

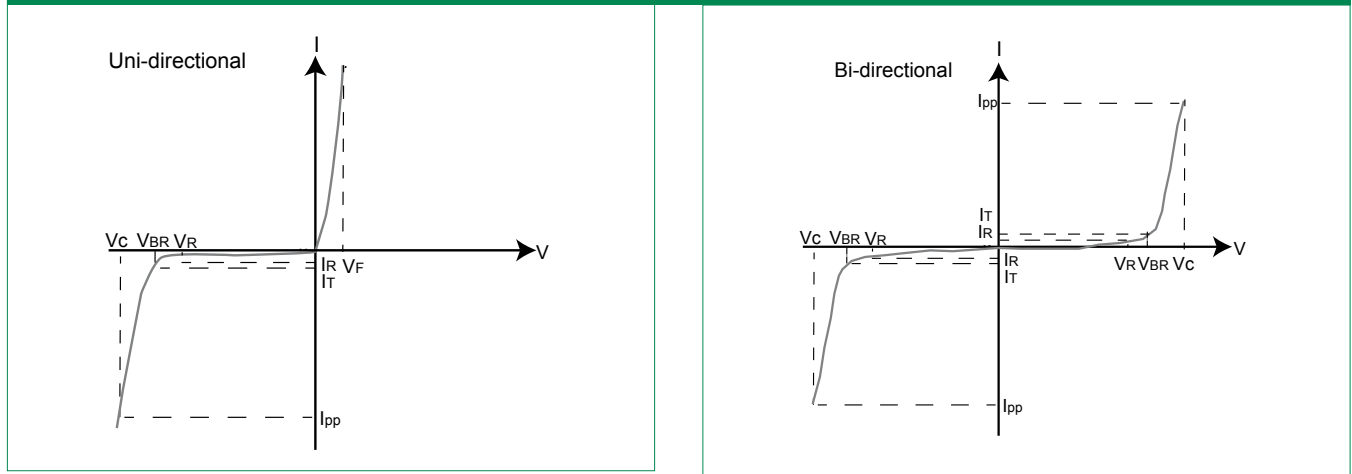
Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Marking		Typical I _s @ 150°C (μA)	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 _{pp} (V)	Maximum Peak Pulse Current I _{pp} (A)	Maximum Reverse Leakage I _R @ V _R (μA)	Maximum Temperature coefficient of V _{BR} (%/°C)	Agency Approval 
		UNI	BI			MIN	MAX						
TPSMB75A	-	7V5AA	-	500	6.40	7.13	7.88	10	11.3	54.0	500	0.052	X
TPSMB8.2A	-	8V2AA	-	200	7.02	7.79	8.61	10	12.1	50.4	200	0.058	X
TPSMB9.1A	-	9V1AA	-	50	7.78	8.65	9.55	1	13.4	45.5	50	0.063	X
TPSMB10A	TPSMB10CA	10AA	10CA	20	8.55	9.50	10.50	1	14.5	42.1	10	0.066	X
TPSMB11A	TPSMB11CA	11AA	11CA	8	9.40	10.50	11.60	1	15.6	39.1	5	0.069	X
TPSMB12A	TPSMB12CA	12AA	12CA	8	10.20	11.40	12.60	1	16.7	36.5	5	0.071	X
TPSMB13A	TPSMB13CA	13AA	13CA	8	11.10	12.40	13.70	1	18.2	33.5	1	0.074	X
TPSMB15A	TPSMB15CA	15AA	15CA	8	12.80	14.30	15.80	1	21.2	28.8	1	0.076	X
TPSMB16A	TPSMB16CA	16AA	16CA	8	13.60	15.20	16.80	1	22.5	27.1	1	0.080	X
TPSMB18A	TPSMB18CA	18AA	18CA	8	15.30	17.10	18.90	1	25.5	24.2	1	0.083	X
TPSMB20A	TPSMB20CA	20AA	20CA	8	17.10	19.00	21.00	1	27.7	22.0	1	0.085	X
TPSMB22A	TPSMB22CA	22AA	22CA	8	18.80	20.90	23.10	1	30.6	19.9	1	0.088	X
TPSMB24A	TPSMB24CA	24AA	24CA	8	20.50	22.80	25.20	1	33.2	18.4	1	0.091	X
TPSMB27A	TPSMB27CA	27AA	27CA	8	23.10	25.70	28.40	1	37.5	16.3	1	0.092	X
TPSMB30A	TPSMB30CA	30AA	30CA	8	25.60	28.50	31.50	1	41.4	14.7	1	0.093	X
TPSMB33A	TPSMB33CA	33AA	33CA	8	28.20	31.40	34.70	1	45.7	13.3	1	0.094	X
TPSMB36A	TPSMB36CA	36AA	36CA	8	30.80	34.20	37.80	1	49.9	12.2	1	0.096	X
TPSMB39A	TPSMB39CA	39AA	39CA	8	33.30	37.10	41.00	1	53.9	11.3	1	0.097	X
TPSMB43A	TPSMB43CA	43AA	43CA	8	36.80	40.90	45.20	1	59.3	10.3	1	0.098	X
TPSMB47A	TPSMB47CA	47AA	47CA	8	40.20	44.70	49.40	1	64.8	9.4	1	0.099	X
TPSMB51A	TPSMB51CA	51AA	51CA	8	43.60	48.50	53.60	1	70.1	8.7	1	0.100	X
TPSMB56A	TPSMB56CA	56AA	56CA	8	47.80	53.20	58.80	1	77.0	7.9	1	0.101	X
TPSMB58A	TPSMB58CA	58AA	58CA	8	52.78	55.10	60.90	1	79.8	7.7	1	0.101	-
TPSMB62A	TPSMB62CA	62AA	62CA	8	53.00	58.90	65.10	1	85.0	7.2	1	0.102	X
TPSMB68A	TPSMB68CA	68AA	68CA	8	58.10	64.60	71.40	1	92.0	6.6	1	0.103	X
