

## Surface Mount Transient Voltage Suppressors(TVS)

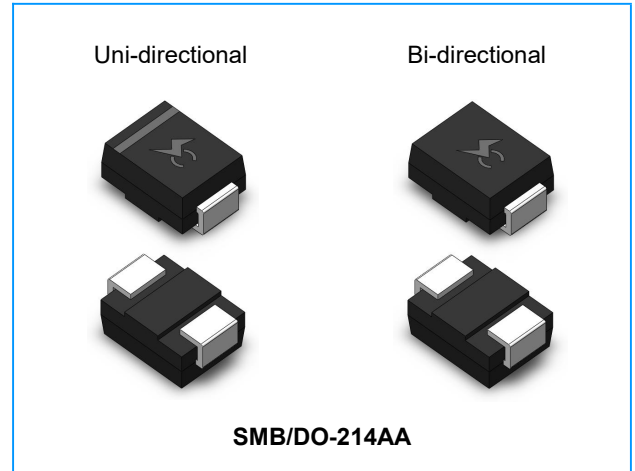
**TPSMBJ Series**
**5.0 to 440 V**
**600W**
**SMB/DO-214AA**

### Features

- ◆ Glass passivated chip.
- ◆ 600W peak pulse power capability with a 10/1000  $\mu$ s 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.
- ◆ Polarity: Color band denotes cathode end except Bipolar.
- ◆ Mounting position: Any.



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

Parameter	Symbol	Value	Unit
Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	$P_{PP}$	600	W
Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	$I_{PP}$	See Next Table	A
Power dissipation on infinite heatsink at $T_L = 75^\circ\text{C}$	$P_D$	5.0	W
Peak forward surge current, 8.3 ms single half sinewave unidirectional only <sup>(2)</sup>	$I_{FSM}$	100	A
Maximum instantaneous forward voltage at 50 A for unidirectional only <sup>(3)</sup>	$V_F$	3.5/6.5	V
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Notes:**

(1) Non-repetitive current pulse per Fig.5 and derated above  $T_A = 25^\circ\text{C}$  per Fig.1.

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

(3)  $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$ .

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**Electrical Characteristics( $T_A=25^\circ\text{C}$  unless otherwise noted)**

Part Number		Marking		Working Peak Reverse 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 $I_R$ @ $V_{RWM}$ ( $\mu\text{A}$ )
Uni	Bi	Uni	Bi		MIN	MAX				
TPSMBJ5.0A	TPSMBJ5.0CA	KEA	AEA	5.0	6.40	7.00	10	9.2	65.22	800
TPSMBJ6.0A	TPSMBJ6.0CA	KGA	AGA	6.0	6.67	7.37	10	10.3	58.25	800
TPSMBJ6.5A	TPSMBJ6.5CA	KKA	AKA	6.5	7.22	7.98	10	11.2	53.57	500
TPSMBJ7.0A	TPSMBJ7.0CA	KMA	AMA	7.0	7.78	8.60	10	12.0	50.00	200
TPSMBJ7.5A	TPSMBJ7.5CA	KPA	APA	7.5	8.33	9.21	1	12.9	46.51	100
TPSMBJ8.0A	TPSMBJ8.0CA	KRA	ARA	8.0	8.89	9.83	1	13.6	44.12	50
TPSMBJ8.5A	TPSMBJ8.5CA	KTA	ATA	8.5	9.44	10.40	1	14.4	41.67	10
TPSMBJ9.0A	TPSMBJ9.0CA	KVA	AVA	9.0	10.00	11.10	1	15.4	38.96	5
TPSMBJ10A	TPSMBJ10CA	KXA	AXA	10.0	11.10	12.30	1	17.0	35.29	5
TPSMBJ11A	TPSMBJ11CA	KZA	WZA	11.0	12.20	13.50	1	18.2	32.97	1
TPSMBJ12A	TPSMBJ12CA	LEA	BEA	12.0	13.30	14.70	1	19.9	30.15	1
TPSMBJ13A	TPSMBJ13CA	LGA	BGA	13.0	14.40	15.90	1	21.5	27.91	1
TPSMBJ14A	TPSMBJ14CA	LKA	BKA	14.0	15.60	17.20	1	23.2	25.86	1
TPSMBJ15A	TPSMBJ15CA	LMA	BMA	15.0	16.70	18.50	1	24.4	24.59	1
TPSMBJ16A	TPSMBJ16CA	LPA	BPA	16.0	17.80	19.70	1	26.0	23.08	1
TPSMBJ17A	TPSMBJ17CA	LRA	BRA	17.0	18.90	20.90	1	27.6	21.74	1
TPSMBJ18A	TPSMBJ18CA	LTA	BTA	18.0	20.00	22.10	1	29.2	20.55	1
TPSMBJ19A	TPSMBJ19CA	LBA	BBA	19.0	21.10	23.30	1	30.8	19.49	1
TPSMBJ20A	TPSMBJ20CA	LVA	BVA	20.0	22.20	24.50	1	32.4	18.52	1
TPSMBJ22A	TPSMBJ22CA	LXA	BXA	22.0	24.40	26.90	1	35.5	16.90	1
TPSMBJ24A	TPSMBJ24CA	LZA	BZA	24.0	26.70	29.50	1	38.9	15.42	1
TPSMBJ26A	TPSMBJ26CA	MEA	CEA	26.0	28.90	31.90	1	42.1	14.25	1
TPSMBJ28A	TPSMBJ28CA	MGA	CGA	28.0	31.10	34.40	1	45.4	13.22	1
TPSMBJ30A	TPSMBJ30CA	MKA	CKA	30.0	33.30	36.80	1	48.4	12.40	1
TPSMBJ33A	TPSMBJ33CA	MMA	CMA	33.0	36.70	40.60	1	53.3	11.26	1
TPSMBJ36A	TPSMBJ36CA	MPA	CPA	36.0	40.00	44.20	1	58.1	10.33	1
TPSMBJ40A	TPSMBJ40CA	MRA	CRA	40.0	44.40	49.10	1	64.5	9.30	1
TPSMBJ43A	TPSMBJ43CA	MTA	CTA	43.0	47.80	52.80	1	69.4	8.65	1
TPSMBJ45A	TPSMBJ45CA	MVA	CVA	45.0	50.00	55.30	1	72.7	8.25	1
TPSMBJ48A	TPSMBJ48CA	MXA	CXA	48.0	53.30	58.90	1	77.4	7.75	1
TPSMBJ51A	TPSMBJ51CA	MZA	CZA	51.0	56.70	62.70	1	82.4	7.28	1
TPSMBJ54A	TPSMBJ54CA	NEA	DEA	54.0	60.00	66.30	1	87.1	6.89	1
TPSMBJ58A	TPSMBJ58CA	NGA	DGA	58.0	64.40	71.20	1	93.6	6.41	1

