Surface Mount Transient Voltage Suppressors

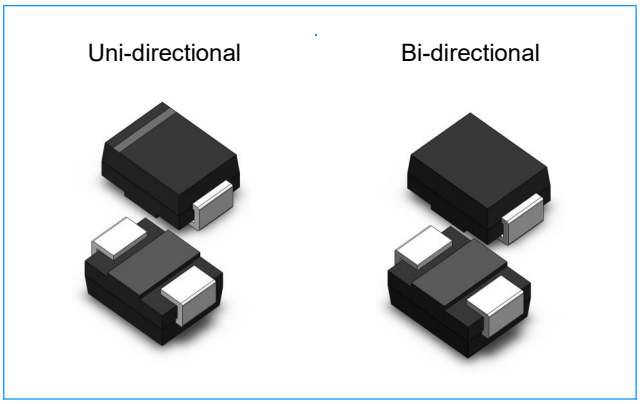
TPSMB Series 13 To 200V 600W

Description

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

Working Voltage: 13 to 200 V

Peak Pulse Power: 600 W



Features

- Glass passivated chip
- 600W peak pulse power capability with a 10/1000 us waveform, repetitive rate (duty cycle):0.01 %
- High reliability application and automotive grade AEC Q101 qualified
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant

Mechanical Data

- Case: Molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Lead: Solderable per MIL-STD-750, method 2026 guranteed
- Polarity: Color band denotes TVS cathode en
- Mounting position: Any

Application

TVS devices are ideal for the protection of I/O interfaces, V_{CC} bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Maximum Ratings and Thermall Characteristics(TA=25C Unless otherwise noted)

Parameter	Symbol	Value	Units
Peak power dissipation with a 10/1000 μs waveform(1)	P_{PPM}	600	W
Power Dissipation on Infinite Heat Sink at T_L=75°C	P_D	5.0	W
Peak pulse current with a 10/1000 μs waveform(1)	I_{PP}	See Next Table	A
Junction and storage temperature range (V_{BR} ⩽ 47V)	T_J ,T_{STG}	-55 to +175	°C
Junction and storage temperature range (V_{BR} > 47V)		-55 to +150	°C
Operating storage temperature range (V_{BR} ⩽ 47V)	T_{OP}	-55 to +150	°C
Operating storage temperature range (V_{BR} > 47V)		-40 to +125	°C
Maximum instantaneous forward voltage at 25 A for unidirectional only	V_F	3.5	V
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only(2)	I_{FSM}	100	A

Note:

(1)Non-repetitive current pulse per Fig.5 and derated above T_A= 25℃per Fig.1

(2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

Surface Mount Transient Voltage Suppressors

TPSMB Series 13 To 200V 600W

Electrical Characteristics(@25C unless otherwise Specified)

