Surface-Mount ESD Capability Rectifier

FEATURES

- Creepage and clearance distance 2.8 mm minimum
- 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

Ultra Librarian EDA / CAD

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
V_{RRM}	400 V, 600 V
I_{FSM}	125 A
V_F at I_F = 10 A (T_J = 125 °C)	0.93 V
T_J max.	175 °C
Package	SlimDPAK 2L
Circuit configurations	Single

MECHANICAL DATA

Case: SlimDPAK 2L

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

Polarity: as marked

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

PARAMETER	SYMBOL	SE100PWTG	SE100PWTJ	UNIT
Device marking code		SE100PWTG	SE100PWTJ	
Maximum repetitive peak reverse voltage	V_{RRM}	400	600	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$ (1)	10		A
	$I_{F(AV)}$ (2)	2.7		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	125		A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175		°C

Notes

(1) With infinite heatsink

(2) Free air, mounted on recommended copper pad area

ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Maximum Instantaneous forward voltage	I_F = 5.0 A	T_J = 25 °C	V_F (1)	0.93	-	V
	I_F = 10.0 A			1.01	1.14	
	I_F = 5.0 A	T_J = 125 °C		0.82	-	
	I_F = 10.0 A			0.93	1.09	
Reverse current	Rated V_R	T_J = 25 °C	I_R (2)	-	20	µA
		T_J = 125 °C		25	150	
Typical reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	2600	-	ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	78	-	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**	**TYP.**	**MAX.**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)(2)	75	94	°C/W
	$R_{\theta JM}$ (3)	2.2	2.8	

Notes

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

(2) Thermal resistance junction to ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint

(3) Thermal resistance junction-to-mount to follow JEDEC® 51-14 transient dual interface test method (TDIM)

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**
SE100PWTJ-M3/I	0.185	I	4500	13" diameter plastic tape and reel
SE100PWTJHM3/I (1)	0.185	I	4500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

