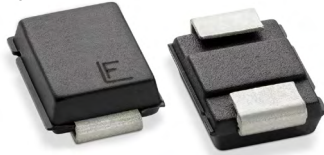


TPSMB-E Series

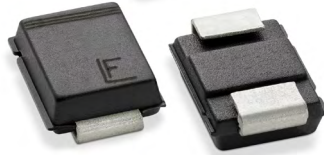
Surface Mount – 600 W



Bi-directional



Uni-directional



Agency Approvals

Agency	Agency File Number
	E230531

Maximum Ratings and Thermal Characteristics

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

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with 10/1000 μs exponential pulse	P_{PPM}	600	W
Peak Forward Surge Current 8.3 ms. (Jedec Method) (Note 1) (Note 2)	I_{FSM}	100	A
Max. Forward Voltage Drop at $I_F = 50\text{ A}$ (Note 1)	V_F	3.5	V
Operating Temperature Range	$V_{BR} \leq 43\text{ V}$	T_J	-65 to 175 $^\circ\text{C}$
	$V_{BR} > 43\text{ V}$		-65 to 150 $^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 to 175	$^\circ\text{C}$

Notes:

- Only for Unidirectional
- Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal

Functional Diagram



Bi-directional



Uni-directional

Description

Littelfuse TPSMB-E Series of Transient Voltage Suppression (TVS) Diodes can provide secondary transient voltage protection from transients induced by load dump and other transient voltage events for sensitive electronics. The TPSMB-E Series offers superior electrical performance in a small footprint DO-214AA package, allowing designers to upgrade their circuit protection without altering their existing design footprint or provide more robust protection in new circuit layouts.

Features

- AEC-Q101 qualified
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 $^\circ\text{C}$
- Meets ESD HBM: 8 kV and M4 machine model: 400 V
- Low profile package
- Ideal for automated placement
- 600 W peak pulse power capability with a 10/1000 μs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Available in uni-directional and bi-directional
- Solder dip 260 $^\circ\text{C}$, 10s
- Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC
- Manufactured Front-End in Spain and Back-End in Thailand, these products support reliable global production scalability and long-term supply chain resiliency.

Applications

Used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for industrial, automotive and telecommunication.

Physical Specifications

Weight	0.0082 grams
Case	DO-214AA (SMB). Epoxy meets UL 94V-0 flammability rating.
Polarity	For unidirectional types color band denotes cathode end. No marking on bidirectional types.
Terminal	Matte tin plated leads, solderable per MIL-ED-750 Method 2026, J-ED-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.

