TPSMC-EVR Series
Surface Mount – 1500 W

AUTOMOTIVE GRADE RoHS



Description

Littelfuse TPSMC-EVR 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 TPSMC-EVR Series offers superior electrical performance in a small footprint DO-214AB 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 °C
- Meets ESD HBM: 8 kV and M4 machine model: 400 V
- Low profile package
- Ideal for automated placement
- 1500 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
- Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC
- Manufacturing Location: This product is manufactured, assembled, and tested outside mainland China and Taiwan.

Agency Approvals

Agency	Agency File Number
	E230531

Maximum Ratings and Thermal Characteristics
(T_A=25 °C unless otherwise noted)

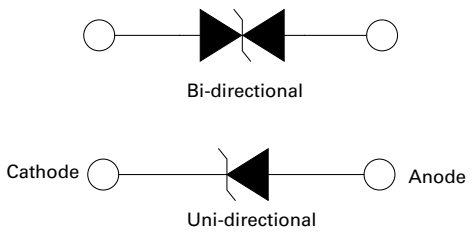
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with 10/1000 µs exponential pulse	P_{PPM}	1500	W
Peak Forward Surge Current 8.3 ms. (Jedec Method) (Note 1)(Note 2)	I_{FSM}	200	A
Max. Forward Voltage Drop at I_F = 100 A (Note 1)	V_F	3.5	V
Operating Junction Temperature Range	T_J	-65 to 150	°C
Storage Temperature Range	T_{STG}	-65 to 150	°C
Typical Thermal Resistance Junction to Ambient Air	$R_{th\ (j-A)}$	75	°C/W
Typical Thermal Resistance Junction to Lead	$R_{th\ (j-l)}$	15	°C/W

Notes:
1. Only for Unidirectional
2. Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal

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.

Functional Diagram



Physical Specifications

Weight	0.007 ounce, 0.201 grams
Case	DO-214AB (SMC). 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-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.

