

High Current Density Surface Mount Schottky Barrier Rectifiers



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- **Halogen-free**



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
V_{RRM}	30 V, 40 V
I_{FSM}	280 A
E_{AS}	20 mJ
V_F at $I_F = 10$ A	0.41 V
T_J max.	150 °C

TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, dc-to-dc converters, and polarity protection applications.

MECHANICAL DATA

Case: TO-277A (SMPC)

Molding compound meets UL 94V-0 flammability rating.

Base P/N-E3 - RoHS compliant, commercial grade

Base P/NHE3 - RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

Base P/NHM3 - halogen-free and RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	SS10P3	SS10P4	UNIT
Device marking code		S103	S104	
Maximum repetitive peak reverse voltage	V_{RRM}	30	40	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	10		A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	280		A
Non-repetitive avalanche energy at $I_{AS} = 2$ A, $T_J = 25$ °C	E_{AS}	20		mJ
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150		°C



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage ⁽¹⁾	I _F = 5 A I _F = 10 A	T _A = 25 °C	V _F	0.41 0.48	- 0.56	V
	I _F = 5 A I _F = 10 A	T _A = 125 °C		0.31 0.41	- 0.49	
Reverse current ⁽²⁾	rated V _R	T _A = 25 °C T _A = 125 °C	I _R	100 50	800 100	μA mA
Typical junction capacitance	4.0 V, 1 MHz		C _J	750	-	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	SS10P3	SS10P4	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	60		°C/W
	R _{θJL}	3		

Note:

(1) Units mounted on recommended P.C.B. 1 oz. pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS10P4-E3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10P4-E3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10P4HE3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
SS10P4HE3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel
SS10P4-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10P4-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10P4HM3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
SS10P4HM3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel

Note:

(1) High reliability/automotive grade (AEC-Q101 qualified)