TPSMB-E Series

Surface Mount – 600 W

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

Part Number (Uni)	Marking Code	Maximum Reverse Leakage Current I_{RM} at V_{RM}		Breakdown Voltage V_{BR} at I_R (V) ⁽¹⁾				Max. Clamping Voltage V_{CL} at I_{PP} max. 1ms. Expo.		Agency Approval
		(μA)	(V)	Min.	Nom.	Max.	(mA)	(V)	(A)	
TPSMB6.8A-E	KE	1000	5.80	6.50	6.80	7.10	10	10.5	57.0	X
TPSMB7.5A-E	KG	500	6.40	7.10	7.50	7.90	10	11.3	53.0	X
TPSMB8.2A-E	KK	200	7.02	7.80	8.20	8.60	10	12.1	50.0	X
TPSMB9.1A-E	KM	50	7.78	8.70	9.00	9.60	1	13.4	45.0	X
TPSMB10A-E	KP	10	8.55	9.50	10.00	10.50	1	14.5	41.0	X
TPSMB11A-E	KR	5	9.40	10.50	11.00	11.60	1	15.6	38.0	X
TPSMB12A-E	KT	5	10.20	11.40	12.00	12.60	1	16.7	36.0	X
TPSMB13A-E	KV	5	11.10	12.40	13.00	13.70	1	18.2	33.0	X
TPSMB15A-E	KX	1	12.80	14.30	15.00	15.80	1	21.2	28.0	X
TPSMB16A-E	KZ	1	13.60	15.20	16.00	16.80	1	22.5	27.0	X
TPSMB18A-E	LE	1	15.30	17.10	18.00	18.90	1	25.5	24.0	X
TPSMB20A-E	LG	1	17.10	19.00	20.00	21.00	1	27.7	22.0	X
TPSMB22A-E	LK	1	18.80	20.90	22.00	23.10	1	30.6	20.0	X
TPSMB24A-E	LM	1	20.50	22.80	24.00	25.20	1	33.2	18.0	X
TPSMB27A-E	LP	1	23.10	25.70	27.00	28.40	1	37.5	16.0	X
TPSMB30A-E	LR	1	25.60	28.50	30.00	31.50	1	41.4	14.4	X
TPSMB33A-E	LT	1	28.20	31.40	33.00	34.70	1	45.7	13.2	X
TPSMB36A-E	LV	1	30.80	34.20	36.00	37.80	1	49.9	12.0	X
TPSMB39A-E	LX	1	33.30	37.10	39.00	41.00	1	53.9	11.2	X
TPSMB43A-E	LZ	1	36.80	40.90	43.00	45.20	1	59.3	10.1	X
TPSMB47A-E	ME	1	40.20	44.70	47.00	49.40	1	64.8	9.3	X
TPSMB51A-E	MG	1	43.60	48.50	51.00	53.60	1	70.1	8.6	X
TPSMB56A-E	MK	1	47.80	53.20	56.00	58.80	1	77.0	7.8	X
TPSMB62A-E	MM	1	53.00	58.90	62.00	65.10	1	85.0	7.1	X
TPSMB68A-E	MP	1	58.10	64.60	68.00	71.40	1	92.0	6.5	X
TPSMB75A-E	MR	1	64.10	71.30	75.00	78.80	1	103.0	5.8	X
TPSMB82A-E	MT	1	70.10	77.90	82.00	86.10	1	113.0	5.3	X
TPSMB91A-E	MV	1	77.80	86.50	91.00	95.50	1	125.0	4.8	X
TPSMB100A-E	MX	1	85.50	95.00	100.00	105.00	1	137.0	4.4	X
TPSMB110A-E	MZ	1	94.00	105.00	110.00	116.00	1	152.0	4.0	X
TPSMB120A-E	NE	1	102.00	114.00	120.00	126.00	1	165.0	3.6	X
TPSMB130A-E	NG	1	111.00	124.00	130.00	137.00	1	179.0	3.3	X
TPSMB150A-E	NK	1	128.00	143.00	150.00	158.00	1	207.0	2.9	X
TPSMB160A-E	NM	1	136.00	152.00	160.00	168.00	1	219.0	2.7	X
TPSMB170A-E	NP	1	145.00	162.00	170.00	179.00	1	234.0	2.6	X
TPSMB180A-E	NR	1	154.00	171.00	180.00	189.00	1	246.0	2.4	X
TPSMB200A-E	NT	1	171.00	190.00	200.00	210.00	1	274.0	2.2	X
TPSMB220A-E	NV	1	185.00	209.00	220.00	231.00	1	328.0	1.8	X
TPSMB250A-E	NX	1	214.00	237.00	250.00	263.00	1	344.0	1.8	X
TPSMB300A-E	NZ	1	256.00	285.00	300.00	315.00	1	414.0	1.5	X
TPSMB350A-E	YW	1	300.00	333.00	350.00	368.00	1	482.0	1.2	X
TPSMB400A-E	YX	1	342.00	380.00	400.00	420.00	1	548.0	1.1	X
TPSMB440A-E	YY	1	376.00	418.00	440.00	462.00	1	602.0	1.0	X
TPSMB480A-E	KA	1	408.00	456.00	480.00	504.00	1	658.0	0.9	X
TPSMB510A-E	YZ	1	434.00	485.00	510.00	535.00	1	698.0	0.9	X
TPSMB540A-E	KB	1	459.00	513.00	540.00	567.00	1	740.0	0.8	X

