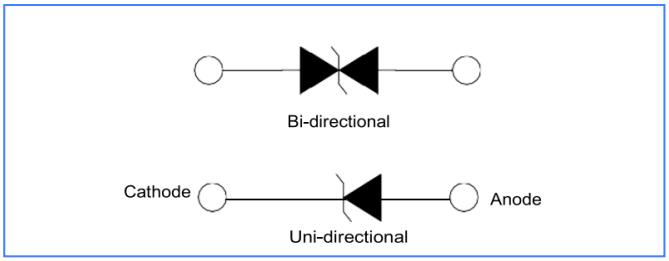
The P6SMB-H series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The P6SMB-H series is supplied 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 μs 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) ±30kV (air), ±30kV (contact).
- AEC-Q101 qualified

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℃ unless otherwise noted)

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

NOTES:

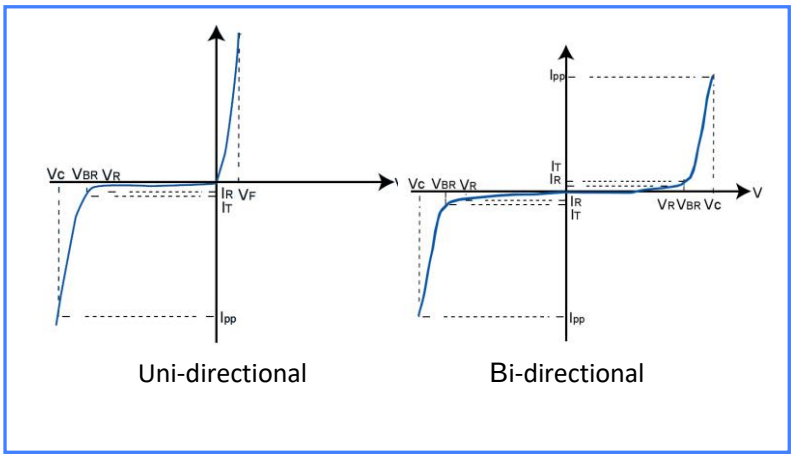
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

