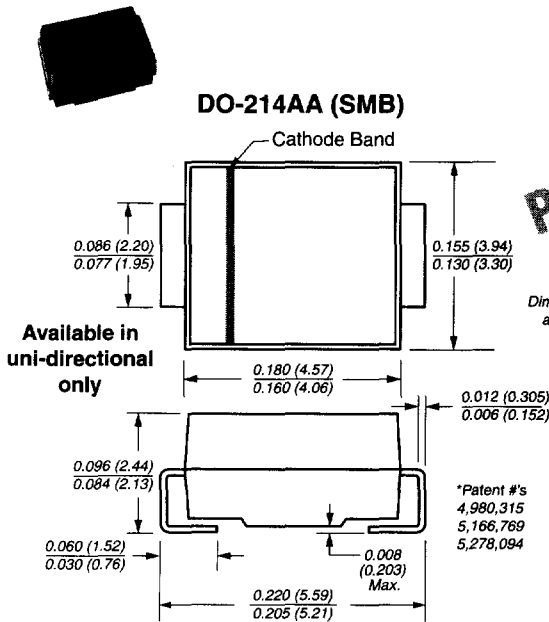


# TPSMB6.8 thru TPSMB43A

## Surface Mount Automotive Transient Voltage Suppressors

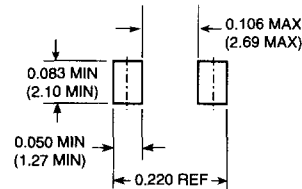
Breakdown Voltage 6.8 to 43V  
Peak Pulse Power 600W



Patented\*

Dimensions in inches and millimeters

### Mounting Pad Layout



Available in uni-directional only

### Mechanical Data

**Case:** JEDEC DO-214AA molded plastic body over passivated junction

**Terminals:** Solder plated, solderable per MIL-STD-750, Method 2026

**Polarity:** The color band denotes the cathode, which is positive with respect to the anode under normal TVS operation

**Mounting Position:** Any

**Weight:** 0.003oz., 0.093g

**Packaging codes/options:**

5/3.2K per 13" Reel (12mm tape), 38.4K/box  
2/750 EA per 7" Reel (12mm tape), 15K/box

### Features

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Easy pick and place
- Low profile package
- Built-in strain relief ideal for automated placement
- Exclusive patented PAR® oxide passivated chip construction
- 600W peak pulse power capability with a 10/1000ms waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time
- For devices with  $V_{(BR)} \geq 10V$   $I_D$  is typically less than 2.0mA at  $T_A = 150^\circ C$
- Designed for under the hood surface mount applications
- High temperature soldering: 250°C/10 seconds at terminals

Automotive TVS

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

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000µs waveform <sup>(1)(2)</sup> (Fig. 1)	PPPM	Minimum 600	W
Peak pulse current with a 10/1000µs waveform <sup>(1)</sup> (Fig. 3)	IPPM	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave <sup>(2)(3)</sup>	IFSM	75	A
Instantaneous forward voltage at 50A <sup>(3)</sup>	V <sub>F</sub>	3.5	V
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +185	°C

**Notes:** (1) Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ C$  per Fig. 2  
(2) Mounted on 0.2 x 0.2" (5.0 x 5.0mm) land areas per figure  
(3) Mounted on 8.3ms single half sine-wave duty cycle = 4 pulses per minute maximum