TPSMB-E Series

Surface Mount – 600 W

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

Part Number (Bi)	Marking Code	Maximum Reverse Leakage Current I_{RM} at V_{RM}		Breakdown Voltage V_{BR} at I_R (V) ⁽¹⁾				Max. Clamping Voltage V_{CL} at I_{PP} max. 1ms. Expo.		Agency Approval 
		(μA)	(V)	Min.	Nom.	Max.	(mA)	(V)	(A)	
TPSMB6.8CA-E	PE	1000	5.80	6.45	6.80	7.14	10	10.5	57.0	X
TPSMB7.5CA-E	PG	500	6.40	7.13	7.50	7.88	10	11.3	53.0	X
TPSMB8.2CA-E	PK	200	7.02	7.79	8.20	8.61	10	12.1	50.0	X
TPSMB9.1CA-E	PM	50	7.78	8.65	9.00	9.55	1	13.4	45.0	X
TPSMB10CA-E	PP	10	8.55	9.50	10.00	10.50	1	14.5	41.0	X
TPSMB11CA-E	PR	5	9.40	10.50	11.00	11.60	1	15.6	38.0	X
TPSMB12CA-E	PT	5	10.20	11.40	12.00	12.60	1	16.7	36.0	X
TPSMB13CA-E	PV	5	11.10	12.40	13.00	13.70	1	18.2	33.0	X
TPSMB15CA-E	PX	1	12.80	14.30	15.00	15.80	1	21.2	28.0	X
TPSMB16CA-E	PZ	1	13.60	15.20	16.00	16.80	1	22.5	27.0	X
TPSMB18CA-E	QE	1	15.30	17.10	18.00	18.90	1	25.5	24.0	X
TPSMB20CA-E	QG	1	17.10	19.00	20.00	21.00	1	27.7	22.0	X
TPSMB22CA-E	QK	1	18.80	20.90	22.00	23.10	1	30.6	20.0	X
TPSMB24CA-E	QM	1	20.50	22.80	24.00	25.20	1	33.2	18.0	X
TPSMB27CA-E	QP	1	23.10	25.70	27.00	28.40	1	37.5	16.0	X
TPSMB30CA-E	QR	1	25.60	28.50	30.00	31.50	1	41.4	14.4	X
TPSMB33CA-E	QT	1	28.20	31.40	33.00	34.70	1	45.7	13.2	X
TPSMB36CA-E	QV	1	30.80	34.20	36.00	37.80	1	49.9	12.0	X
TPSMB39CA-E	QX	1	33.30	37.10	39.00	41.00	1	53.9	11.2	X
TPSMB43CA-E	QZ	1	36.80	40.90	43.00	45.20	1	59.3	10.1	X
TPSMB47CA-E	TE	1	40.20	44.70	47.00	49.40	1	64.8	9.3	X
TPSMB51CA-E	TG	1	43.60	48.50	51.00	53.60	1	70.1	8.6	X
TPSMB56CA-E	TK	1	47.80	53.20	56.00	58.80	1	77.0	7.8	X
TPSMB62CA-E	TM	1	53.00	58.90	62.00	65.10	1	85.0	7.1	X
TPSMB68CA-E	TP	1	58.10	64.60	68.00	71.40	1	92.0	6.5	X
TPSMB75CA-E	TR	1	64.10	71.30	75.00	78.80	1	103.0	5.8	X
TPSMB82CA-E	TT	1	70.10	77.90	82.00	86.10	1	113.0	5.3	X
TPSMB91CA-E	TV	1	77.80	86.50	91.00	95.50	1	125.0	4.8	X
TPSMB100CA-E	TX	1	85.50	95.00	100.00	105.00	1	137.0	4.4	X
TPSMB110CA-E	TZ	1	94.00	105.00	110.00	116.00	1	152.0	4.0	X
TPSMB120CA-E	VE	1	102.00	114.00	120.00	126.00	1	165.0	3.6	X
TPSMB130CA-E	VG	1	111.00	124.00	130.00	137.00	1	179.0	3.3	X
TPSMB150CA-E	VK	1	128.00	143.00	150.00	158.00	1	207.0	2.9	X
TPSMB160CA-E	VM	1	136.00	152.00	160.00	168.00	1	219.0	2.7	X
TPSMB170CA-E	VP	1	145.00	162.00	170.00	179.00	1	234.0	2.6	X
TPSMB180CA-E	VR	1	154.00	171.00	180.00	189.00	1	246.0	2.4	X
TPSMB200CA-E	VT	1	171.00	190.00	200.00	210.00	1	274.0	2.2	X
TPSMB220CA-E	VV	1	185.00	209.00	220.00	231.00	1	328.0	1.8	X
TPSMB250CA-E	VX	1	214.00	237.00	250.00	263.00	1	344.0	1.8	X
TPSMB260CA-E	KI	1	232.00	247.00	260.00	273.00	1	360.0	1.7	X