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

Part Number (Bi)	Part Number (Uni)	MARKING		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@I_T		Test Current I_T(mA)	Maximum Reverse Leakage I_R @ V_R(μA)	Maximum Peak Pulse Current Ipp(A)	Maximum Clamping Voltage V_C @I_{PP}(V)
		BI	UNI		Min .V	Max .V				
P6SMB6.8CA-H	P6SMB6.8A-H	H6V8C	H6V8A	5.8	6.45	7.14	10	800	58.1	10.5
P6SMB7.5CA-H	P6SMB7.5A-H	H7V5C	H7V5A	6.4	7.13	7.88	10	500	54.0	11.3
P6SMB8.2CA-H	P6SMB8.2A-H	H8V2C	H8V2A	7.02	7.79	8.61	10	200	50.4	12.1
P6SMB9.1CA-H	P6SMB9.1A-H	H9V1C	H9V1A	7.78	8.65	9.55	10	50	45.5	13.4
P6SMB10CA-H	P6SMB10A-H	H10C	H10A	8.55	9.50	10.50	10	10	42.1	14.5
P6SMB11CA-H	P6SMB11A-H	H11C	H11A	9.40	10.50	11.60	1	5	39.1	15.6
P6SMB12CA-H	P6SMB12A-H	H12C	H12A	10.20	11.40	12.60	1	5	36.5	16.7
P6SMB13CA-H	P6SMB13 A-H	H13C	H13A	11.10	12.40	13.70	1	1	33.5	18.2
P6SMB15CA-H	P6SMB15A-H	H15C	H15A	12.80	14.30	15.80	1	1	28.8	21.2
P6SMB16CA-H	P6SMB16A-H	H16C	H16A	13.60	15.20	16.80	1	1	27.1	22.5
P6SMB18CA-H	P6SMB18A-H	H18C	H18A	15.30	17.10	18.90	1	1	24.2	25.2
P6SMB20CA-H	P6SMB20A-H	H20C	H20A	17.10	19.00	21.00	1	1	22.0	27.7
P6SMB22CA-H	P6SMB22A-H	H22C	H22A	18.80	20.90	23.10	1	1	19.9	30.6
P6SMB24CA-H	P6SMB24A-H	H24C	H24A	20.50	22.80	25.20	1	1	18.4	33.2
P6SMB27CA-H	P6SMB27A-H	H27C	H27A	23.10	25.70	28.40	1	1	16.3	37.5
P6SMB30CA-H	P6SMB30A-H	H30C	H30A	25.60	28.50	31.50	1	1	14.7	41.4
P6SMB33CA-H	P6SMB33A-H	H33C	H33A	28.20	31.40	34.70	1	1	13.3	45.7
P6SMB36CA-H	P6SMB36A-H	H36C	H36A	30.80	34.20	37.80	1	1	12.2	49.9
P6SMB39CA-H	P6SMB39A-H	H39C	H39A	33.30	37.10	41.00	1	1	11.3	53.9
P6SMB43CA-H	P6SMB43A-H	H43C	H43A	36.80	40.90	45.20	1	1	10.3	59.3
P6SMB47CA-H	P6SMB47A-H	H47C	H47A	40.20	44.70	49.40	1	1	9.4	64.8
P6SMB51CA-H	P6SMB51A-H	H51C	H51A	43.60	48.50	53.60	1	1	8.7	70.1
P6SMB56CA-H	P6SMB56A-H	H56C	H56A	47.80	53.20	58.80	1	1	7.9	77.0
P6SMB62CA-H	P6SMB62A-H	H62C	H62A	53.00	58.90	65.10	1	1	7.2	85.0
P6SMB68CA-H	P6SMB68A-H	H68C	H68A	58.10	64.60	71.40	1	1	6.6	92.0
P6SMB75CA-H	P6SMB75A-H	H75C	H75A	64.10	71.30	78.00	1	1	5.9	103.0
P6SMB82CA-H	P6SMB82A-H	H82C	H82A	70.10	77.90	86.10	1	1	5.4	113.0
P6SMB91CA-H	P6SMB91A-H	H91C	H91A	77.80	86.50	95.50	1	1	4.9	125.0
P6SMB100CA-H	P6SMB100A-H	H100C	H100A	85.50	95.0	105.0	1	1	4.5	137.0
P6SMB110CA-H	P6SMB110A-H	H110C	H110A	94.00	105.0	116.0	1	1	4.0	152.0
P6SMB120CA-H	P6SMB120A-H	H120C	H120A	102.0	114.0	126.0	1	1	3.7	165.0
P6SMB130CA-H	P6SMB130A-H	H130C	H130A	111.0	124.0	137.0	1	1	3.4	179.0
P6SMB150CA-H	P6SMB150A-H	H150C	H150A	128.0	143.0	158.0	1	1	2.9	207.0
P6SMB160CA-H	P6SMB160A-H	H160C	H160A	136.0	152.0	168.0	1	1	2.8	219.0
P6SMB170CA-H	P6SMB170A-H	H170C	H170A	145.0	162.0	179.0	1	1	2.6	234.0