# TPSMB6.8 thru TPSMB43A

## Surface Mount Automotive Transient Voltage Suppressors

### Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

Device	Device Marking Code	Breakdown Voltage V <sub>(BR)</sub> <sup>(1)</sup> at I <sub>T</sub> (V)		Test Current I <sub>T</sub> (mA)	Stand-off Voltage V <sub>WM</sub> (V)	Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA)	T <sub>J</sub> = 150°C Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA)	Maximum Peak Pulse Surge Current I <sub>PPM</sub> <sup>(2)</sup> (A)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (V)
		Min.	Max.						
TPSMB6.8	KDP	6.12	7.48	10	5.50	500	1000	55.6	10.8
TPSMB6.8A	KEP	6.45	7.14	10	5.80	500	1000	57.1	10.5
TPSMB7.5	KFP	6.75	8.25	10	6.05	250	500	51.3	11.7
TPSMB7.5A	KGP	7.13	7.88	10	6.40	250	500	53.1	11.3
TPSMB8.2	KHP	7.38	9.02	10	6.63	100	200	48.0	12.5
TPSMB8.2A	KKP	7.79	8.61	10	7.02	100	200	49.6	12.1
TPSMB9.1	KLP	8.19	10.0	1.0	7.37	25	50	43.5	13.8
TPSMB9.1A	KMP	8.65	9.55	1.0	7.78	25	50	44.8	13.4
TPSMB10	KNP	9.00	11.0	1.0	8.10	5.0	20	40.0	15.0
TPSMB10A	KPP	9.50	10.5	1.0	8.55	5.0	20	41.4	14.5
TPSMB11	KQP	9.90	12.1	1.0	8.92	2.0	5.0	37.0	16.2
TPSMB11A	KRP	10.5	11.6	1.0	9.40	2.0	5.0	38.5	15.6
TPSMB12	KSP	10.8	13.2	1.0	9.72	2.0	5.0	34.7	17.3
TPSMB12A	KTP	11.4	12.6	1.0	10.2	2.0	5.0	35.9	16.7
TPSMB13	KUP	11.7	14.3	1.0	10.5	2.0	5.0	31.6	19.0
TPSMB13A	KVP	12.4	13.7	1.0	11.1	2.0	5.0	33.0	18.2
TPSMB15	KWP	13.5	16.5	1.0	12.1	1.0	5.0	27.3	22.0
TPSMB15A	KXP	14.3	15.8	1.0	12.8	1.0	5.0	28.3	21.2
TPSMB16	KYP	14.4	17.6	1.0	12.9	1.0	5.0	25.5	23.5
TPSMB16A	KZP	15.2	16.8	1.0	13.6	1.0	5.0	26.7	22.5
TPSMB18	LDP	16.2	19.8	1.0	14.5	1.0	5.0	22.6	26.5
TPSMB18A	LEP	17.1	18.9	1.0	15.3	1.0	5.0	23.8	25.2
TPSMB20	LFP	18.0	22.0	1.0	16.2	1.0	5.0	20.6	29.1
TPSMB20A	LGP	19.0	21.0	1.0	17.1	1.0	5.0	21.7	27.7
TPSMB22	LHP	19.8	24.2	1.0	17.8	1.0	5.0	18.8	31.9
TPSMB22A	LKP	20.9	23.1	1.0	18.8	1.0	5.0	19.6	30.6
TPSMB24	LLP	21.6	26.4	1.0	19.4	1.0	5.0	17.3	34.7
TPSMB24A	LMP	22.8	25.2	1.0	20.5	1.0	5.0	18.1	33.2
TPSMB27	LNP	24.3	29.7	1.0	21.8	1.0	5.0	15.3	39.1
TPSMB27A	LPP	25.7	28.4	1.0	23.1	1.0	5.0	16.0	37.5
TPSMB30	LQP	27.0	33.0	1.0	24.3	1.0	5.0	13.8	43.5
TPSMB30A	LRP	28.5	31.5	1.0	25.6	1.0	5.0	14.5	41.4
TPSMB33	LSP	29.7	36.3	1.0	26.8	1.0	5.0	12.6	47.7
TPSMB33A	LTP	31.4	34.7	1.0	28.2	1.0	5.0	13.1	45.7
TPSMB36	LUP	32.4	39.6	1.0	29.1	1.0	5.0	11.5	52.0
TPSMB36A	LVP	34.2	37.8	1.0	30.8	1.0	5.0	12.0	49.9
TPSMB39	LWP	35.1	42.9	1.0	31.6	1.0	5.0	10.6	56.4
TPSMB39A	LXP	37.1	41.0	1.0	33.3	1.0	5.0	11.1	53.9
TPSMB43	LYP	38.7	47.3	1.0	34.8	1.0	5.0	9.7	61.9
TPSMB43A	LZP	40.9	45.2	1.0	36.8	1.0	5.0	10.1	59.3

