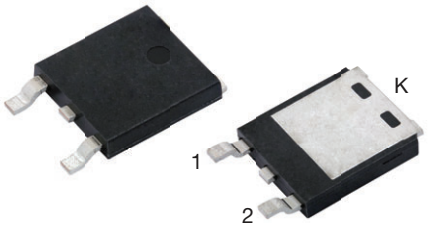
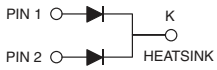
SE40PWBC, SE40PWDC, SE40PWGC, SE40PWJC

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

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models

TYPICAL APPLICATIONS

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

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 2 A
V_{RRM}	100 V, 200 V, 400 V, 600 V
I_{FSM}	36 A
V_F at I_F = 2 A (T_A = 125 °C)	0.92 V
T_J max.	175 °C
Package	SlimDPAK (TO-252AE)
Circuit configuration	Common cathode

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

PARAMETER		SYMBOL	SE40PWBC	SE40PWDC	SE40PWGC	SE40PWJC	UNIT
Device marking code			SE40PWBC	SE40PWDC	SE40PWGC	SE40PWJC	
Maximum repetitive peak reverse voltage		V_{RRM}	100	200	400	600	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$ (1)	4				A
	per diode		2				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I_{FSM}	36				A
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +175				°C

Note

(1) With infinite heatsink

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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 = 1.0 A	T_A = 25 °C	V_F (1)	0.94	-	V
	I_F = 2.0 A			1.01	1.10	
	I_F = 1.0 A	T_A = 125 °C		0.84	-	
	I_F = 2.0 A			0.92	1.01	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	-	10	µA
		T_A = 125 °C		12	150	
Typical reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	1500	-	ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	14	-	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	SE40PWBC	SE40PWDC	SE40PWGC	SE40PWJC	UNIT
Typical thermal resistance per device	$R_{\theta JA}$ (1)(2)	63				°C/W
	$R_{\theta JM}$ (3)	2.5				

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
SE40PWJC-M3/I	0.20	I	4500	13" diameter plastic tape and reel
SE40PWJCHM3/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)