TPSMB75A	TPSMB75CA	75AA	75CA	8	64.10	71.30	78.80	1	103.0	5.9	1	0.104	X
TPSMB82A	TPSMB82CA	82AA	82CA	8	70.10	77.90	86.10	1	113.0	5.4	1	0.105	X
TPSMB91A	TPSMB91CA	91AA	91CA	8	77.80	86.50	95.50	1	125.0	4.9	1	0.106	X
TPSMB100A	TPSMB100CA	100A	100C	8	85.50	95.00	105.00	1	137.0	4.5	1	0.106	X
TPSMB110A	TPSMB110CA	110A	110C	8	94.00	105.00	116.00	1	152.0	4.0	1	0.107	X
TPSMB120A	TPSMB120CA	120A	120C	8	102.00	114.00	126.00	1	165.0	3.7	1	0.107	X
TPSMB130A	TPSMB130CA	130A	130C	8	111.00	124.00	137.00	1	179.0	3.4	1	0.107	X
TPSMB150A	TPSMB150CA	150A	150C	8	128.00	143.00	158.00	1	207.0	2.9	1	0.108	X
TPSMB160A	TPSMB160CA	160A	160C	8	136.00	152.00	168.00	1	219.0	2.8	1	0.108	X
TPSMB170A	TPSMB170CA	170A	170C	8	145.00	162.00	179.00	1	234.0	2.6	1	0.108	X
TPSMB180A	TPSMB180CA	180A	180C	8	154.00	171.00	189.00	1	246.0	2.5	1	0.108	X
TPSMB200A	TPSMB200CA	200A	200C	8	171.00	190.00	210.00	1	274.0	2.2	1	0.108	X
TPSMB210A	TPSMB210CA	210A	210C	8	179.60	199.50	220.50	1	288.0	2.1	1	0.110	-
TPSMB220A	TPSMB220CA	220A	220C	8	185.00	209.00	231.00	1	328.0	1.9	1	0.110	X
TPSMB250A	TPSMB250CA	250A	250C	8	214.00	237.00	263.00	1	344.0	1.8	1	0.110	X
TPSMB300A-A	TPSMB300CA-A	300A	300C	8	256.00	285.00	315.00	1	414.0	1.5	1	0.110	X
TPSMB350A-A	TPSMB350CA-A	350A	350C	8	300.00	332.00	368.00	1	482.0	1.3	1	0.112	-
TPSMB400A-A	TPSMB400CA-A	400A	400C	8	342.00	380.00	420.00	1	548.0	1.1	1	0.112	-
TPSMB440A-A	TPSMB440CA-A	440A	440C	8	376.00	418.00	462.00	1	602.0	1.0	1	0.112	-
TPSMB480A-A	TPSMB480CA-A	480A	480C	8	408.00	456.00	504.00	1	658.0	0.9	1	0.112	-
TPSMB510A-A	TPSMB510CA-A	510A	510C	8	434.00	485.00	535.00	1	698.0	0.9	1	0.112	-
TPSMB520A-A	TPSMB520CA-A	520A	520C	8	443.00	494.50	545.50	1	718.0	0.9	1	0.112	-
TPSMB530A-A	TPSMB530CA-A	530A	530C	8	451.00	503.50	556.50	1	725.0	0.8	1	0.112	-
TPSMB540A-A	TPSMB540CA-A	540A	540C	8	460.00	513.00	567.00	1	740.0	0.8	1	0.112	-
TPSMB550A-A	TPSMB550CA-A	550A	550C	8	468.00	522.50	577.50	1	760.0	0.8	1	0.112	-
-	TPSMB600CA-A	-	600C	8	511.00	570.00	630.00	1	828.0	0.8	1	0.112	-
-	TPSMB650CA-A	-	650C	8	553.00	617.50	682.50	1	897.0	0.8	1	0.112	-