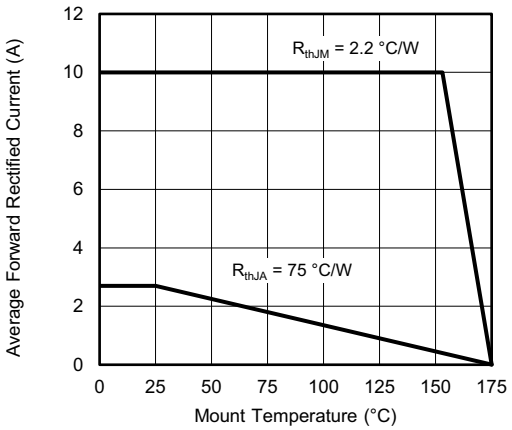


Fig. 1 - Maximum Forward Current Derating Curve

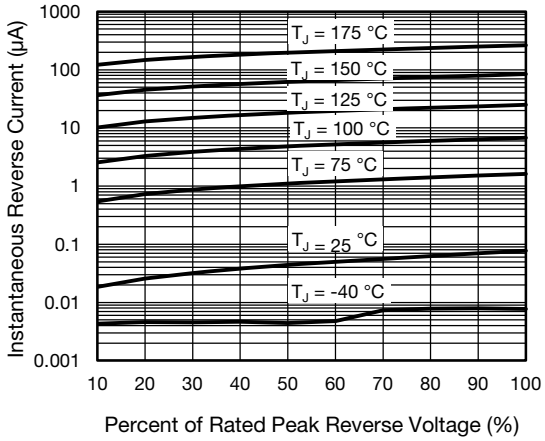


Fig. 4 - Typical Reverse Leakage Characteristics

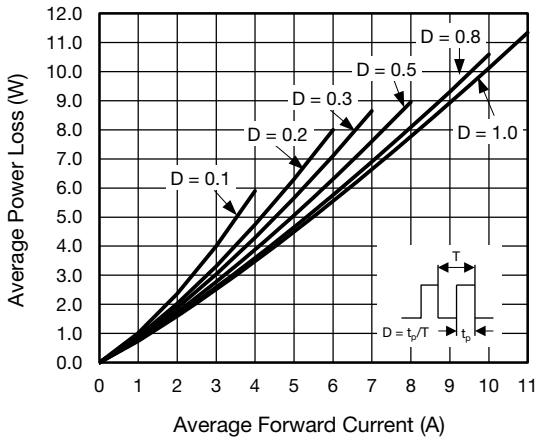


Fig. 2 - Forward Power Loss Characteristics

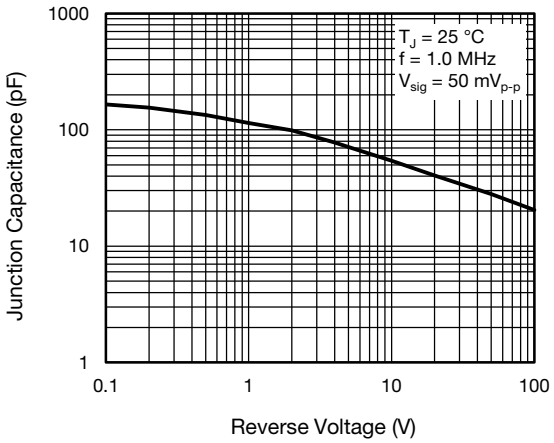


Fig. 5 - Typical Junction Capacitance

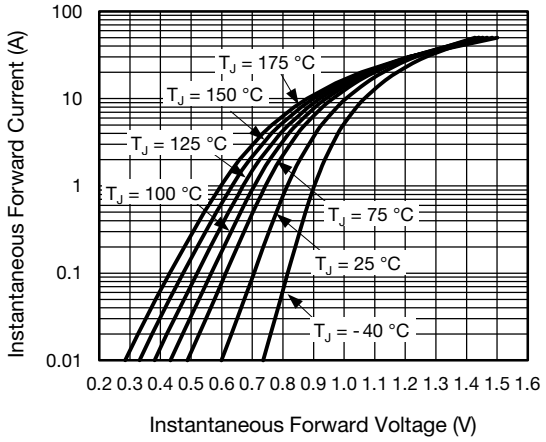


Fig. 3 - Typical Instantaneous Forward Characteristics

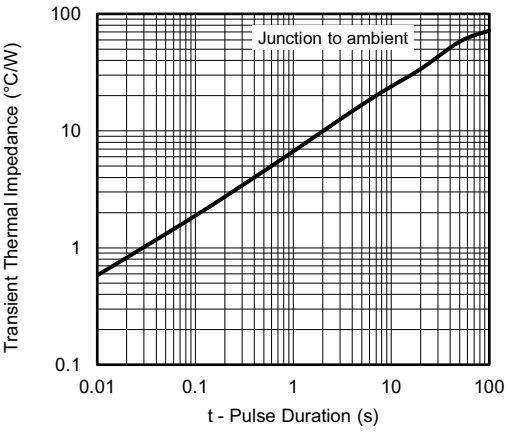
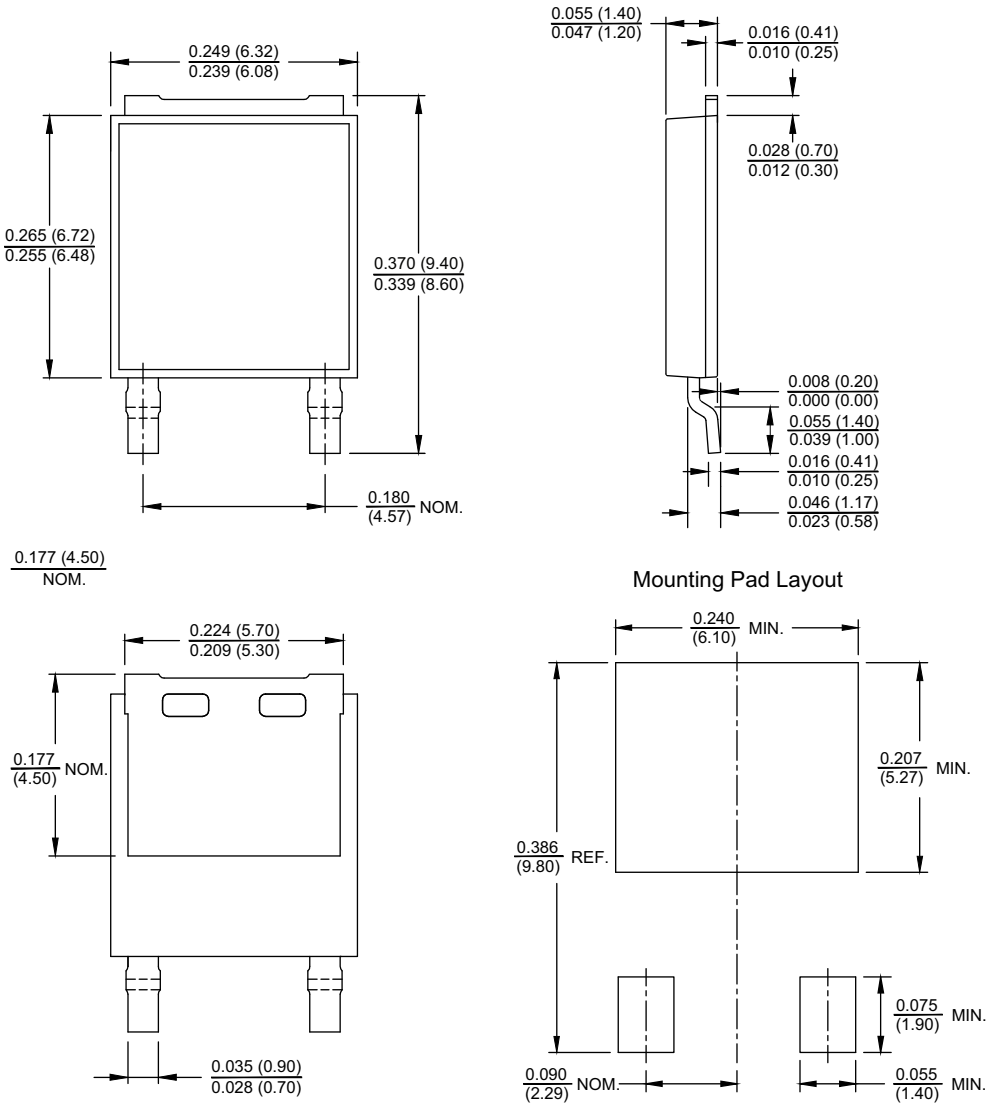


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimDPAK 2L



Note

- The suggested mounting pad layout is provided for reference only, as actual pad layouts may vary depending on application

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