

Features

- 600W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C

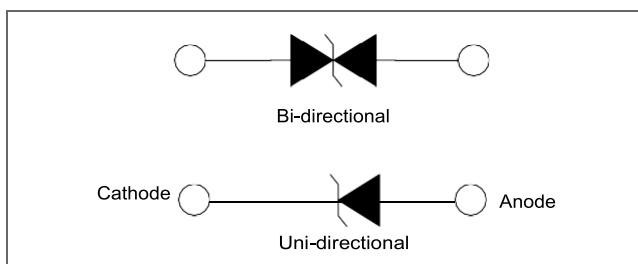
RoHS
Compliant



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.

Function Diagram



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

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at $T_A=25^{\circ}\text{C}$ by 10/1000 μ s Waveform (Fig.3)	P_{PPM}	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 (Note 1)	I_{FSM}	100	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only(Note 2)	V_F	3.5	V
Operating Temperature Range	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$

AGENCY	AGENCY FILE NUMBER
	Pending

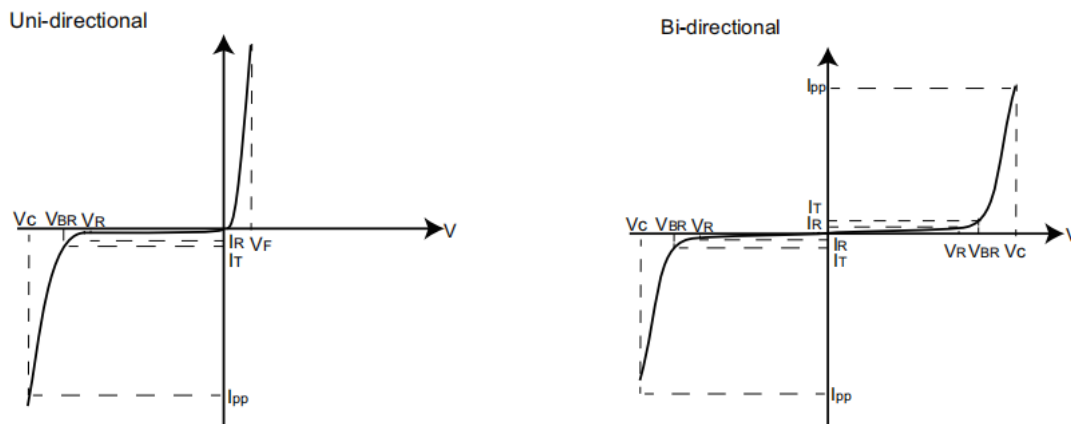
Notes:

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

Characteristics (T = 25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Key Marking UNI BI		Reverse Stand off Voltage V _R (Volts)	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{DD} (V)	Maximum Peak Pulse Current I _{pp} (A)	Maximum Reverse Leakage I _R @ V _R (μA)	Agency Approval 
					MIN	MAX					
P6SMB6.8A	P6SMB6.8CA	B06E	B06E	5.80	6.45	7.14	10	10.5	58.1	1000	
P6SMB7.5A	P6SMB7.5CA	B07F	B07F	6.40	7.13	7.88	10	11.3	54.0	500	
P6SMB8.2A	P6SMB8.2CA	B08T	B08T	7.02	7.79	8.61	10	12.1	50.4	200	
P6SMB9.1A	P6SMB9.1CA	B09O	B09O	7.78	8.65	9.55	1	13.4	45.5	50	
P6SMB10A	P6SMB10CA	B010	B010	8.55	9.50	10.50	1	14.5	42.1	10	
P6SMB11A	P6SMB11CA	B011	B011	9.40	10.50	11.60	1	15.6	39.1	5	
P6SMB12A	P6SMB12CA	B012	B012	10.20	11.40	12.60	1	16.7	36.5	5	
P6SMB13A	P6SMB13CA	B013	B013	11.10	12.40	13.70	1	18.2	33.5	1	
P6SMB15A	P6SMB15CA	B015	B015	12.80	14.30	15.80	1	21.2	28.8	1	
P6SMB16A	P6SMB16CA	B016	B016	13.60	15.20	16.80	1	22.5	27.1	1	
P6SMB18A	P6SMB18CA	B018	B018	15.30	17.10	18.90	1	25.5	24.2	1	
P6SMB20A	P6SMB20CA	B020	B020	17.10	19.00	21.00	1	27.7	22.0	1	
P6SMB22A	P6SMB22CA	B022	B022	18.80	20.90	23.10	1	30.6	19.9	1	
P6SMB24A	P6SMB24CA	B024	B024	20.50	22.80	25.20	1	33.2	18.4	1	
P6SMB27A	P6SMB27CA	B027	B027	23.10	25.70	28.40	1	37.5	16.3	1	
P6SMB30A	P6SMB30CA	B030	B030	25.60	28.50	31.50	1	41.4	14.7	1	
P6SMB33A	P6SMB33CA	B033	B033	28.20	31.40	34.70	1	45.7	13.3	1	
P6SMB36A	P6SMB36CA	B036	B036	30.80	34.20	37.80	1	49.9	12.2	1	
P6SMB39A	P6SMB39CA	B039	B039	33.30	37.10	41.00	1	53.9	11.3	1	
P6SMB43A	P6SMB43CA	B043	B043	36.80	40.90	45.20	1	59.3	10.3	1	
P6SMB47A	P6SMB47CA	B047	B047	40.20	44.70	49.40	1	64.8	9.4	1	
P6SMB51A	P6SMB51CA	B051	B051	43.60	48.50	53.60	1	70.1	8.7	1	
P6SMB56A	P6SMB56CA	B056	B056	47.80	53.20	58.80	1	77.0	7.9	1	
P6SMB58A	P6SMB58CA	B058	B058	52.78	55.10	60.90	1	79.8	7.7	1	
P6SMB62A	P6SMB62CA	B062	B062	53.00	58.90	65.10	1	85.0	7.2	1	
P6SMB68A	P6SMB68CA	B068	B068	58.10	64.60	71.40	1	92.0	6.6	1	
P6SMB75A	P6SMB75CA	B075	B075	64.10	71.30	78.80	1	103.0	5.9	1	
P6SMB82A	P6SMB82CA	B082	B082	70.10	77.90	86.10	1	113.0	5.4	1	
P6SMB91A	P6SMB91CA	B091	B091	77.80	86.50	95.50	1	125.0	4.9	1	
P6SMB100A	P6SMB100CA	B100	B100	85.50	95.00	105.00	1	137.0	4.5	1	
P6SMB110A	P6SMB110CA	B110	B110	94.00	105.00	116.00	1	152.0	4.0	1	
P6SMB120A	P6SMB120CA	B120	B120	102.00	114.00	126.00	1	165.0	3.7	1	
P6SMB130A	P6SMB130CA	B130	B130	111.00	124.00	137.00	1	179.0	3.4	1	
P6SMB150A	P6SMB150CA	B150	B150	128.00	143.00	158.00	1	207.0	2.9	1	
P6SMB160A	P6SMB160CA	B160	B160	136.00	152.00	168.00	1	219.0	2.8	1	
P6SMB170A	P6SMB170CA	B170	B170	145.00	162.00	179.00	1	234.0	2.6	1	
P6SMB180A	P6SMB180CA	B180	B180	154.00	171.00	189.00	1	246.0	2.5	1	
P6SMB200A	P6SMB200CA	B200	B200	171.00	190.00	210.00	1	274.0	2.2	1	
P6SMB220A	P6SMB220CA	B220	B220	185.00	209.00	231.00	1	328.0	1.9	1	
P6SMB250A	P6SMB250CA	B250	B250	214.00	237.00	263.00	1	344.0	1.8	1	
P6SMB300A	P6SMB300CA	B300	B300	256.00	285.00	315.00	1	414.0	1.5	1	
P6SMB350A	P6SMB350CA	B350	B350	300.00	332.00	368.00	1	482.0	1.24	1	
P6SMB380A	P6SMB380CA	B380	B380	324.90	361.00	399.00	1	524.4	1.14	1	
P6SMB400A	P6SMB400CA	B400	B400	342.00	380.00	420.00	1	548.0	1.09	1	
P6SMB440A	P6SMB440CA	B440	B440	376.20	418.00	462.00	1	607.2	0.99	1	
P6SMB500A	P6SMB500CA	B500	B500	427.50	475.00	525.00	1	690.0	0.87	1	
P6SMB510A	P6SMB510CA	B510	B510	434.00	485.00	535.00	1	698.0	0.86	1	
P6SMB520A	P6SMB520CA	B520	B520	444.60	494.00	546.00	1	717.6	0.84	1	
P6SMB550A	P6SMB550CA	B550	B550	470.30	522.50	577.50	1	759.0	0.79	1	
P6SMB600A	P6SMB600CA	B600	B600	513.00	570.00	630.00	1	828.0	0.72	1	