Notes: (1) V<sub>(BR)</sub> measured after I<sub>T</sub> applied for 300μs, I<sub>T</sub>=square wave pulse or equivalent

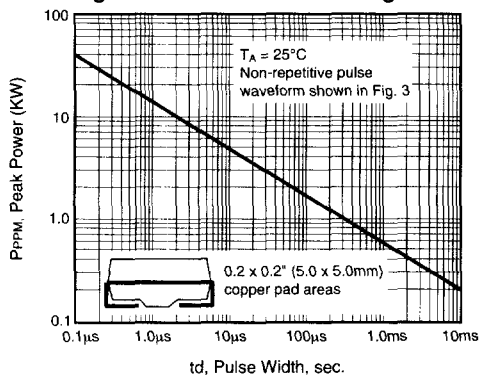
(2) Surge current waveform per Fig. 3 and derate per Fig. 2

(3) All terms and symbols are consistent with ANSI/IEEE C62.35

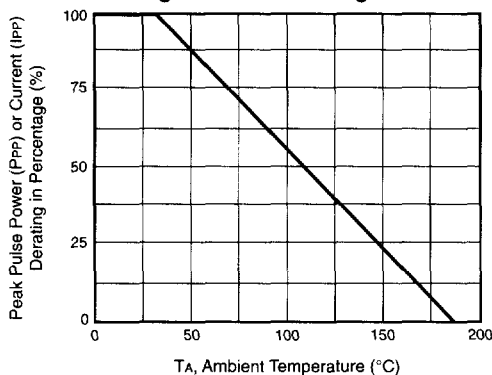
## Surface Mount Automotive Transient Voltage Suppressors

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

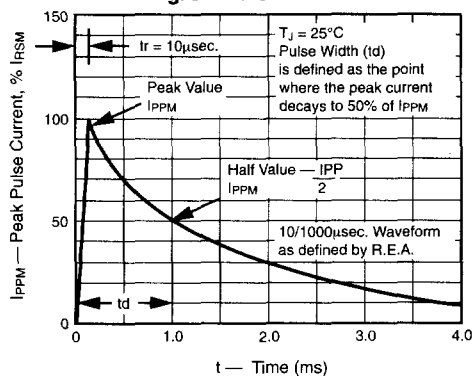
**Fig.1 – Peak Pulse Power Rating Curve**



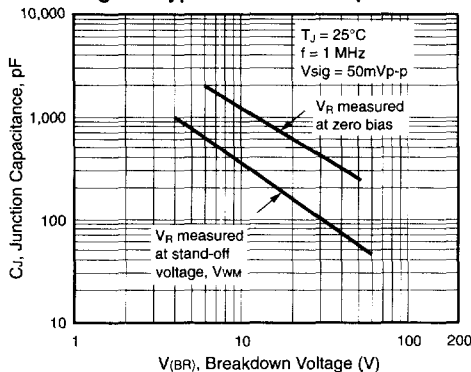
**Fig. 2 – Pulse Derating Curve**



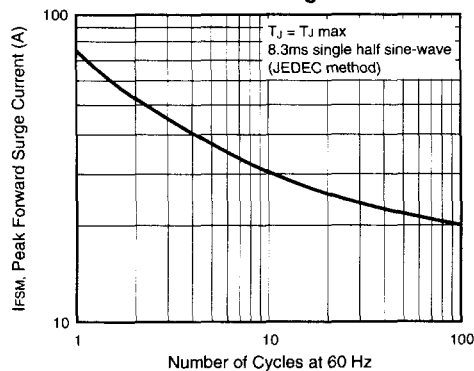
**Fig. 3 – Pulse Waveform**



**Fig. 4 – Typical Junction Capacitance**



**Fig. 5 – Maximum Non-Repetitive Peak Forward Surge Current**



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