RATINGS AND CHARACTERISTICS CURVES

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

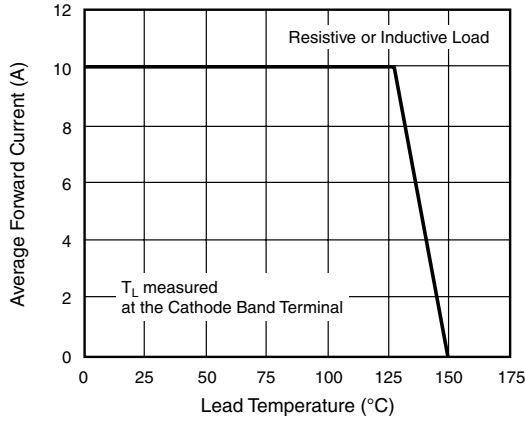


Figure 1. Maximum Forward Current Derating Curve

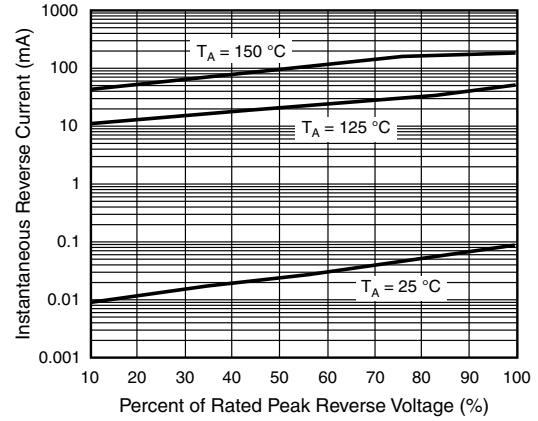


Figure 4. Typical Reverse Leakage Characteristics

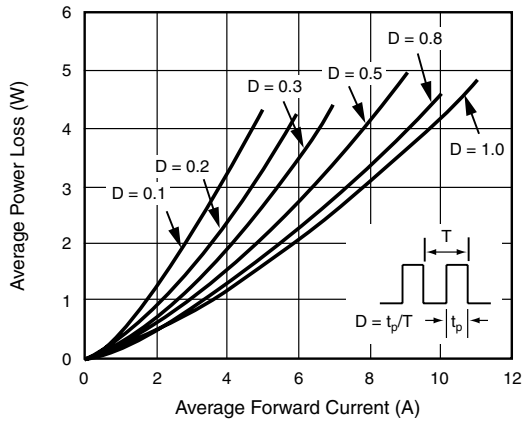


Figure 2. Forward Power Loss Characteristics

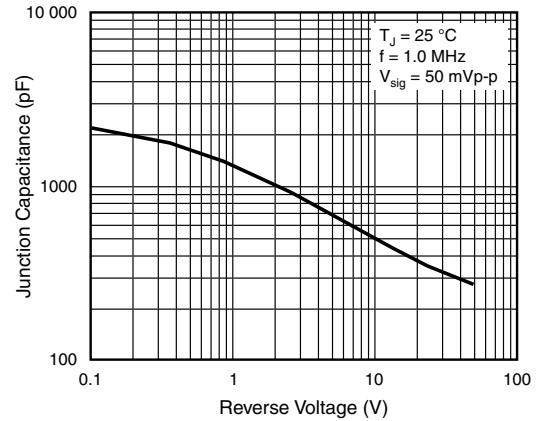


Figure 5. Typical Junction Capacitance

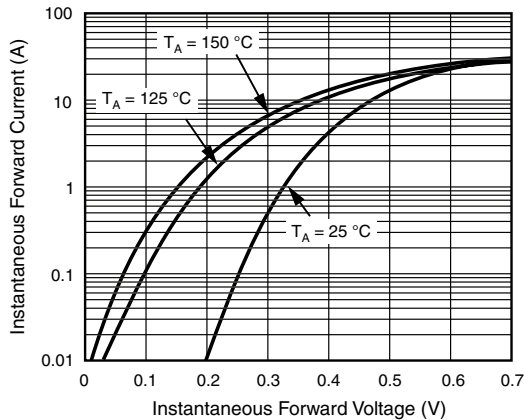


Figure 3. Typical Instantaneous Forward Characteristics

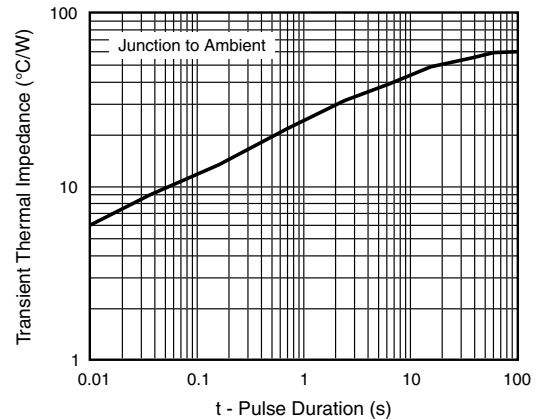
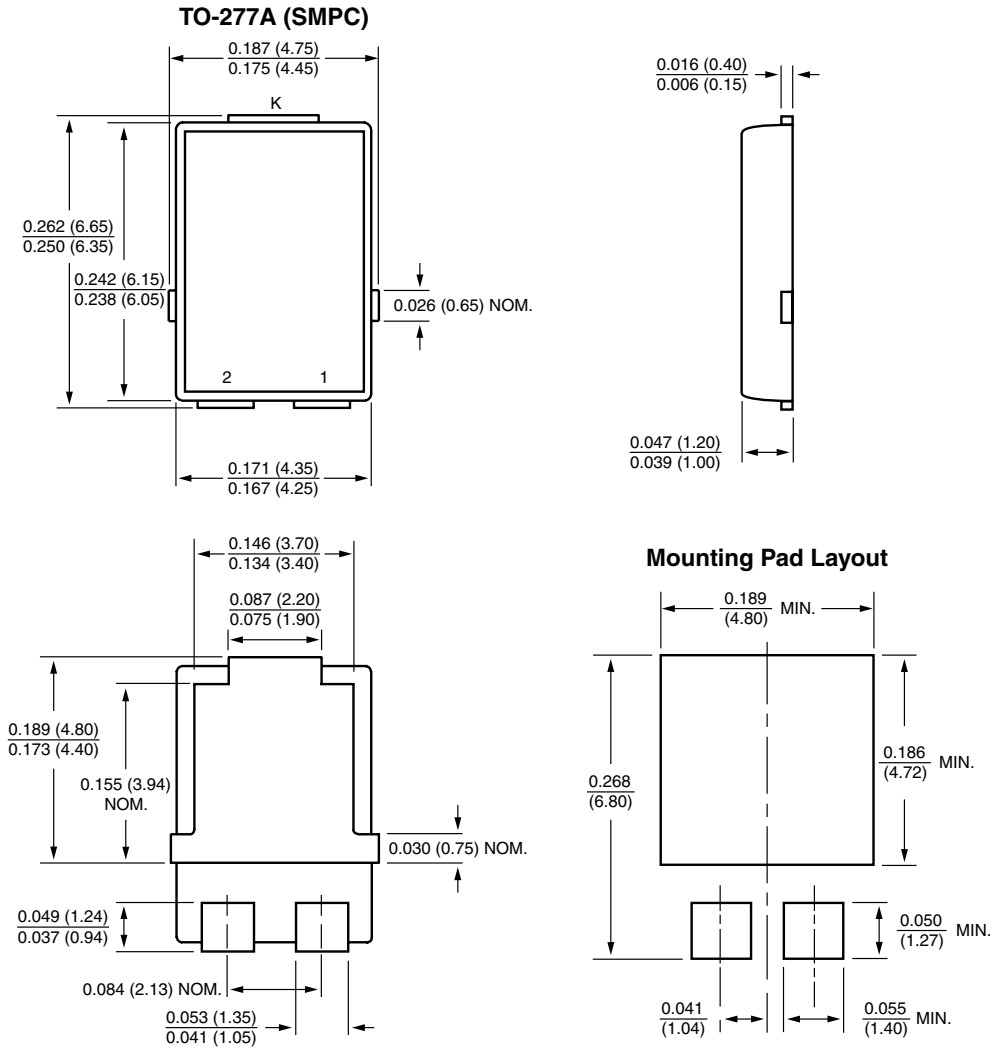


Figure 6. Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.