I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current (I_T)

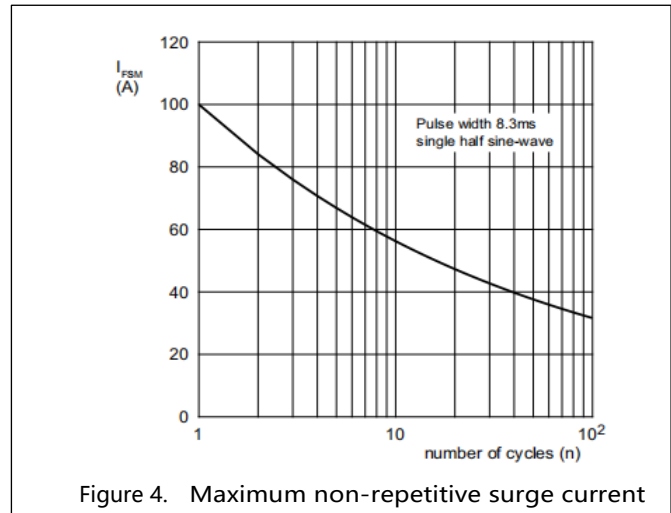
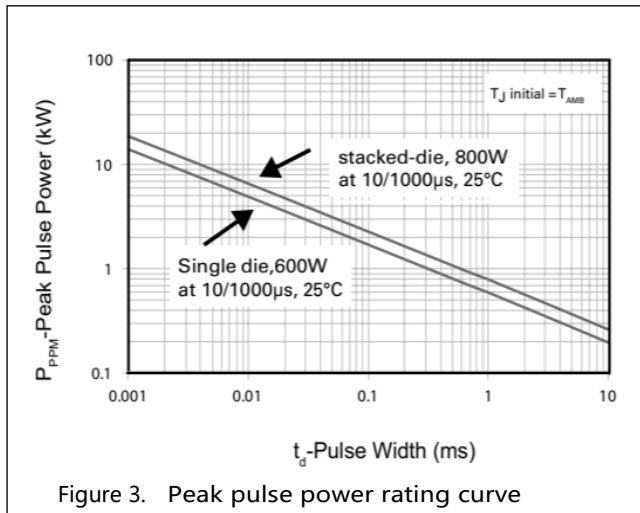
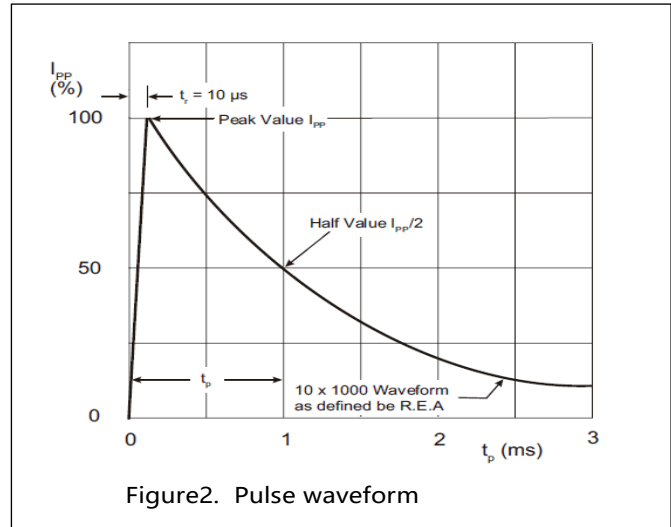
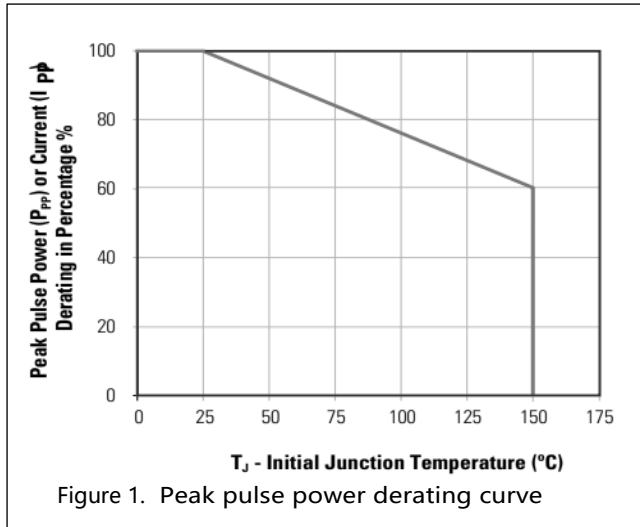
V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current -- Current measured at V_R

