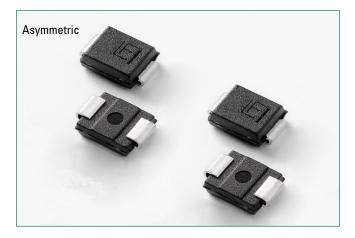
TVS Diode Datasheet

TPSMB Asymmetric Series Surface Mount – 600W

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Maximum Ratings and Thermal Characteristics $(T_a=25^{\circ}C \text{ unless otherwise noted})$

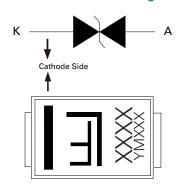
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation ($I_{pp} \times V_c$) by 10/1000µs waveform (Fig.1)(Note 1), (Note 2)	P _{PPM} ¹ P _{PPM} ²	600	W
Power Dissipation on infinite heat sink at T ₁ =50°C	P _{M(AV)}	5.0	W
Operating Junction Temperature Range	TJ	-65 to 175	°C
Storage Temperature Range	T _{stg}	-65 to 175	
Typical Thermal Resistance Junction to Lead	$R_{_{ extsf{ hetaJL}}}$	20	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{_{\theta JA}}$	100	°C/W
Typical Junction Capacitance	C	650	рF

Notes:

1. Non-repetitive current pulse, per Fig.4 and derated above $\rm T_{A}{=}25^{o}\rm C$ per Fig. 3.

2. Mounted on copper pad area of 0.2x0.2" (5.0 x 5.0mm) to each terminal.

Pin out & Functional Diagram



Description

The TPSMB Asymmetric Series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- High reliability application and automotive grade AEC-Q101 qualified
- Surface mount component to optimize board space
- Low profile package
- Typical failure mode is short from over-specified voltage or current
- Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- ESD protection of data lines in accordance with IEC 61000-4-2, 30kV(Air), 30kV (Contact)
- EFT protection of data lines in accordance with IEC 61000-4-4
- Glass passivated chip junction
- 600W P_{PPM} peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycles):0.01%

- Fast response time: typically less than 1.0ns from 0V to V_{BR} min
- Excellent clamping capability
- Low incremental surge resistance
- UL Recognized compound meeting flammability rating V-0.
- Meet MSL level1, per J-STD-020, High temperature soldering guaranteed: 260°C/10 seconds at terminals
- Matte tin lead-free plated
- Halogen free and RoHS compliant
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/JEDEC J-STD-609A.01)

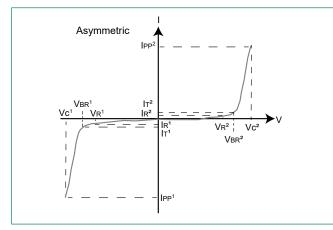
Applications

TVS components are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in Automotive applications.

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

		к — ►						A							
Part Number Mark	Marking			Volta	Breakdown /oltage V _{BR} Volts) @ I _T 1 Volts		Peak lest	Test Current	Reverse	Stand off Voltage	Breakdown Voltage V _{BR} (Volts) @ I ₇ ²		Maximum Clamping	Peak	Test Current
			V _R ¹	MIN	МАХ	Voltage V _c ¹ @ I _{pp} ((V)	Current I _{PP} ¹ (A)	I _T 1 (mA)	Ι _R ² @ V _R ² (μΑ)	V _R ² (Volts)	MIN	МАХ	Voltage V _c ² @ I _{PP} (V)		l _T ² (mA)
TPSMB2616CA	2616	1	26	28.9	31.9	42.1	14.3	1	1	16	17.8	19.7	26	23.1	1

I-V Curve Characteristics



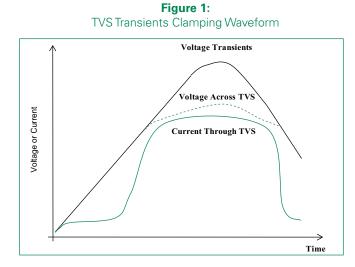
 $\mathbf{P}_{_{\boldsymbol{PPM}}}$ Peak Pulse Power Dissipation ($_{_{\boldsymbol{IPP}}} \times V_c)-$ Max power dissipation

- $V_{\rm h}/V_{\rm h}^{~2}$ ~ Stand-off Voltage Maximum voltage that can be applied to the TVS without operation
- $V_{_{BR}}{}^{\prime}\!/V_{_{BR}}{}^{*}$ Breakdown Voltage — Maximum voltage that flows though the TVS at a specified test current (I,)