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

Part Number (Uni)	Part Number (Bi)	Marking		Breakdown Voltage V_{BR} @ I_T (V) (1)		Test Current I_T (mA)	Stand off Voltage V_{WM} (V)	Maximum Reverse Leakage @ V_{WM} I_D (µA) (3)	Maximum Peak Pulse Surge Current I_{PPM} (A) (2)	Maximum Clamping Voltage at I_{PPM} V_C (V)	Agency Approval
		Uni	Bi	Min	Max						
TPSMC5.0A-EVR	TPSMC5.0CA-EVR(4)	UEA	UFR	6.40	7.07	10	5.0	1000	163.0	9.2	-
TPSMC6.0A-EVR	TPSMC6.0CA-EVR	UEB	UFS	6.67	7.37	10	6.0	1000	145.6	10.3	-
TPSMC6.5A-EVR	TPSMC6.5CA-EVR	UDW	UFT	7.22	7.98	10	6.5	500	133.9	11.2	-
TPSMC7.0A-EVR	TPSMC7.0CA-EVR	UEC	UFU	7.78	8.60	10	7.0	200	125.0	12.0	-
TPSMC7.5A-EVR	TPSMC7.5CA-EVR	UED	UFV	8.33	9.21	1	7.5	100	116.3	12.9	-
TPSMC8.0A-EVR	TPSMC8.0CA-EVR	UEE	UFW	8.89	9.83	1	8.0	50	110.3	13.6	-
TPSMC8.5A-EVR	TPSMC8.5CA-EVR	UEF	UFX	9.44	10.40	1	8.5	20	104.2	14.4	-
TPSMC9.0A-EVR	TPSMC9.0CA-EVR	UEG	UFY	10.00	11.10	1	9.0	10	97.4	15.4	-
TPSMC10A-EVR	TPSMC10CA-EVR	UEH	UFZ	11.10	12.30	1	10.0	5	88.2	17.0	-
TPSMC11A-EVR	TPSMC11CA-EVR	UEI	UGA	12.20	13.50	1	11.0	5	82.4	18.2	X
TPSMC12A-EVR	TPSMC12CA-EVR	UDX	UGB	13.30	14.70	1	12.0	5	75.4	19.9	X
TPSMC13A-EVR	TPSMC13CA-EVR	UEJ	UGC	14.40	15.90	1	13.0	1	69.8	21.5	X
TPSMC14A-EVR	TPSMC14CA-EVR	UEK	UGD	15.60	17.20	1	14.0	1	64.7	23.2	X
TPSMC15A-EVR	TPSMC15CA-EVR	UEL	UGE	16.70	18.50	1	15.0	1	61.5	24.4	X
TPSMC16A-EVR	TPSMC16CA-EVR	UEM	UGF	17.80	19.70	1	16.0	1	57.7	26.0	X
TPSMC17A-EVR	TPSMC17CA-EVR	UEN	UGG	18.90	20.90	1	17.0	1	54.3	27.6	X
TPSMC18A-EVR	TPSMC18CA-EVR	UEO	UGH	20.00	22.10	1	18.0	1	51.4	29.2	X
TPSMC20A-EVR	TPSMC20CA-EVR	UEP	UGI	22.20	24.50	1	20.0	1	46.3	32.4	X
TPSMC22A-EVR	TPSMC22CA-EVR	UEQ	UGK	24.40	26.90	1	22.0	1	42.3	35.5	X
TPSMC24A-EVR	TPSMC24CA-EVR	UER	UGL	26.70	29.50	1	24.0	1	38.6	38.9	X
TPSMC26A-EVR	TPSMC26CA-EVR	UDO	UGM	28.90	31.90	1	26.0	1	35.6	42.1	X
TPSMC28A-EVR	TPSMC28CA-EVR	UES	UGN	31.10	34.40	1	28.0	1	33.0	45.4	X
TPSMC30A-EVR	TPSMC30CA-EVR	UET	UGO	33.30	36.80	1	30.0	1	31.0	48.4	X
TPSMC33A-EVR	TPSMC33CA-EVR	UEU	UGP	36.70	40.60	1	33.0	1	28.1	53.3	X
TPSMC36A-EVR	TPSMC36CA-EVR	UEV	UDY	40.00	44.20	1	36.0	1	25.8	58.1	X
TPSMC40A-EVR	TPSMC40CA-EVR	UEW	UGQ	44.40	49.10	1	40.0	1	23.3	64.5	X
TPSMC43A-EVR	TPSMC43CA-EVR	UEX	UGR	47.80	52.80	1	43.0	1	21.6	69.4	X
TPSMC45A-EVR	TPSMC45CA-EVR	UEY	UGS	50.00	55.30	1	45.0	1	20.6	72.7	X
TPSMC48A-EVR	TPSMC48CA-EVR	UEZ	UGT	53.30	58.90	1	48.0	1	19.4	77.4	X
TPSMC51A-EVR	TPSMC51CA-EVR	UFA	UGU	56.70	62.70	1	51.0	1	18.2	82.4	X
TPSMC54A-EVR	TPSMC54CA-EVR	UDP	UGV	60.00	66.30	1	54.0	1	17.2	87.1	X
TPSMC58A-EVR	TPSMC58CA-EVR	UFB	UGW	64.40	71.20	1	58.0	1	16.0	93.6	X
TPSMC60A-EVR	TPSMC60CA-EVR	UFC	UGX	66.70	73.70	1	60.0	1	15.5	96.8	X
TPSMC64A-EVR	TPSMC64CA-EVR	UFD	UGY	71.10	78.60	1	64.0	1	14.6	103.0	X
TPSMC70A-EVR	TPSMC70CA-EVR	UFE	UGZ	77.80	86.00	1	70.0	1	13.3	113.0	X
TPSMC75A-EVR	TPSMC75CA-EVR	UFF	UHA	83.30	92.10	1	75.0	1	12.4	121.0	X
TPSMC78A-EVR	TPSMC78CA-EVR	UFG	UHB	86.70	95.80	1	78.0	1	11.9	126.0	X
TPSMC85A-EVR	TPSMC85CA-EVR	UFH	UHC	94.40	104.00	1	85.0	1	10.9	137.0	X
TPSMC90A-EVR	TPSMC90CA-EVR	UFI	UHD	100.00	111.00	1	90.0	1	10.3	146.0	X
TPSMC100A-EVR	TPSMC100CA-EVR	UFJ	UHE	111.00	123.00	1	100.0	1	9.3	162.0	X
TPSMC110A-EVR	TPSMC110CA-EVR	UFK	UHF	122.00	135.00	1	110.0	1	8.5	177.0	X
TPSMC120A-EVR	TPSMC120CA-EVR	UFL	UHG	133.00	147.00	1	120.0	1	7.8	193.0	X
TPSMC130A-EVR	TPSMC130CA-EVR	UFM	UHH	144.00	159.00	1	130.0	1	7.2	209.0	X
TPSMC150A-EVR	TPSMC150CA-EVR	UFN	UHI	167.00	185.00	1	150.0	1	6.2	243.0	X
TPSMC160A-EVR	TPSMC160CA-EVR	UFO	UHJ	178.00	197.00	1	160.0	1	5.8	259.0	X
TPSMC170A-EVR	TPSMC170CA-EVR	UFP	UHK	189.00	209.00	1	170.0	1	5.5	275.0	X
TPSMC188A-EVR	TPSMC188CA-EVR	UFQ	UHL	209.00	231.00	1	188.0	1	4.6	328.0	-