Notes:

1. Tested with pulses Pulse test: $t_p \leq 50\text{ ms}$; $\delta < 2\%$

TPSMB-E Series

Surface Mount – 600 W

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

Figure 1 - Pulse Waveform

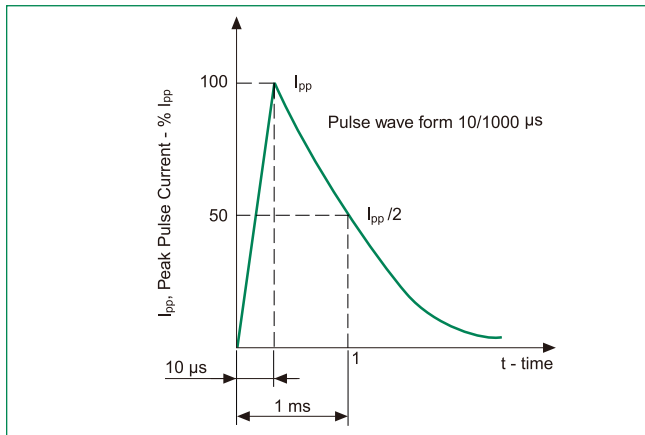


Figure 2 - Pulse Power or Current vs. Initial Junction Temperature

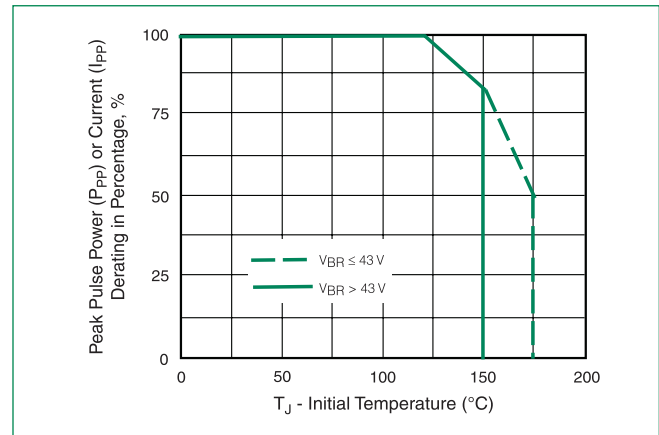


Figure 3 - Peak Pulse Power Rating Curve

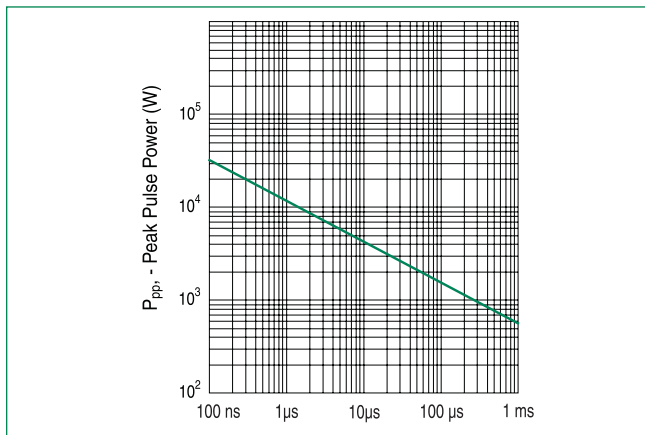
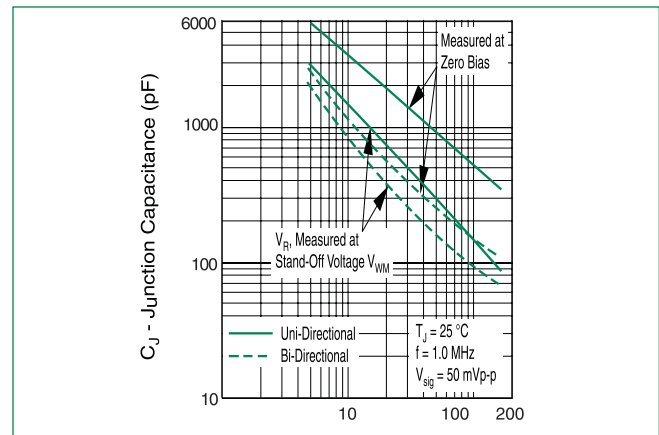
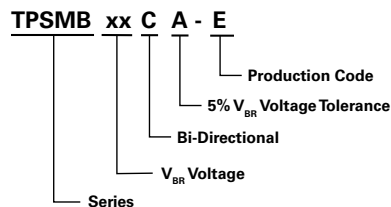


