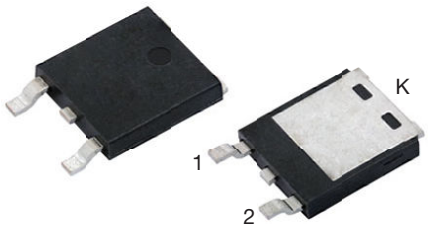
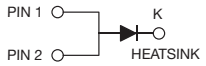
Surface-Mount ESD Capability Rectifier

eSMP® Series



SlimDPAK (TO-252AE)



FEATURES

- Very low profile - typical height of 1.3 mm
- Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop
- ESD capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

DESIGN SUPPORT TOOLS

click logo to get started

3D Models Available

TYPICAL APPLICATIONS

General purpose, power line polarity protection, in both industry and automotive applications.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	8 A
V_{RRM}	100 V, 200 V, 400 V, 600 V
I_{FSM}	110 A
V_F at I_F = 8 A (T_A = 125 °C)	0.92 V
T_J max.	175 °C
Package	SlimDPAK (TO-252AE)
Circuit configurations	Single

MECHANICAL DATA

Case: SlimDPAK (TO-252AE)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant
Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 and HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	SE80PWB	SE80PWD	SE80PWG	SE80PWJ	UNIT
Device marking code		SE80PWB	SE80PWD	SE80PWG	SE80PWJ	
Maximum repetitive peak reverse voltage	V_{RRM}	100	200	400	600	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$ (1)	8.0				A
	$I_{F(AV)}$ (2)	3.5				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	110				A
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +175				°C

Notes
(1) With infinite heatsink
(2) Free air, mounted on recommended copper pad area

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Maximum Instantaneous forward voltage	I_F = 4.0 A	T_A = 25 °C	V_F (1)	0.93	-	V
	I_F = 8.0 A			1.10	1.12	
	I_F = 4.0 A	T_A = 125 °C		0.82	-	
	I_F = 8.0 A			0.92	1.07	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	-	15	μA
		T_A = 125 °C		19	150	
Typical reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	2400	-	ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	58	-	pF

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**SE80PWB**	**SE80PWD**	**SE80PWG**	**SE80PWJ**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)(2)	60				°C/W
	$R_{\theta JM}$ (3)	2.2				

Notes

(1) The heat generated must be less than thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$

(2) Free air, mounted on recommended copper pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

(3) Mounted on infinite heat sink; thermal resistance $R_{\theta JM}$ - junction-to-mount

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS (T_A = 25 °C unless otherwise noted)					
STANDARD	**TEST TYPE**	**TEST CONDITIONS**	**SYMBOL**	**CLASS**	**VALUE**
AEC-Q101-001	Human body model (contact mode)	C = 100 pF, R = 1.5 kΩ	V_C	H3B	> 8 kV

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SE80PWJ-M3/I	0.20	I	4500	13" diameter plastic tape and reel
SE80PWJHM3/I (1)	0.20	I	4500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