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Part Number		Marking		Working Peak Reverse 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 $I_R$ @ $V_{RWM}$ ( $\mu\text{A}$ )
Uni	Bi	Uni	Bi		MIN	MAX				
TPSMBJ60A	TPSMBJ60CA	NKA	DKA	60.0	66.70	73.70	1	96.8	6.20	1
TPSMBJ64A	TPSMBJ64CA	NMA	DMA	64.0	71.10	78.60	1	103.0	5.83	1
TPSMBJ70A	TPSMBJ70CA	NPA	DPA	70.0	77.80	86.00	1	113.0	5.31	1
TPSMBJ75A	TPSMBJ75CA	NRA	DRA	75.0	83.30	92.10	1	121.0	4.96	1
TPSMBJ78A	TPSMBJ78CA	NTA	DTA	78.0	86.70	95.80	1	126.0	4.76	1
TPSMBJ85A	TPSMBJ85CA	NVA	DVA	85.0	94.4	104.0	1	137.0	4.4	1
TPSMBJ90A	TPSMBJ90CA	NXA	DXA	90.0	100.0	111.0	1	146.0	4.1	1
TPSMBJ100A	TPSMBJ100CA	NZA	DZA	100.0	111.0	123.0	1	162.0	3.7	1
TPSMBJ110A	TPSMBJ110CA	PEA	EEA	110.0	122.0	135.0	1	177.0	3.4	1
TPSMBJ120A	TPSMBJ120CA	PGA	EGA	120.0	133.0	147.0	1	193.0	3.1	1
TPSMBJ130A	TPSMBJ130CA	PKA	EKA	130.0	144.0	159.0	1	209.0	2.9	1
TPSMBJ150A	TPSMBJ150CA	PMA	EMA	150.0	167.0	185.0	1	243.0	2.5	1
TPSMBJ160A	TPSMBJ160CA	PPA	EPA	160.0	178.0	197.0	1	259.0	2.3	1
TPSMBJ170A	TPSMBJ170CA	PRA	ERA	170.0	189.0	209.0	1	275.0	2.2	1
TPSMBJ180A	TPSMBJ180CA	PTA	ETA	180.0	201.0	222.0	1	292.0	2.1	1
TPSMBJ190A	TPSMBJ190CA	PVA	EVA	190.0	209.0	243.0	1	308.0	2.0	1
TPSMBJ200A	TPSMBJ200CA	PWA	EWA	200.0	224.0	247.0	1	324.0	1.9	1
TPSMBJ220A	TPSMBJ220CA	PXA	EXA	220.0	246.0	272.0	1	356.0	1.7	1
TPSMBJ250A	TPSMBJ250CA	PZA	EZA	250.0	279.0	309.0	1	405.0	1.5	1
TPSMBJ300A	TPSMBJ300CA	QEA	FEA	300.0	335.0	371.0	1	486.0	1.3	1
TPSMBJ350A	TPSMBJ350CA	QGA	FGA	350.0	391.0	432.0	1	567.0	1.1	1
TPSMBJ400A	TPSMBJ400CA	QKA	FKA	400.0	447.0	494.0	1	648.0	0.9	1
TPSMBJ440A	TPSMBJ440CA	QMA	FMA	440.0	492.0	543.0	1	713.0	0.9	1