Notes:
1. Pulses test: tp ≤ 50 ms
2. Surge current waveform per fig3 and derate per fig2
3. For bi-directional types having V_{WM} of 10 V and less, the I_D limit is doubled
4. For the bi-directional TPSMC5.0CA-EVR, the maximum V_{BR} is 7.25 V

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Ratings and Characteristic Curves (T_A=25 °C unless otherwise noted)

Figure 1 - Pulse Waveform

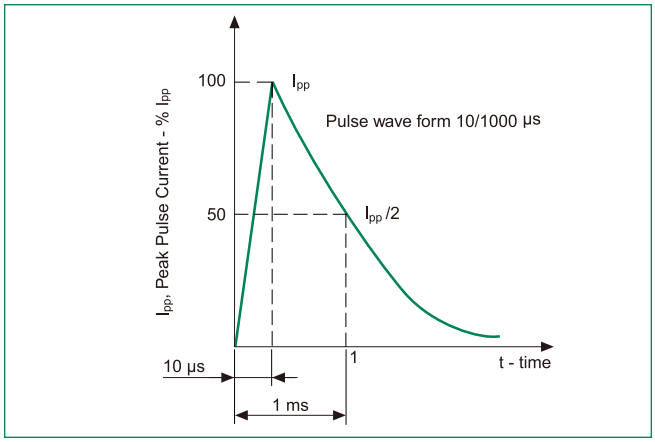


Figure 2 - Pulse Power or Current vs. Initial Junction Temperature

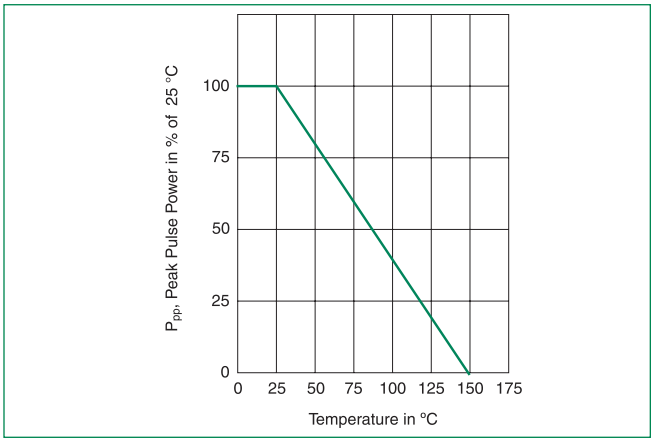


Figure 3 - Peak Pulse Power Rating Curve

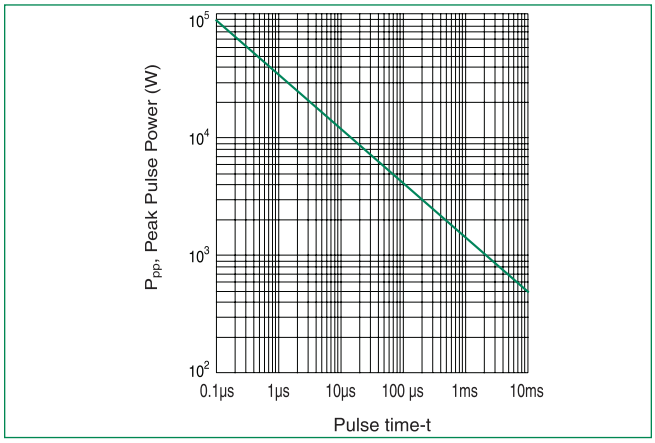
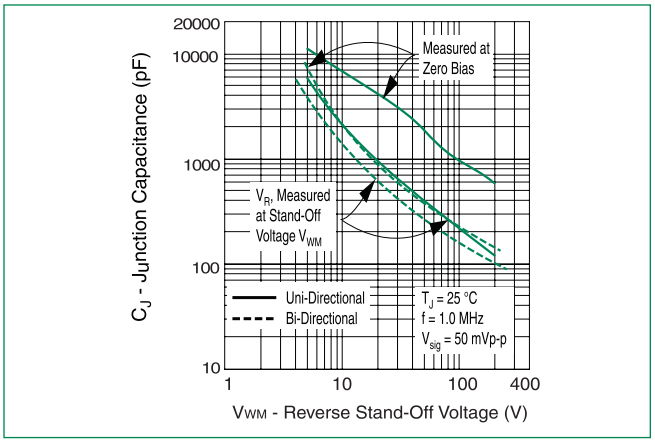
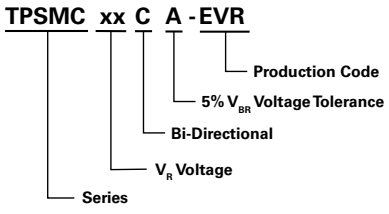