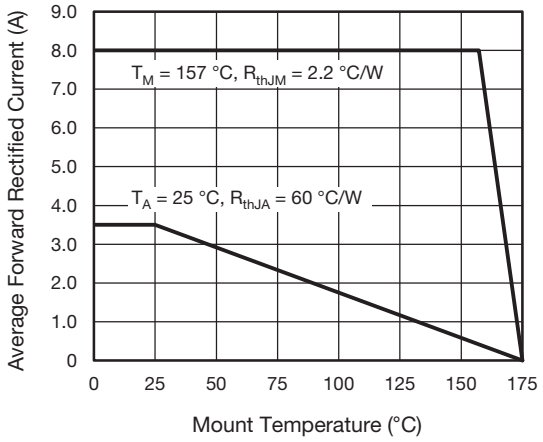

Fig. 1 - Maximum Forward Current Derating Curve

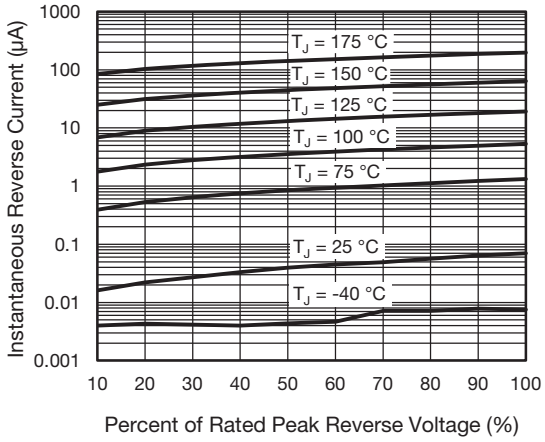

Fig. 4 - Typical Reverse Leakage Characteristics

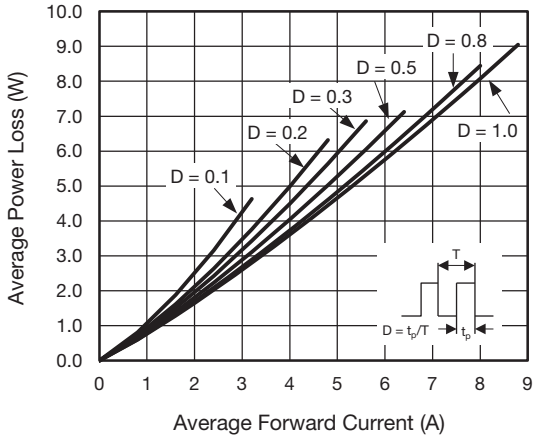

Fig. 2 - Forward Power Loss Characteristics

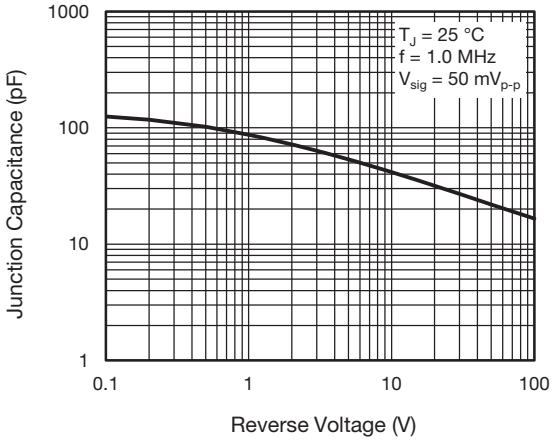

Fig. 5 - Typical Junction Capacitance

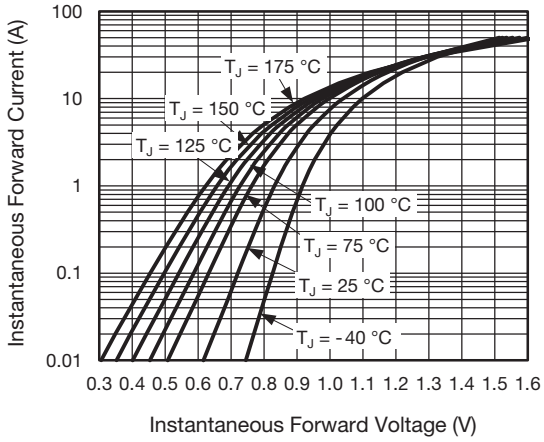