**Note:**

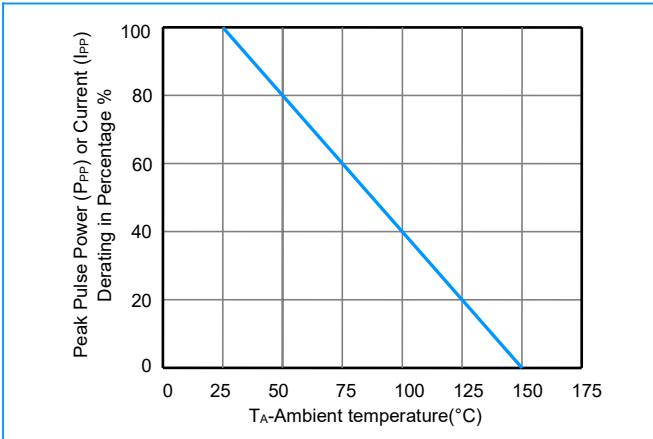
1. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices.
2. For Bi-Directional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is double.

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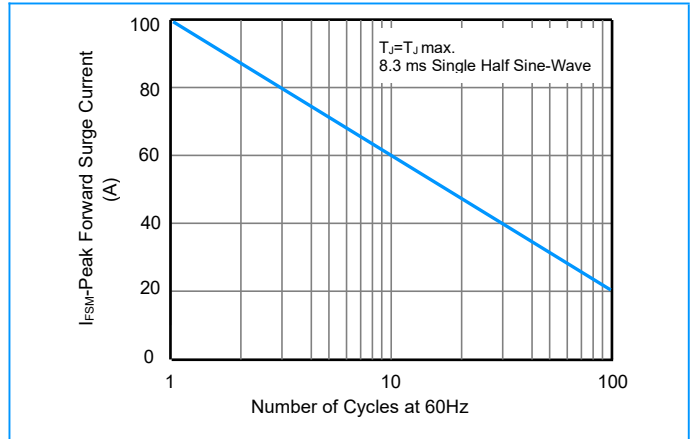
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**Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

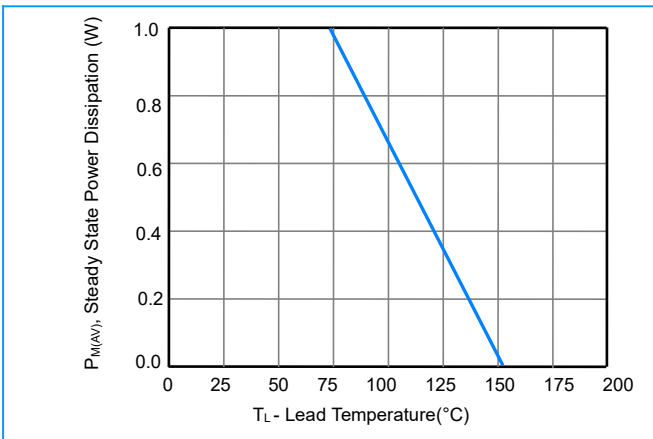
**Figure 1 - Pulse Derating Curve**



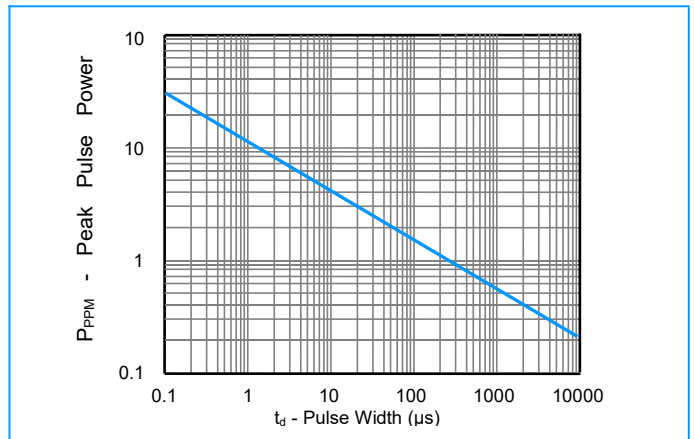
**Figure 2 - Maximum Non-Repetitive Surge Current**