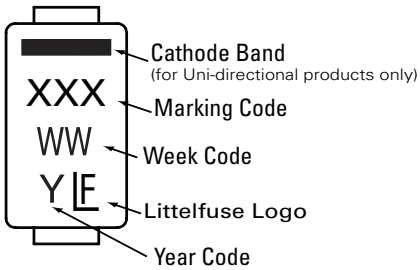
Figure 4 - Typical Junction Capacitance



Part Numbering System



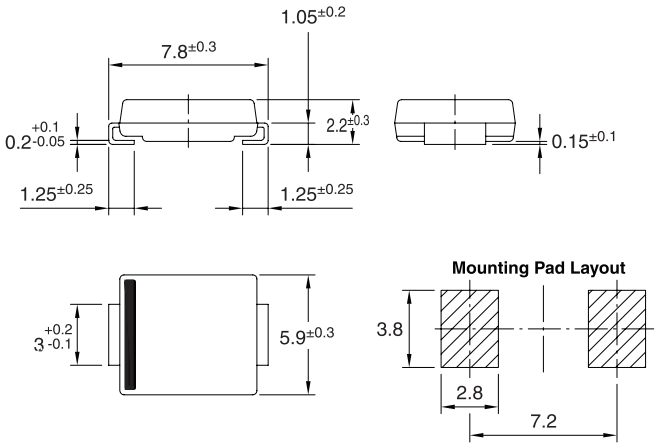
Part Marking System



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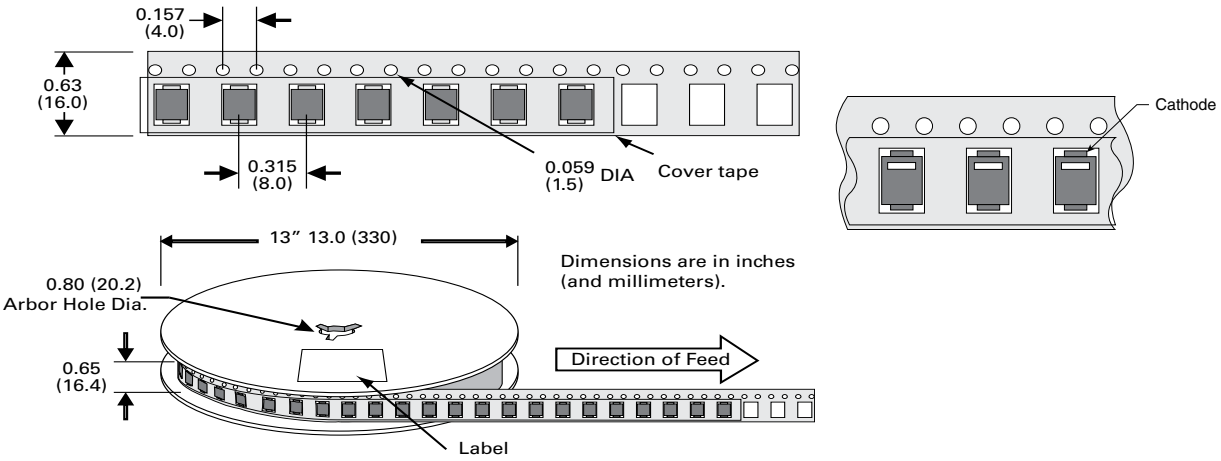
Dimensions - DO-214AB Package



Packaging Options

Part number	Component Package	Quantity	Packaging Option	Packaging Specification
TPSMCxxXX-EVR	DO-214AB	3500	13" diameter tape andreel	EIA RS-481

Tape and Reel Specification



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