Fig. 3 - Typical Instantaneous Forward Characteristics

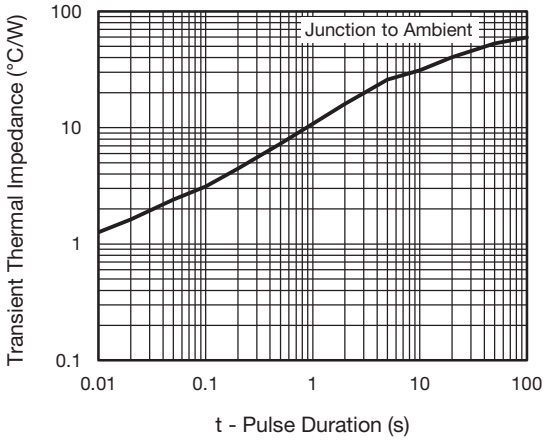

Fig. 6 - Typical Transient Thermal Impedance

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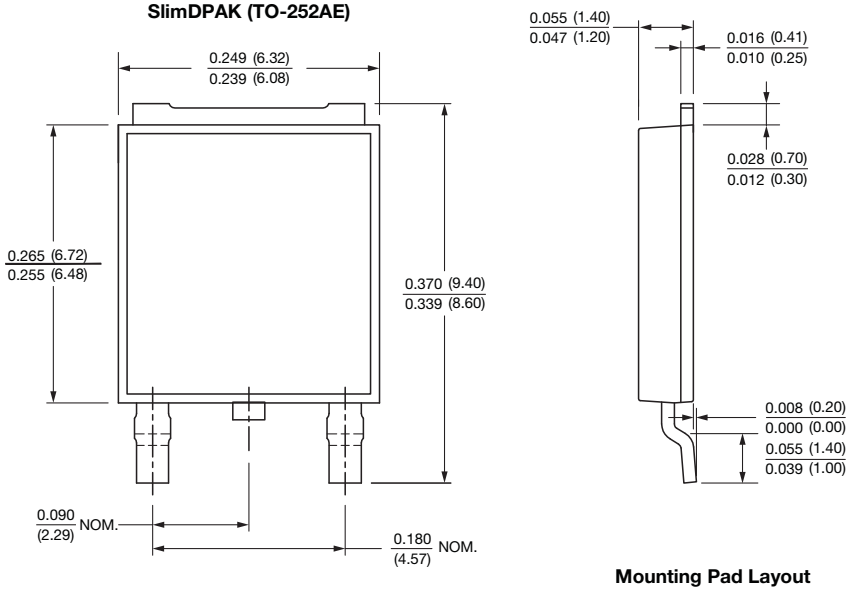
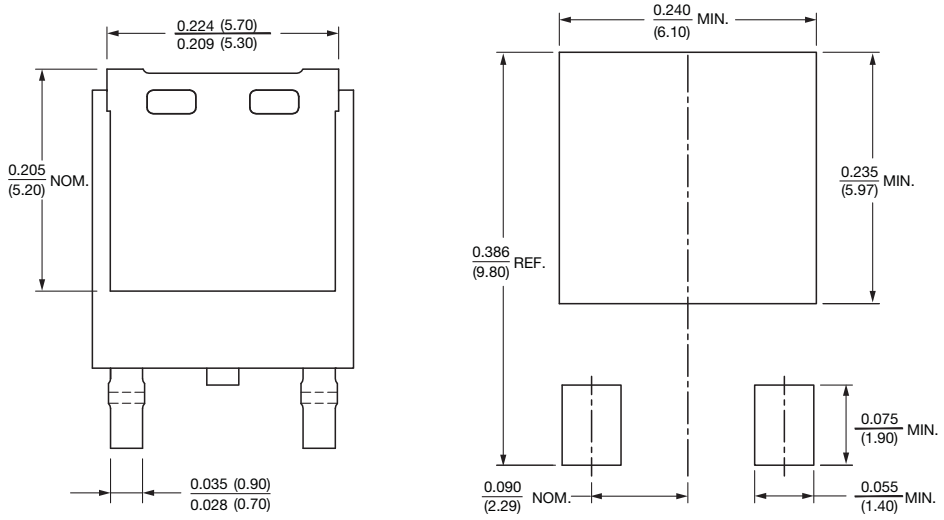
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimDPAK (TO-252AE)



Mounting Pad Layout



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