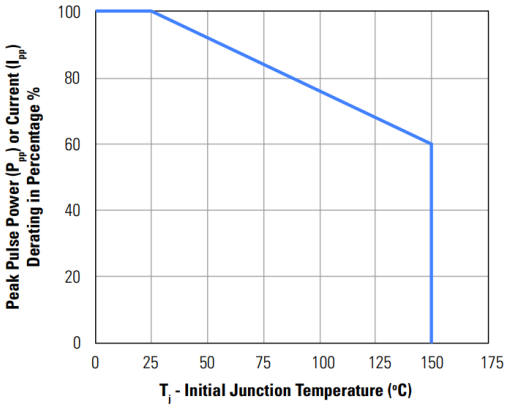
P6SMB180CA-H	P6SMB180A-H	H180C	H180A	154.0	171.0	189.00	1	1	2.5	246.0
P6SMB200CA-H	P6SMB200A-H	H200C	H200A	171.0	190.0	210.0	1	1	2.2	274.0
P6SMB220CA-H	P6SMB220A-H	H220C	H220A	185.0	209.0	231.0	1	1	1.9	328.0
P6SMB250CA-H	P6SMB250A-H	H250C	H250A	214.0	237.0	263.0	1	1	1.8	344.0
P6SMB300CA-H	P6SMB300A-H	H300C	H300A	256.0	285.0	315.0	1	1	1.5	414.0
P6SMB350CA-H	P6SMB350A-H	H350C	H350A	300.0	332.0	368.0	1	1	1.3	482.0
P6SMB400CA-H	P6SMB400A-H	H400C	H400A	342.0	380.0	420.0	1	1	1.1	548.0
P6SMB440CA-H	P6SMB440A-H	H440C	H440A	376.0	418.0	462.0	1	1	1.0	602.0
P6SMB480CA-H	P6SMB480A-H	H480C	H480A	408.0	456.0	504.0	1	1	0.9	658.0
P6SMB510CA-H	P6SMB510A-H	H510C	H510A	434.0	485.0	535.0	1	1	0.9	698.0
P6SMB540CA-H	P6SMB540A-H	H540C	H540A	460.0	513.0	567.0	1	1	0.8	740.0
P6SMB600CA-H	P6SMB600A-H	H600C	H600A	512.0	570.0	630.0	1	1	0.75	828.0

I-V Curve characteristics

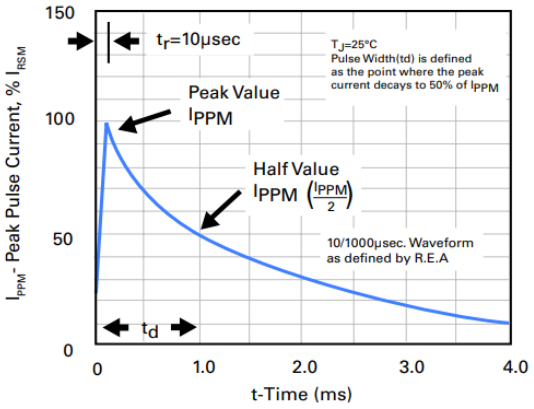


Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @V_{RWM}
V_{BR}	Breakdown Voltage @ I_T(Test Current)