Part Number		Marking		Reverse Stand-Off Voltage V_{RWM}(V)	Breakdown Voltage V_{BR} (V) @I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C @I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R @V_{RWM} (μA)
Uni	Bi	Uni	Bi		MIN	MAX				
TPSMB13A	TPSMB13CA	13AA	13CA	11.1	12.35	13.65	1	18.20	32.97	1
TPSMB15A	TPSMB15CA	15AA	15CA	12.8	14.25	15.75	1	21.20	28.30	1
TPSMB16A	TPSMB16CA	16AA	16CA	13.6	15.20	16.80	1	22.50	26.67	1
TPSMB18A	TPSMB18CA	18AA	18CA	15.3	17.10	18.90	1	25.20	23.81	1
TPSMB20A	TPSMB20CA	20AA	20CA	17.1	19.00	21.00	1	27.70	21.66	1
TPSMB22A	TPSMB22CA	22AA	22CA	18.8	20.90	23.10	1	30.60	19.61	1
TPSMB24A	TPSMB24CA	24AA	24CA	20.5	22.80	25.20	1	33.20	18.07	1
TPSMB27A	TPSMB27CA	27AA	27CA	23.1	25.65	28.35	1	37.50	16.00	1
TPSMB30A	TPSMB30CA	30AA	30CA	25.6	28.50	31.50	1	41.40	14.49	1
TPSMB33A	TPSMB33CA	33AA	33CA	28.2	31.35	34.65	1	45.70	13.13	1
TPSMB36A	TPSMB36CA	36AA	36CA	30.8	34.20	37.80	1	49.90	12.02	1
TPSMB39A	TPSMB39CA	39AA	39CA	33.3	37.05	40.95	1	53.90	11.13	1
TPSMB43A	TPSMB43CA	43AA	43CA	36.8	40.85	45.15	1	59.30	10.12	1
TPSMB47A	TPSMB47CA	47AA	47CA	40.2	44.65	49.35	1	64.80	9.26	1
TPSMB51A	TPSMB51CA	51AA	51CA	43.6	48.45	53.55	1	70.10	8.56	1
TPSMB56A	TPSMB56CA	56AA	56CA	47.8	53.20	58.80	1	77.00	7.79	1
TPSMB62A	TPSMB62CA	62AA	62CA	53.0	58.90	65.10	1	85.00	7.06	1
TPSMB68A	TPSMB68CA	68AA	68CA	58.1	64.60	71.40	1	92.00	6.52	1
TPSMB75A	TPSMB75CA	75AA	75CA	64.1	71.25	78.75	1	103.0	5.83	1
TPSMB82A	TPSMB82CA	82AA	82CA	70.1	77.90	86.10	1	113.0	5.31	1
TPSMB91A	TPSMB91CA	91AA	91CA	77.8	86.45	95.55	1	125.0	4.80	1
TPSMB100A	TPSMB100CA	100AA	100CA	85.5	95.00	105.0	1	137.0	4.38	1
TPSMB110A	TPSMB110CA	110AA	110CA	94.0	104.5	115.5	1	152.0	3.95	1
TPSMB120A	TPSMB120CA	120AA	120CA	102.0	114.0	126.0	1	165.0	3.64	1
TPSMB130A	TPSMB130CA	130AA	130CA	111.0	123.5	136.5	1	179.0	3.35	1
TPSMB150A	TPSMB150CA	150AA	150CA	128.0	142.5	157.5	1	207.0	2.90	1
TPSMB160A	TPSMB160CA	160AA	160CA	136.0	152.0	168.0	1	219.0	2.74	1
TPSMB170A	TPSMB170CA	170AA	170CA	145.0	161.5	178.5	1	234.0	2.56	1
TPSMB180A	TPSMB180CA	180AA	180CA	154.0	171.0	189.0	1	246.0	2.44	1
TPSMB200A	TPSMB200CA	200AA	200CA	171.0	190.0	210.0	1	274.0	2.19	1

Note:

(1) Add suffix 'C 'or ' CA ' after part number to specify Bi-directional devices

Surface Mount Transient Voltage Suppressors

TPSMB Series 13 To 200V 600W

Ratings and Characteristics Curves(TA=25C unless otherwise noted)

