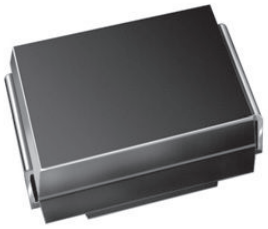
Low V_F Surface-Mount TRANSZORB® Transient Voltage Suppressors



SMB (DO-214AA)

FEATURES

- Uni-directional polarity only
- Peak pulse power: 600 W (10/1000 µs)
- Ideal for automated placement
- Low forward voltage
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

3D Models

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs sensor units specifically for protecting 12 V supplied sensitive equipment against transient overvoltages.

MECHANICAL DATA

Case: SMB (DO-214AA)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

PRIMARY CHARACTERISTICS	
V_{BR}	13.2 V to 14.8 V
I_{PPM} (with 10 x 1000 µs)	31 A
I_{PPM} (with 1.4 x 6.5 µs)	17.5 A
V_F at I_F = 1.0 A	0.35 V
V_{WM}	12 V
P_{PPM}	600 W
I_{FSM}	100 A
T_J max.	150 °C
Polarity	Unidirectional
Package	SMB (DO-214AA)

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Device marking code		L14	
Peak power pulse current with a 10/1000 µs waveform (1)(2) (fig. 1)	I_{PPM}	31	A
Peak pulse current with a 1.4/6.5 µs waveform (fig. 2)	I_{PPM}	17.5	A
Peak forward surge current 8.3 ms single half sine-wave (2)	I_{FSM}	100	A
Power dissipation on infinite heatsink, TL = 50 °C	P_D	5	W
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +150	°C

Notes

(1) Non-repetitive current pulse, per fig. 1 and derated above 25 °C per fig. 1

(2) Mounted on PCB with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
DEVICE TYPE	BREAKDOWN VOLTAGE V_{BR} AT I_Z (V)		TEST CURRENT I_Z (mA)	STAND-OFF VOLTAGE V_{WM} (V)
	MIN.	MAX.		
LVB14A	13.2	14.8	1	12

ADDITIONAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Max. clamping voltage with 10 x 1000 µs	I_{PPM} = 31 A	V_C	-	-	19.5	V
Max. clamping voltage with 1.4 x 6.5 µs	I_{PPM} = 17.5 A	V_C	-	-	15.8	V
Instantaneous forward voltage (1)	I_F = 1.0 A, T_J = 25 °C	V_F	-	0.45	0.5	V
	I_F = 1.0 A, T_J = 125 °C		-	0.35	-	V
Reverse leakage current (1)	V_{WM} = 12.0 V	I_R	-	-	100	µA

Note

(1) Measured on a 300 µs square pulse width

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Typical thermal resistance, junction to lead	$R_{\theta JL}$	20	°C/ W
Typical thermal resistance, junction to ambient (1)	$R_{\theta JA}$	100	

Note

(1) Thermal resistance from junction to ambient - mounted on the recommended PCB pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
LVB14A-E3/52	0.096	52	750	7" diameter plastic tape and reel
LVB14A-E3/5B	0.096	5B	3200	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

