

Surface-Mount ESD Capability Rectifier



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



LINKS TO ADDITIONAL RESOURCES



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

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

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 per diode	I _{F(AV)} ⁽¹⁾	4			A
			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

**ELECTRICAL CHARACTERISTICS** ($T_A = 25\text{ }^{\circ}\text{C}$ 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 $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	SE40PWBC	SE40PWDC	SE40PWGC	SE40PWJC	UNIT
Typical thermal resistance per device	R _{θJA} ⁽¹⁾⁽²⁾	63				°C/W
	R _{θJM} ⁽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**($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body model (contact mode)	$C = 100\text{ pF}$, $R = 1.5\text{ k}\Omega$	V_C	H3B	$> 8\text{ kV}$

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



RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)

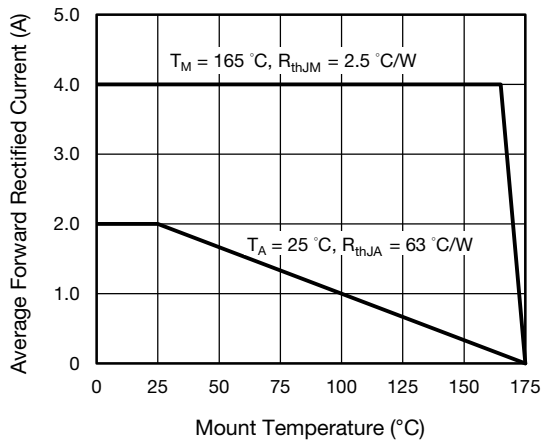


Fig. 1 - Maximum Forward Current Derating Curve

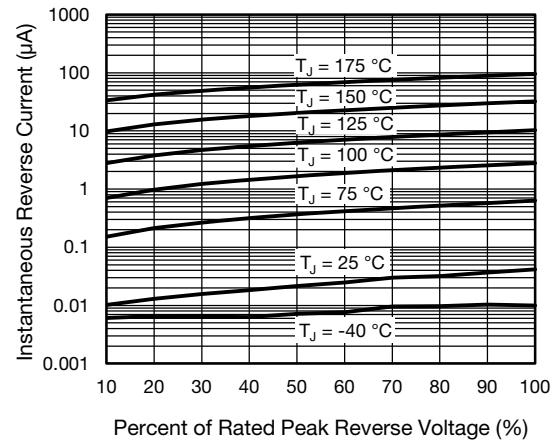


Fig. 4 - Typical Reverse Leakage Characteristics

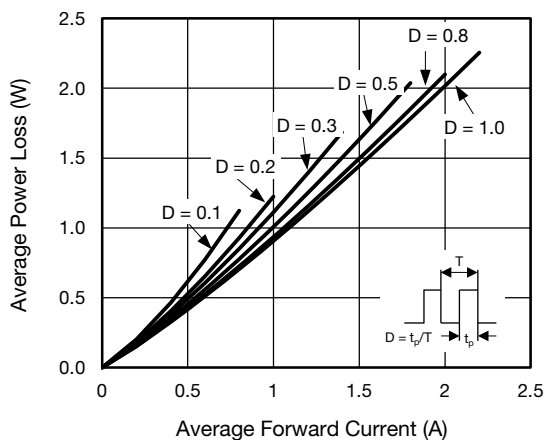


Fig. 2 - Forward Power Loss Characteristics

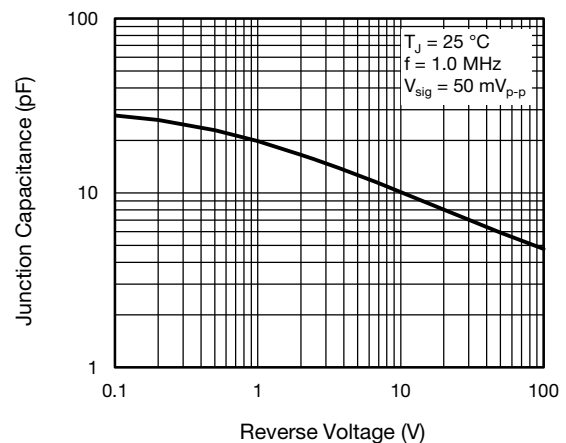


Fig. 5 - Typical Junction Capacitance

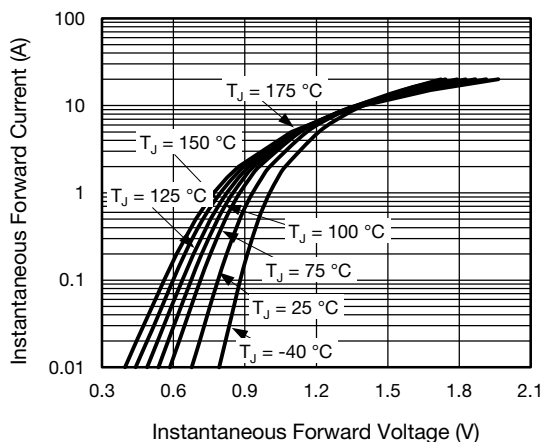


Fig. 3 - Typical Instantaneous Forward Characteristics

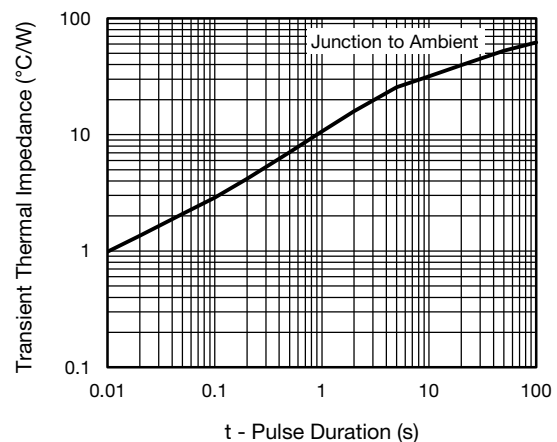
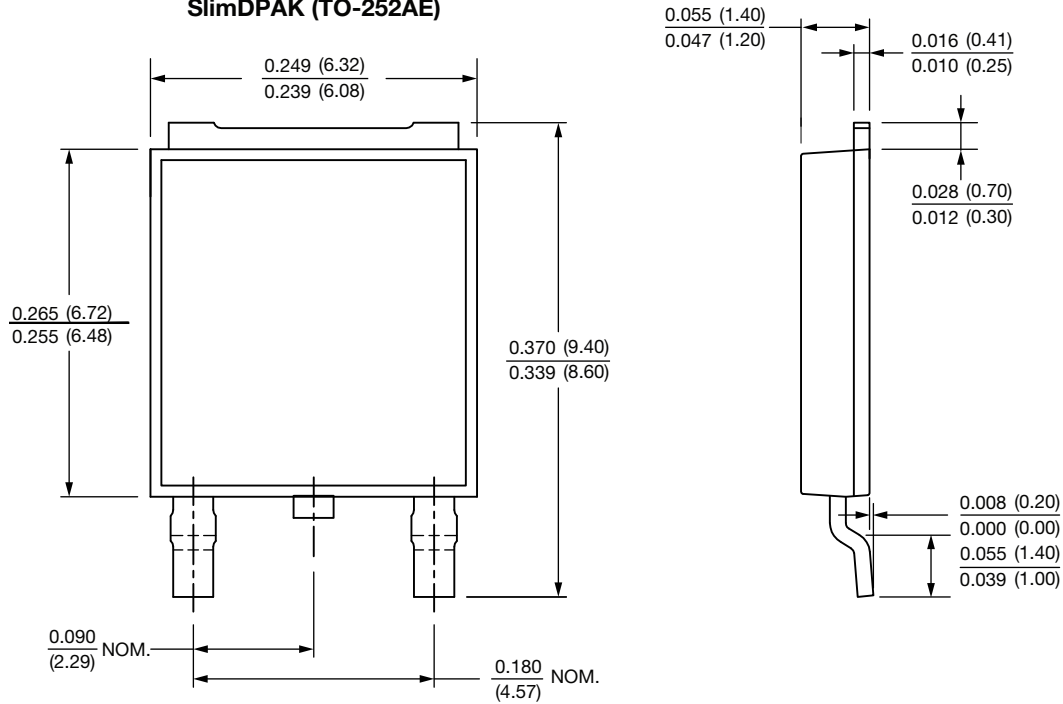


Fig. 6 - Typical Transient Thermal Impedance

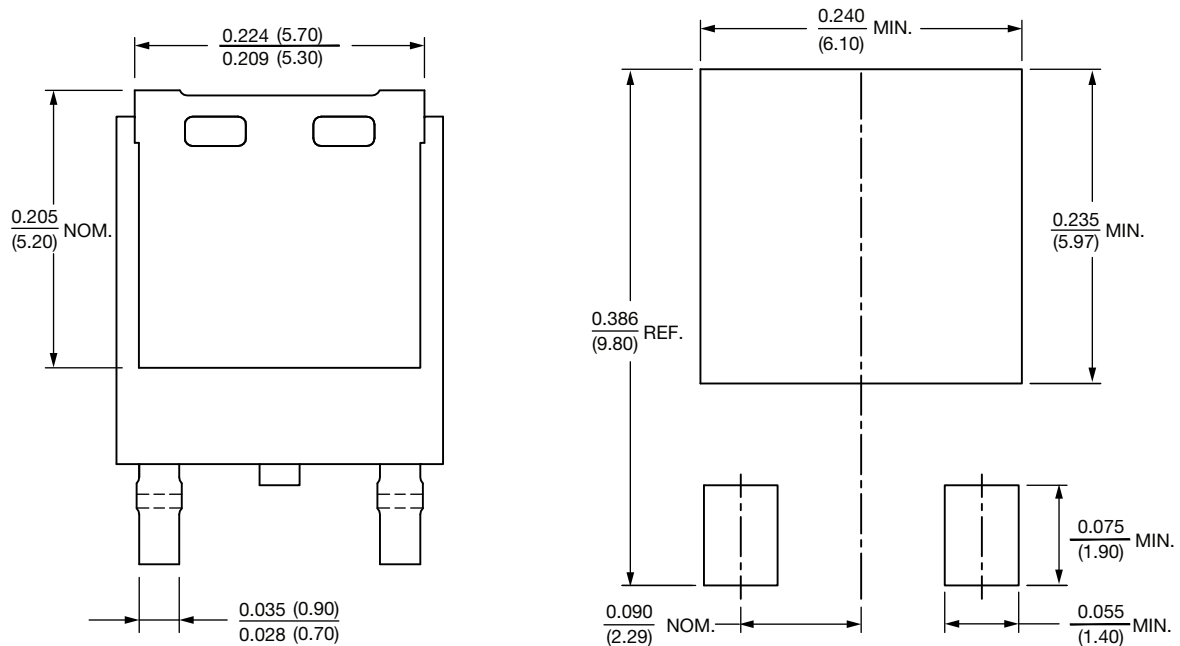


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimDPAK (TO-252AE)



Mounting Pad Layout





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