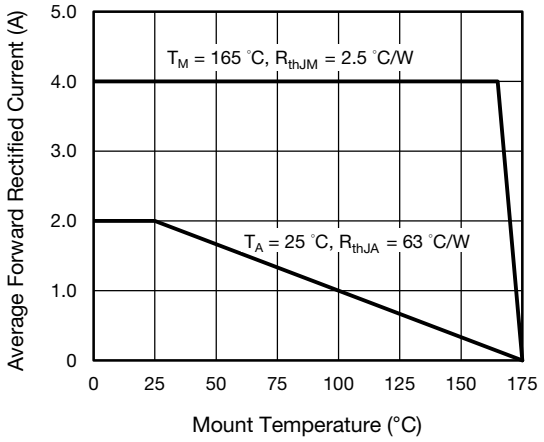

Fig. 1 - Maximum Forward Current Derating Curve

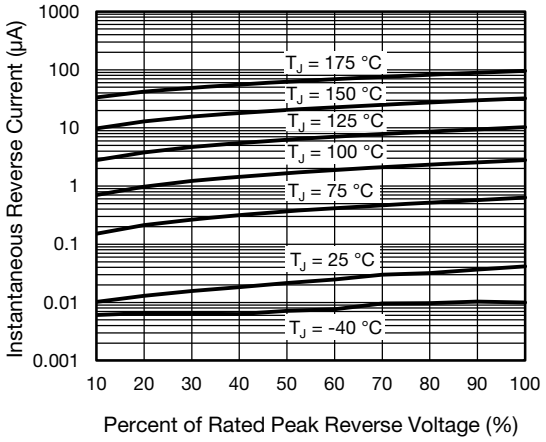

Fig. 4 - Typical Reverse Leakage Characteristics

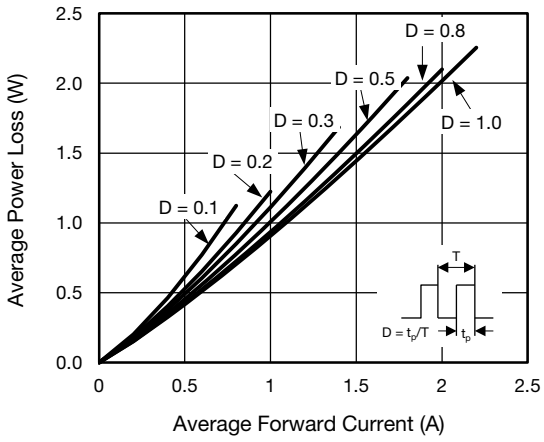

Fig. 2 - Forward Power Loss Characteristics

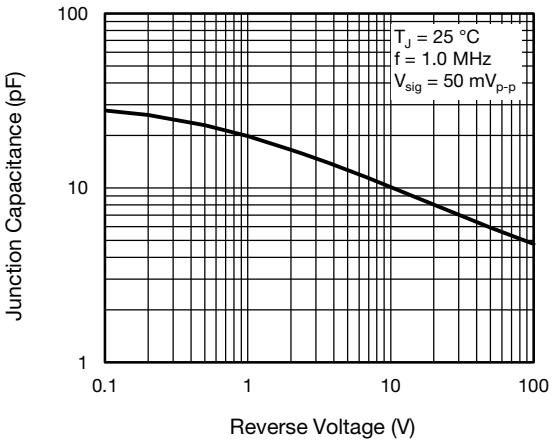

Fig. 5 - Typical Junction Capacitance

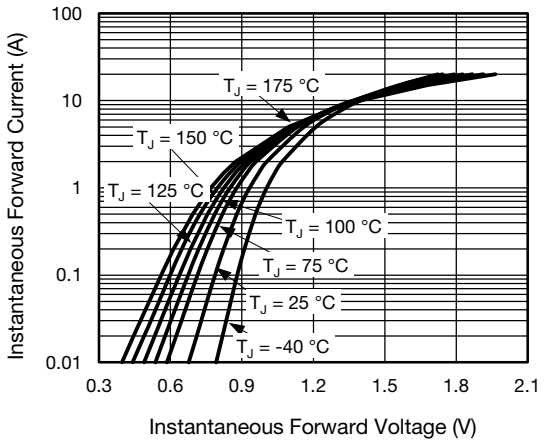