Note:

- For bidirectional type having V_s of 10 volts and less, the I_s limit is double.
- V_{BR} @ T_j = V_{BR} @ 25°C x (1 + αT x (T_j - 25)) (αT: Temperature Coefficient).
- The CTI (Comparative Tracking Index) of TPSMB600CA-A and TPSMB650CA-A is 600 and other parts is 550

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

Figure 1 - TVS Transients Clamping Waveform

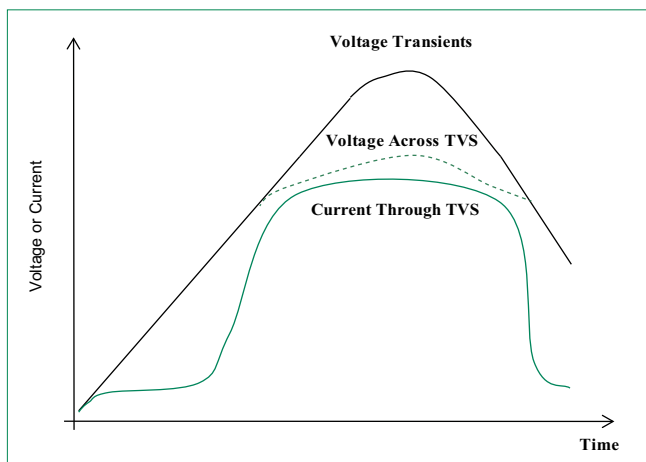
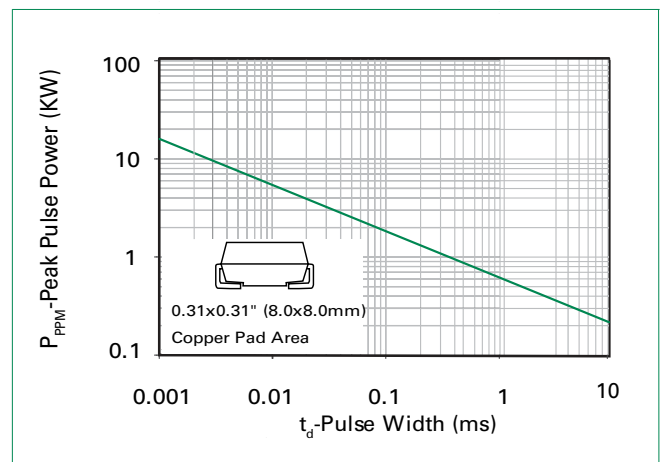