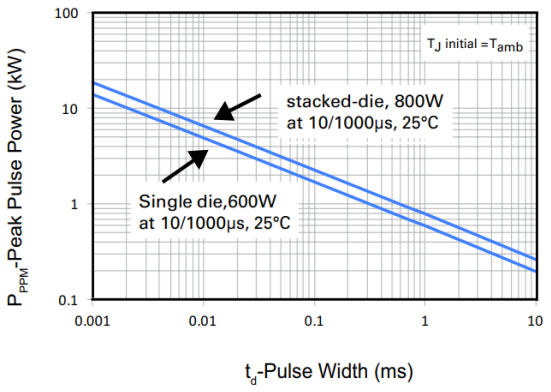
Rating & Characteristic Curves



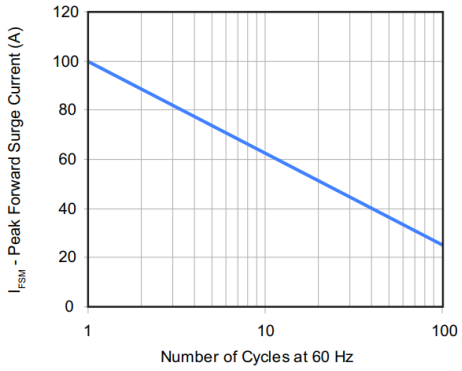
1.Peak pulse power derating curve



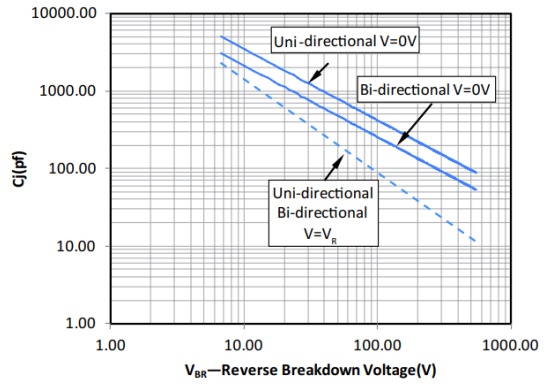
2. Pulse waveform



3. Peak pulse power rating curve

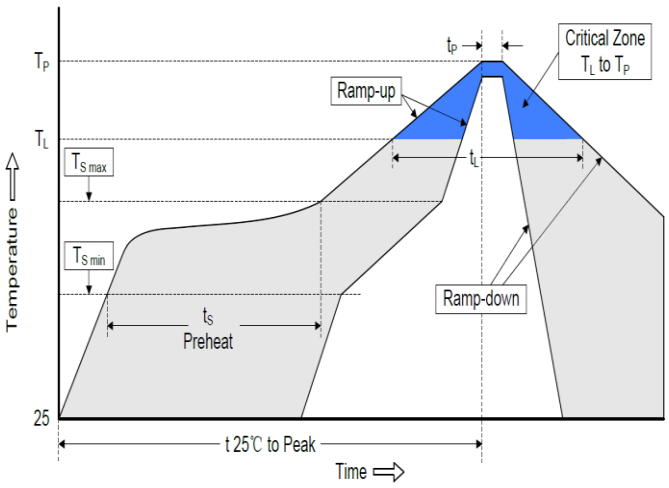


4. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



5. Typical Junction Capacitance

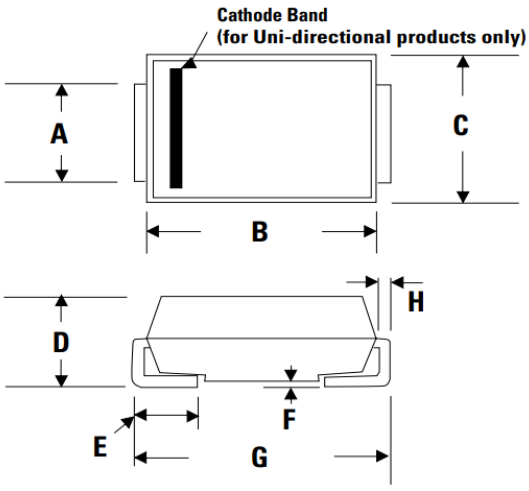
Soldering parameters



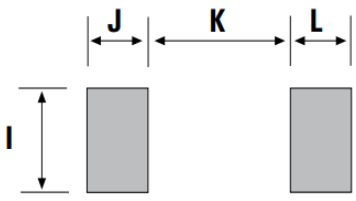
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max)(t_S)	 150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3°C/second max.
Time maintained above: - Temperature (T_L) - Time (t_L)	 217°C 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)

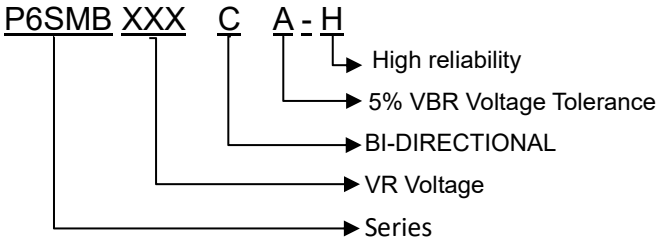


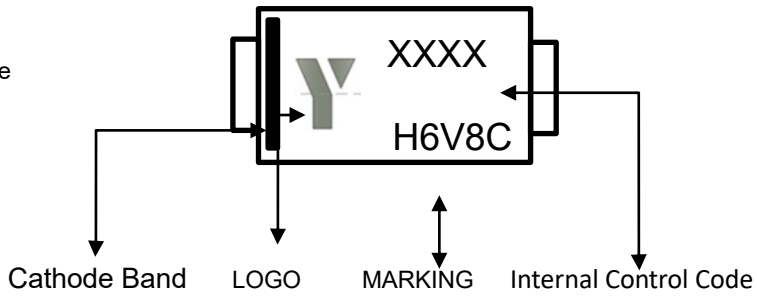
Mounting Pad Layout



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





(for Uni-directional products only)

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.