Figure 1-Pulse Waveform

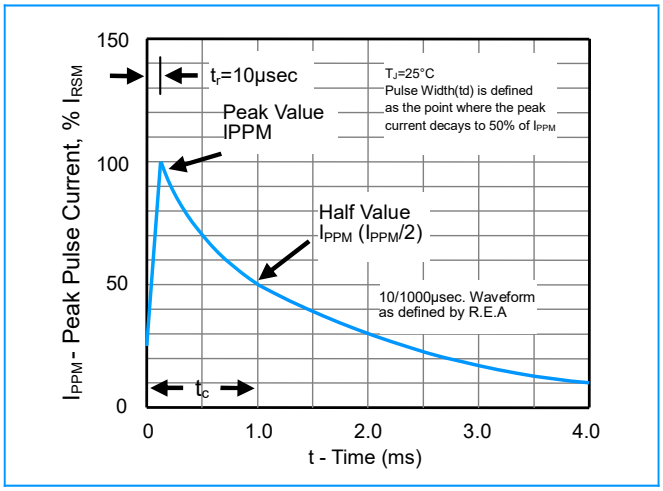


Figure 2-Pulse Derating Curve

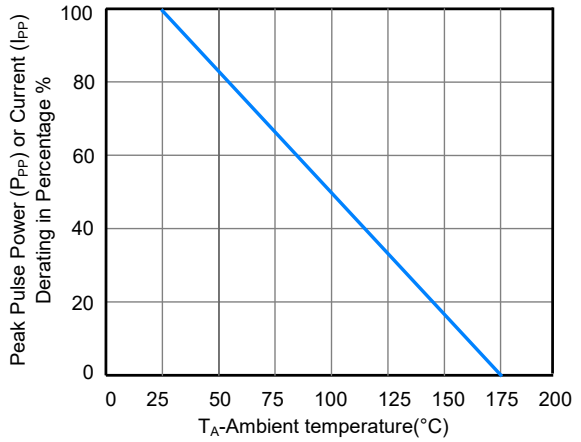


Figure 3-Peak Pulse Power Rating Curve

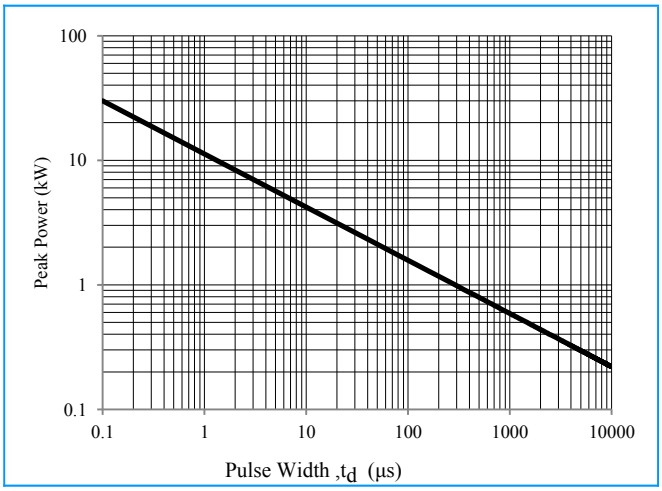


Figure 4-Steady State Power Derating Curve

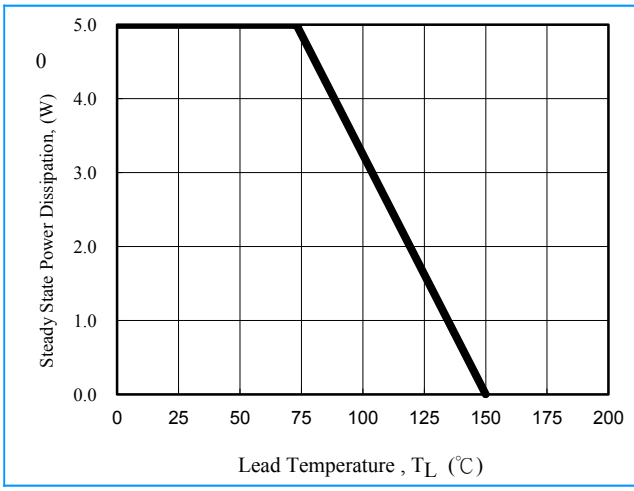
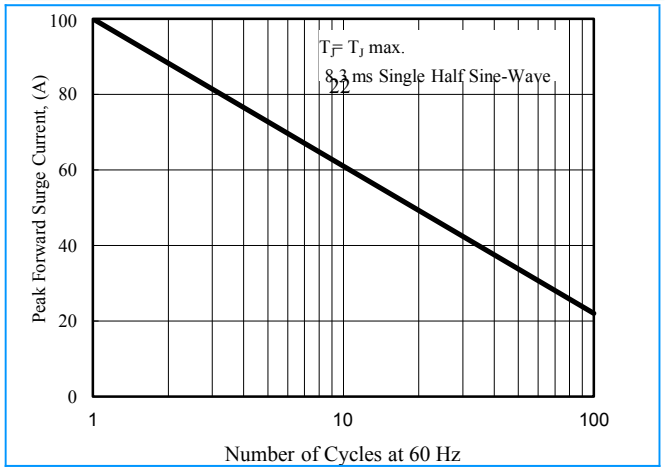
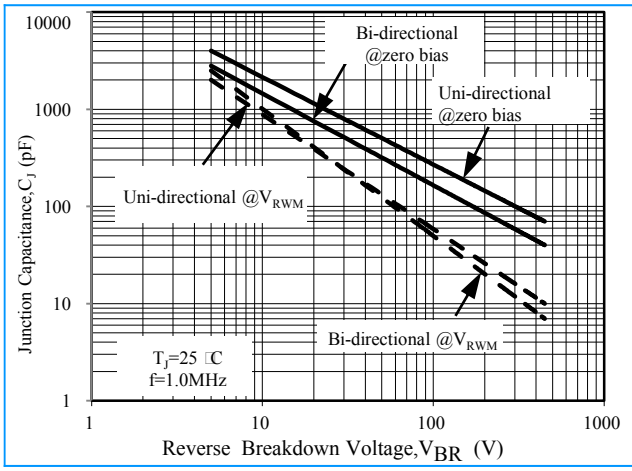