Figure 2 - Peak Pulse Power Rating Curve



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

Figure 3 - Peak Pulse Power Derating Curve

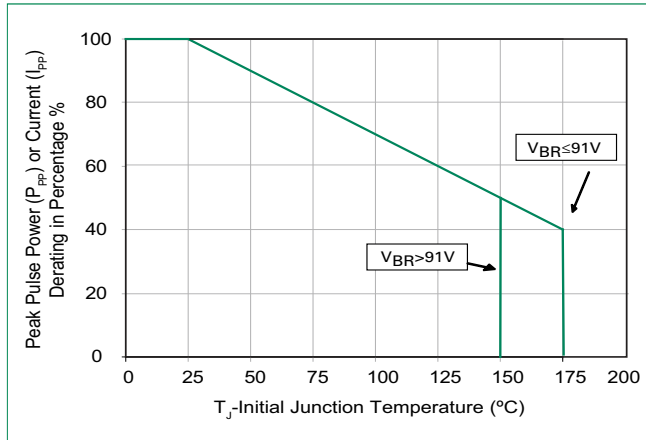


Figure 4 - Pulse Waveform

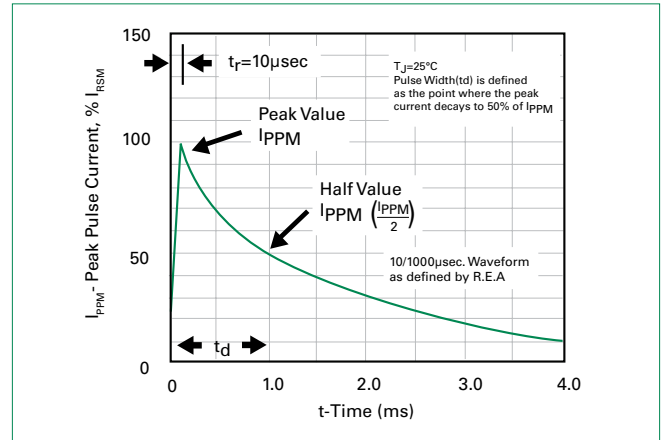


Figure 5 - Typical Junction Capacitance

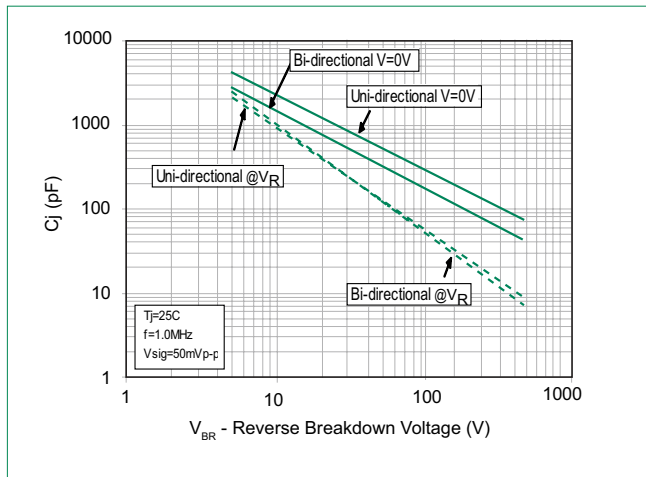
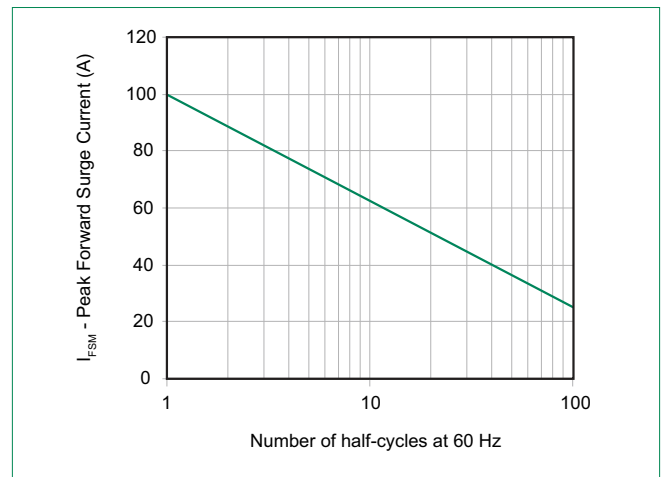
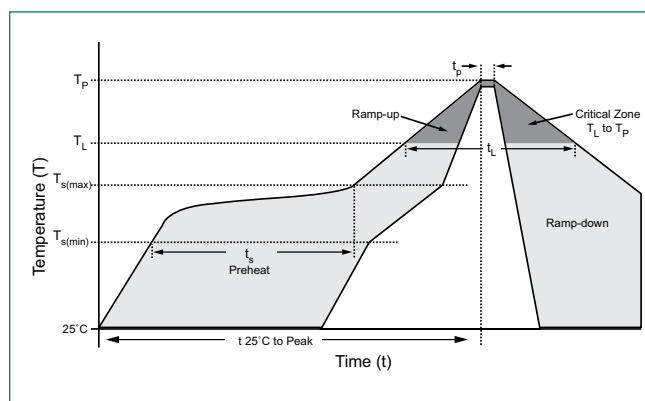


Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



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 – 120 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{s(max)}$ to T_L - 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)		30 seconds max
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