Fig. 3 - Typical Instantaneous Forward Characteristics

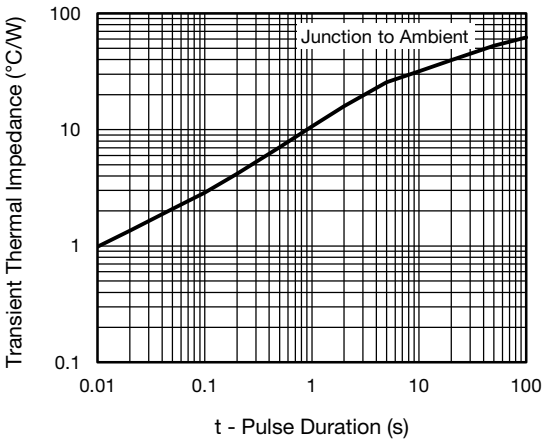

Fig. 6 - Typical Transient Thermal Impedance

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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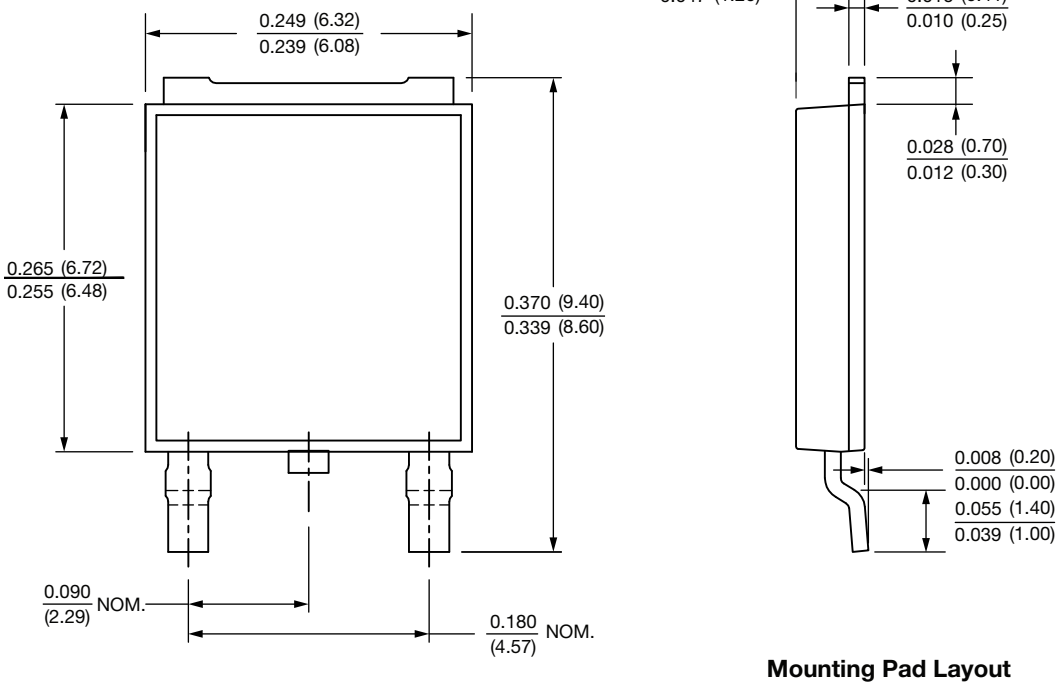
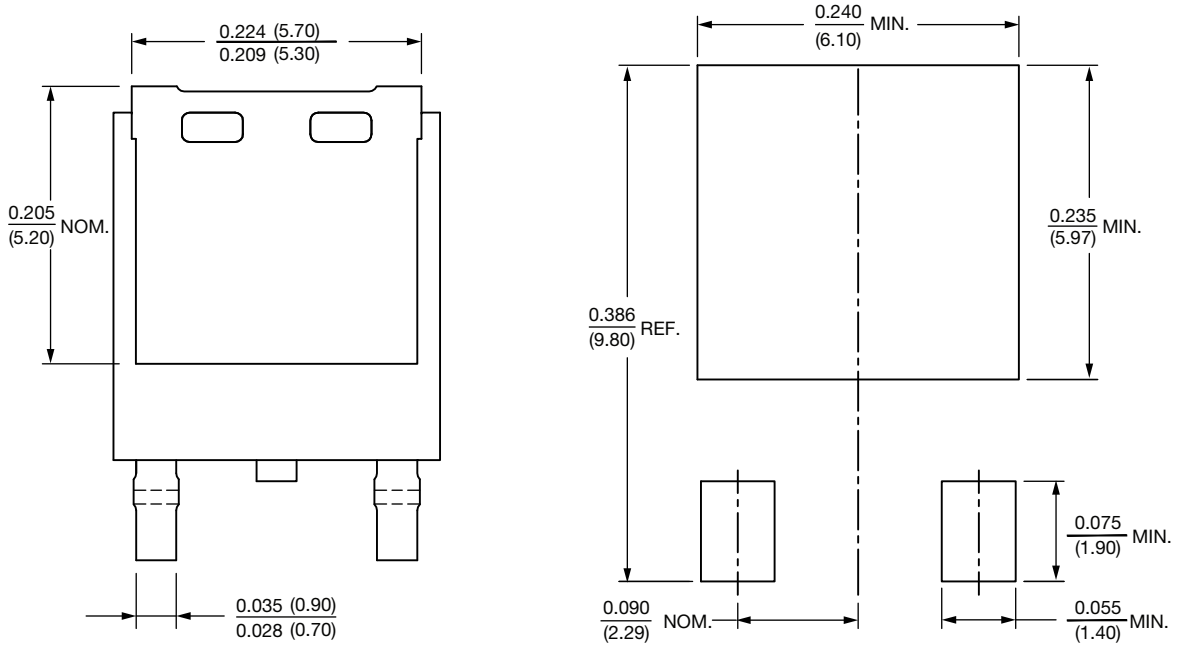


Mounting Pad Layout



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