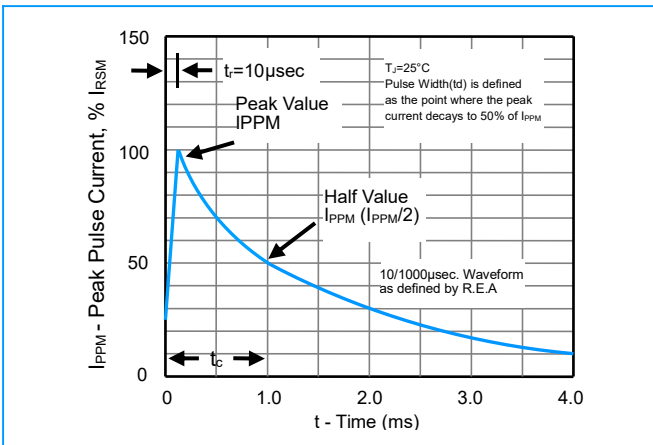
**Figure 3 - Steady State Power Derating Curve**



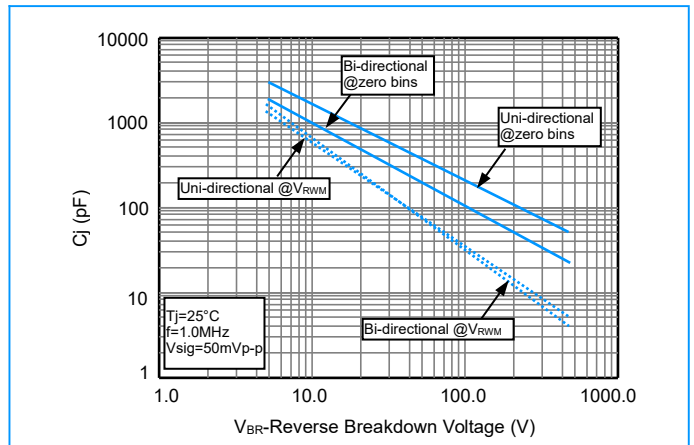
**Figure 4 - Peak Pulse Power Rating Curve**



**Figure 5 - Pulse Waveform**



**Figure 6 - Typical Junction Capacitance**



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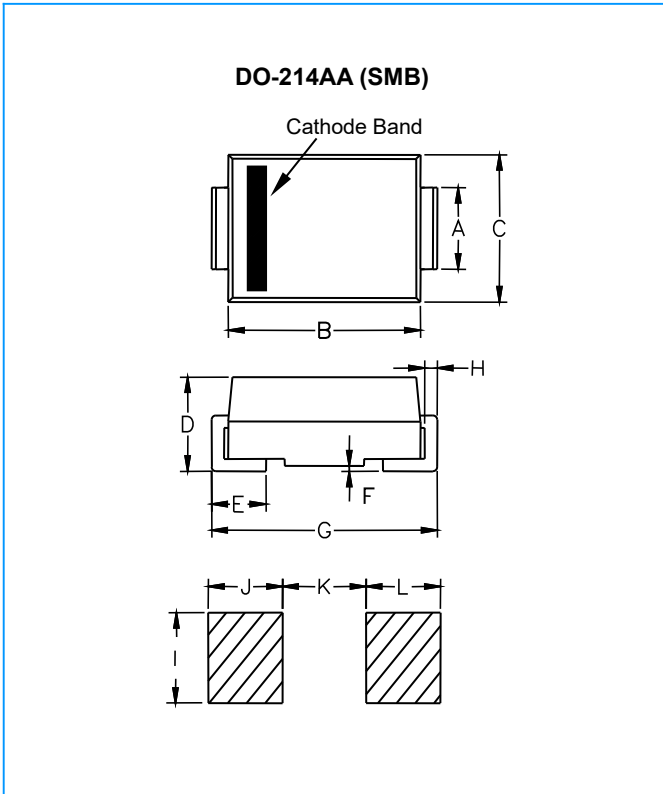
TPSMBJ Series

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600W

SMB/DO-214AA

### Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.073	0.087	1.85	2.21
B	0.167	0.191	4.25	4.85
C	0.130	0.155	3.30	3.94
D	0.085	0.104	2.15	2.65
E	0.030	0.060	0.75	1.52
F	--	0.008	--	0.203
G	0.200	0.220	5.08	5.59
H	0.006	0.012	0.15	0.31
I	0.089	-	2.26	-
J	0.085	-	2.10	-
K	-	0.107	-	2.74
L	0.085	-	2.10	-

### Packaging

Part Number	Component Package	Quantity
TPSMBJ Series	SMB/DO-214AA	3000 pcs