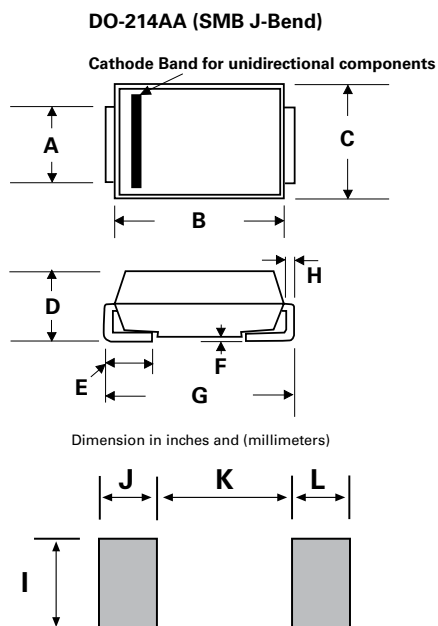
Physical Specifications

Weight	0.003 ounce, 0.093 grams
Case	JEDEC DO214AA. Molded plastic body over glass passivated junction
Polarity	Color band denotes cathode for unidirectional components.
Terminal	Matte Tin-plated leads, Solderable per JESD22-B102

Environmental Specifications

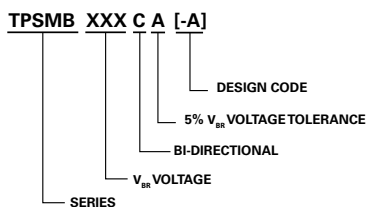
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Temperature Cycling	JESD22-A104
MSL	JEDEC-J-STD-020, Level 1
H3TRB	JESD22-A101
RSH	JESD22-A111

Dimensions

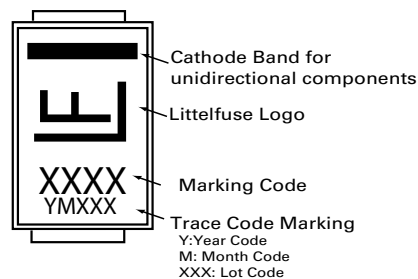


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.077	0.086	1.950	2.200
B	0.160	0.180	4.060	4.570
C	0.130	0.155	3.300	3.940
D	0.084	0.096	2.130	2.440
E	0.030	0.060	0.760	1.520
F	-	0.008	-	0.203
G	0.205	0.220	5.210	5.590
H	0.006	0.012	0.152	0.305
I	0.089	-	2.260	-
J	0.085	-	2.160	-
K	-	0.107	-	2.740
L	0.085	-	2.160	-

Part Numbering System



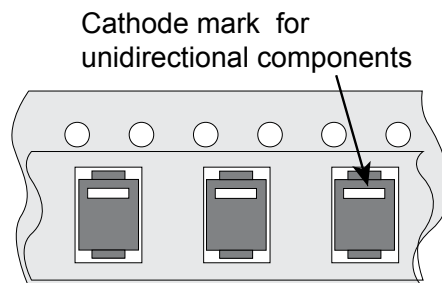
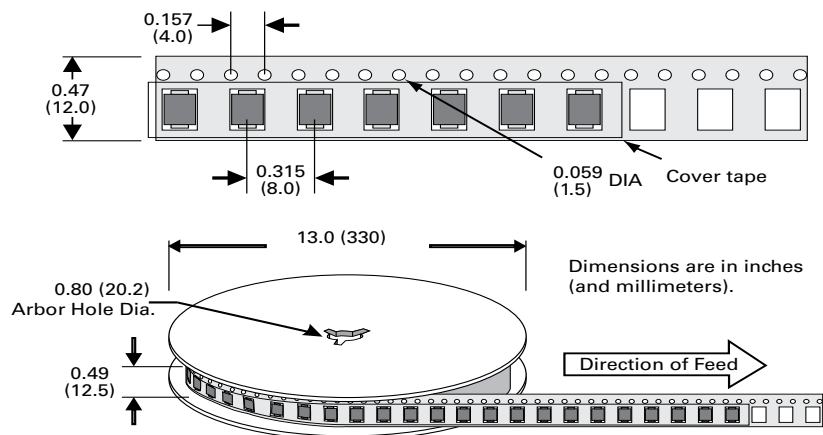
Part Marking System



Packaging

Part number	Component Package	Quantity	Packaging Option	Packaging Specification
TPSMBxxxXX	DO-214AA	3000	Tape & Reel - 12mm tape/13" reel	EIA STD RS-481

Tape and Reel Specification



Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

© 2018 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 09/05/18