V_F Forward Voltage Drop for Uni-directional



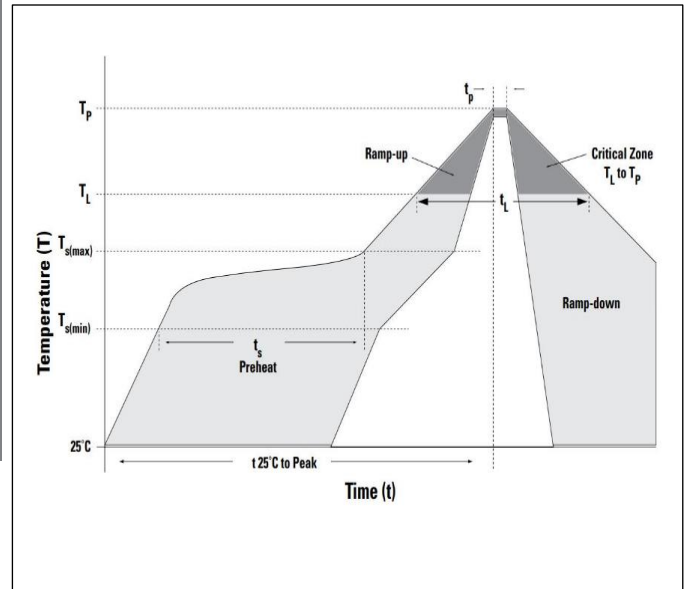
Ratings and Characteristic Curves ($T = 25^{\circ}\text{C}$ unless otherwise noted)



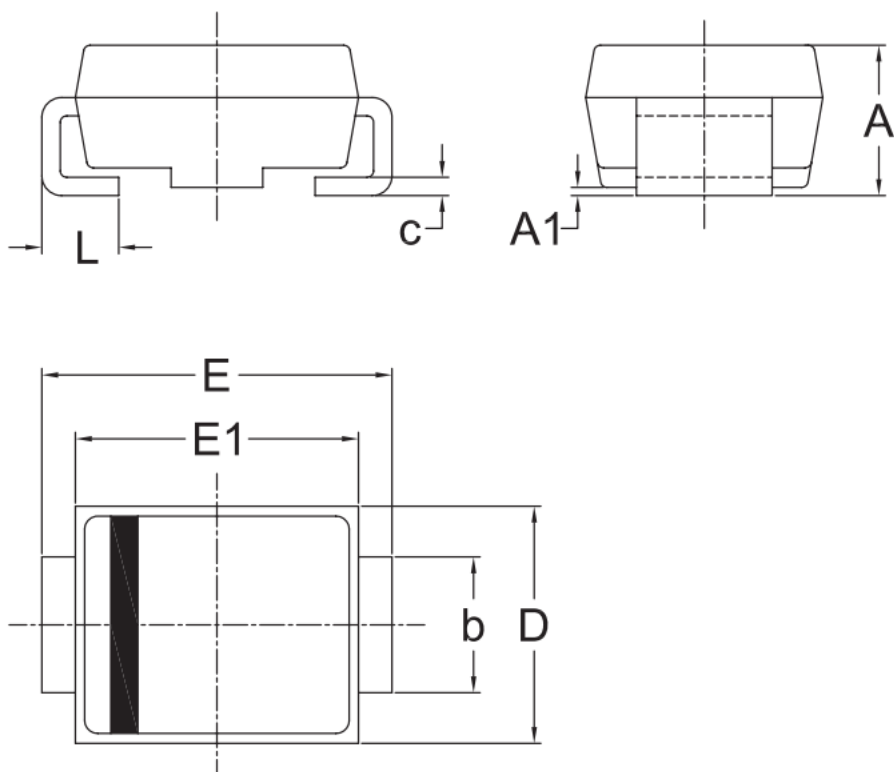
Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak)		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °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 (T_p)		8 minutes Max.
Do not exceed		260°C