Figure 5-Maximum Non-Repetitive Surge Current



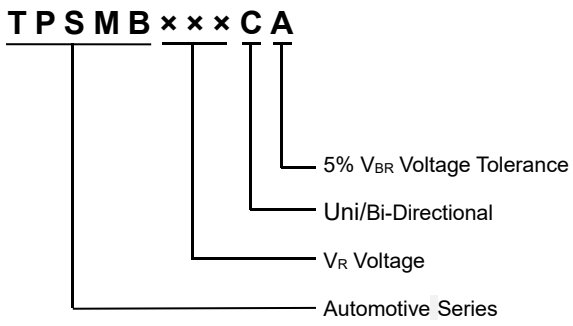
F igure 6-Typical Junction Capacitance



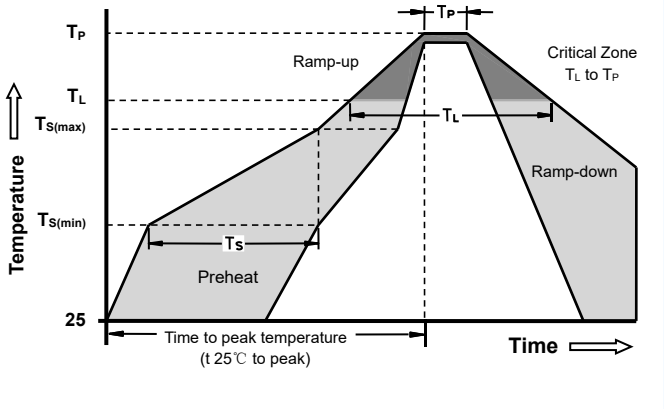
Surface Mount Transient Voltage Suppressors

TPSMB Series 13 To 200V 600W

Parting Numbering



Soldering Parameters



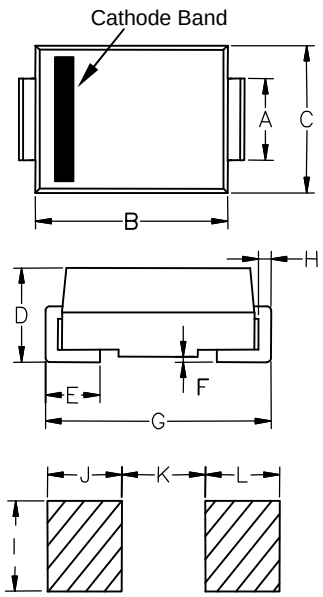
Reflow Condition		Lead–free assembly
Pre Heat	**-Temperature Min ($T_{s(min)}$)**	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 -180 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to TL - Ramp-up Rate		3°C/second max
Reflow	**- Temperature (T_L) (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		280°C

Surface Mount Transient Voltage Suppressors

TPSMB Series 13 To 200V 600W

Demiensions

DO-214AA (SMB)



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.077	0.087	1.960	2.200
B	0.171	0.191	4.350	4.850
C	0.130	0.155	3.300	3.940
D	0.084	0.096	2.130	2.440
E	0.030	0.060	0.750	1.520
F	-	0.008	-	0.203
G	0.201	0.216	5.100	5.500
H	0.006	0.012	0.152	0.305
I	0.089	-	2.260	-
J	0.085	-	2.160	-
K	-	0.107	-	2.740
L	0.085	-	2.160	-