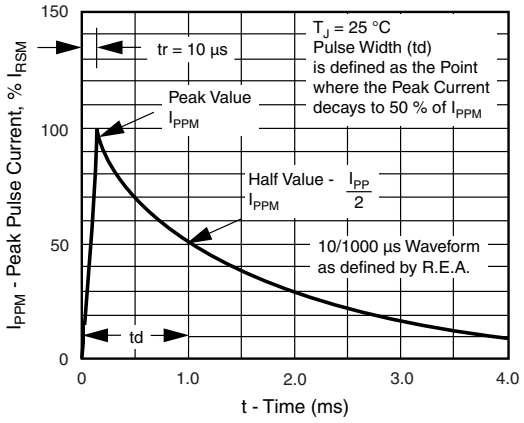


Fig. 1 - Pulse Waveform

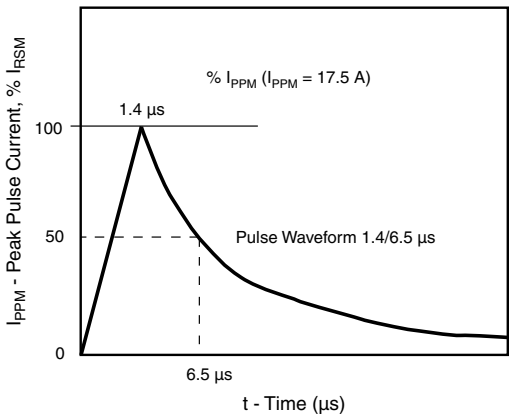


Fig. 2 - Pulse Waveform

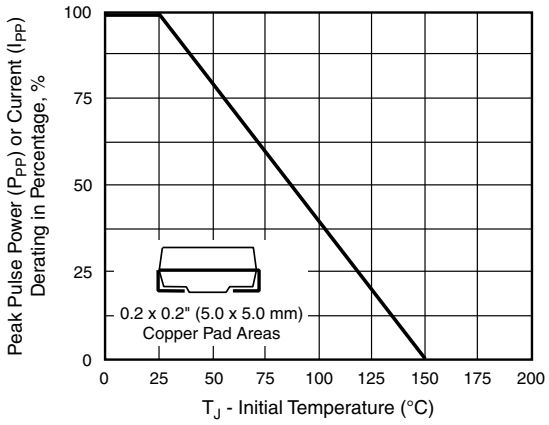


Fig. 3 - Pulse Power or Current vs. Initial Junction Temperature

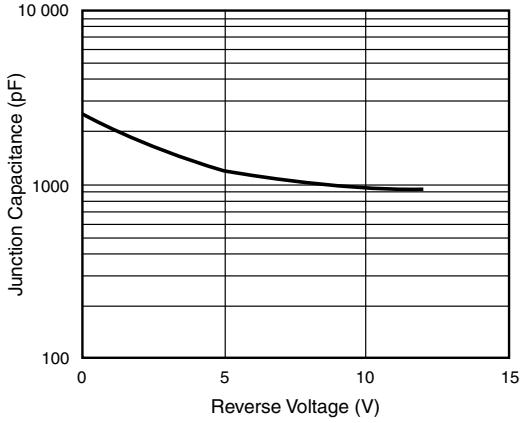


Fig. 5 - Typical Junction Capacitance

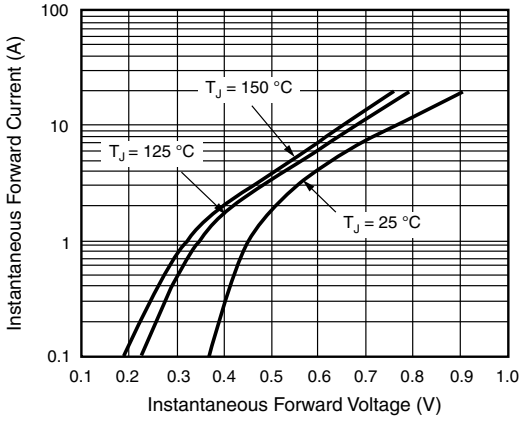
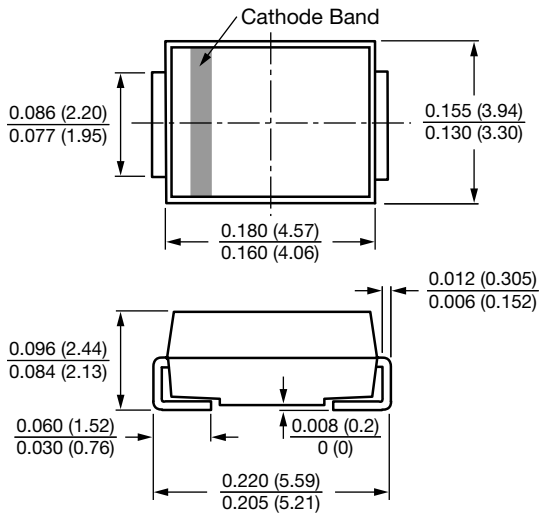


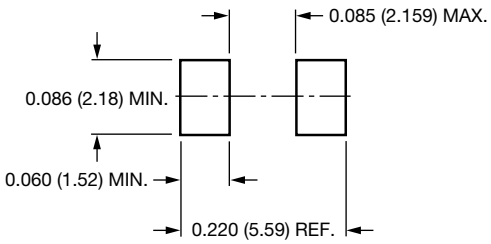
Fig. 4 - Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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