Soldering Parameters

Soldering profile

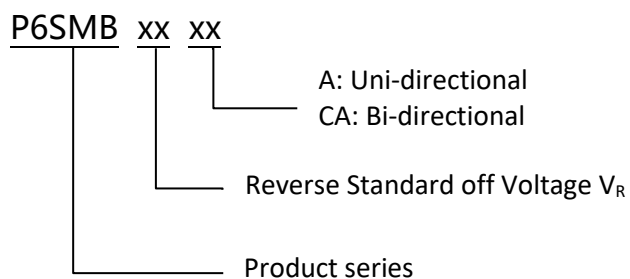


Dimensions

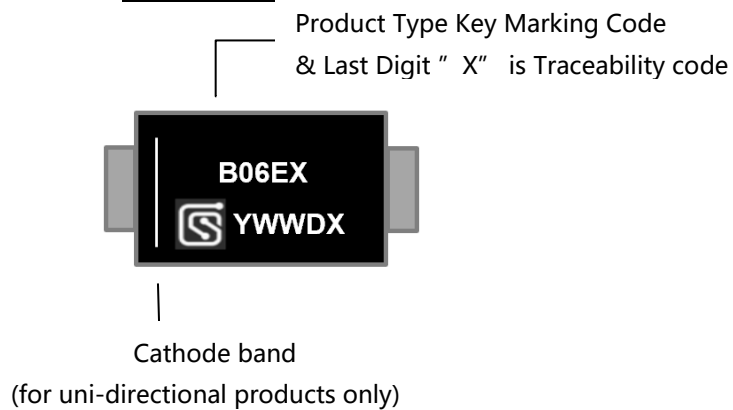


unit		A	A1	b	c	D	E	E1	L
max	mm	2.61	0.30	2.30	0.31	3.94	5.70	4.70	1.52
min		1.99	0	1.70	0.15	3.30	5.05	4.06	0.76

Part Numbering



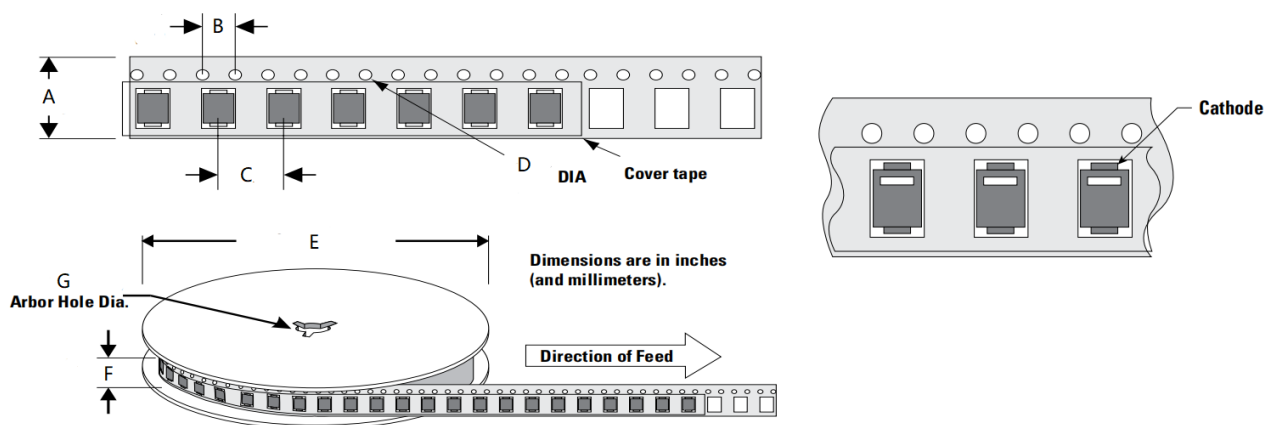
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
P6SMBXXXX	DO-214AA	3000	Tape & Reel

Tape and Reel Specification



Symbol	Millimeter
A	12.00±0.10
B	4.00±0.10
C	8.00±0.10
D	1.55±0.05
E	330.20±2.00
F	15.70±2.00
G	13.30±0.30

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-July-2021
1.1	Modified Temperature Range & Details	16-Aug-2021
1.2	Update Marking	24-May-2024