 V_c^{\prime}/V_c^{2} Clamping Voltage – Peak voltage measured across the TVS at a specified lppm (peak impulse current)

I_B¹/I_B² Reverse Leakage Current – Current measured at V_B

Ratings and Characteristic Curves (T_{Δ} =25°C unless otherwise noted)



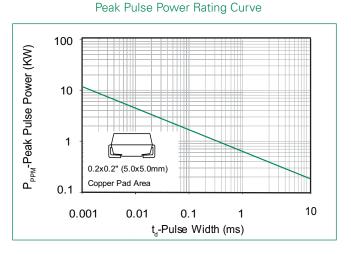
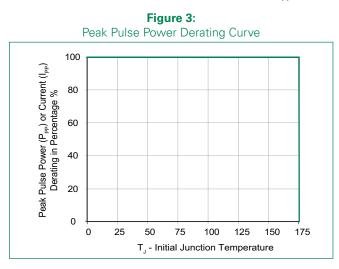
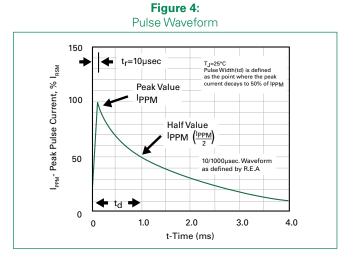


Figure 2:

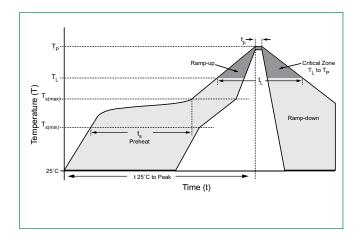
Ratings and Characteristic Curves ($T_A = 25^{\circ}C$ unless otherwise noted) (Continued)





Soldering Parameters

Reflow Cor	ndition	Lead-free assembly		
	- Temperature Min (T _{s(min)})	150°C		
Pre Heat	- Temperature Max (T _{s(max)})	200°C		
	- Time (min to max) (t _s)	60 - 120 secs		
Average rate	mp up rate (Liquidus Temp (T_L)	3°C/second max		
$\mathbf{T}_{\mathrm{S(max)}}$ to \mathbf{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 Temp	erature (T _P)	260 ^{+0/-5} °C		
	Time within 5°C of actual peak Temperature (t _p)			
Ramp-dow	n Rate	6°C/second max		
Time 25°C	to peak Temperature (T _P)	8 minutes max.		
Do not exc	eed	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

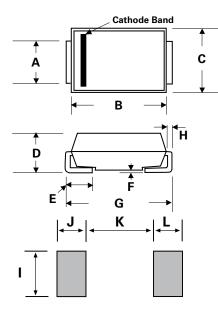
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Temperature Cycling	JESD22-A104
MSL	JEDEC-J-STD-020, Level 1
H3TRB	JESD22-A101
RSH	JESD22-A111

M Littelfuse

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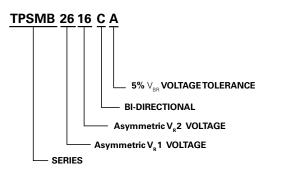
Dimensions

DO-214AA (SMB J-Bend)



Dimensions	Inc	hes	Millimeters			
Dimensions	Min	Max	Min	Max		
А	0.077	0.086	1.950	2.200		
В	0.160	0.180	4.060	4.570		
С	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		
Н	0.006	0.012	0.152	0.305		
I	0.089	-	2.260	-		
J	0.085	-	2.160	-		
К	-	0.107	-	2.740		
L	0.085	-	2.160	-		

Part Numbering System





Part Marking System

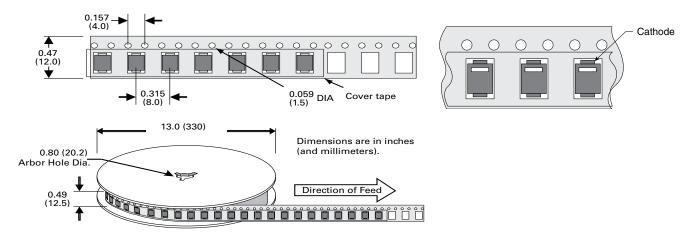
Product Selector & Packaging Option

Part number	Marking Code	Component Package	Quantity	Packaging Option	Packaging Specification
TPSMB2616CA	2616	DO-214AA	3000	Tape & Reel - 12mm tape/13" reel	EIA STD RS-481



TPSMB Asymmetric Series Surface Mount – 600W

Tape and Reel Specification



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