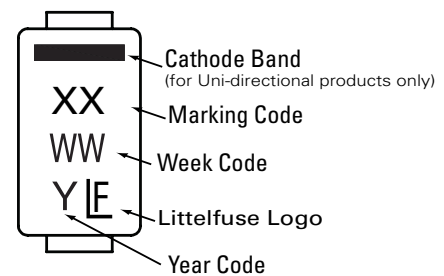
Figure 4 - Typical Junction Capacitance



Part Numbering System



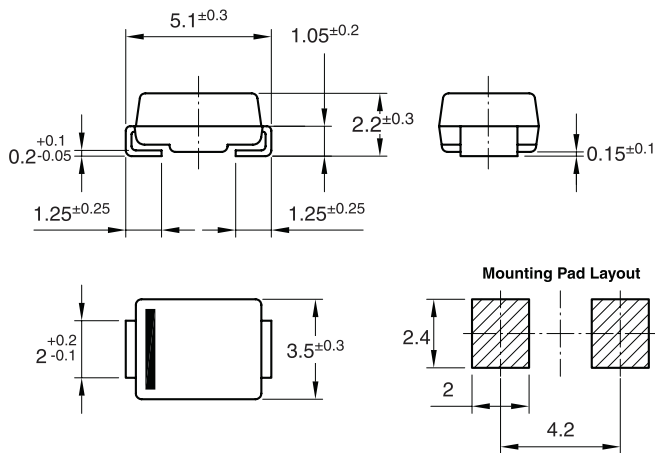
Part Marking System



TPSMB-E Series

Surface Mount – 600 W

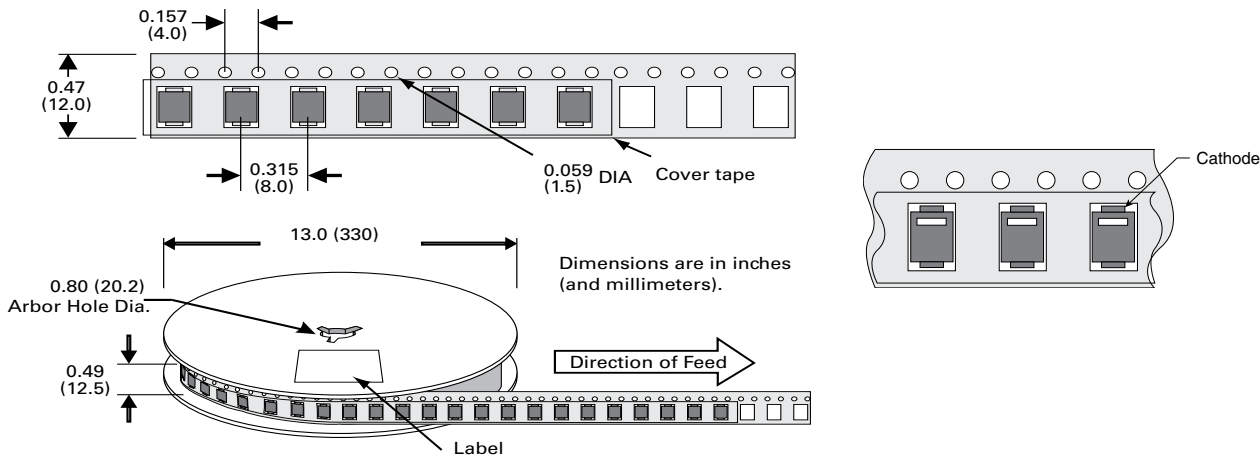
Dimensions - DO-214AA Package



Packaging Options

Part number	Component Package	Quantity	Packaging Option	Packaging Specification
TPSMBxxXX-E	DO-214AA	3200	13" diameter tape and reel	EIA RS-481

Tape and Reel Specification



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