

# High Current Density Surface Mount Schottky Rectifier



## FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology,  $T_J = 175\text{ °C}$  maximum
- Low leakage current
- Meets MSL level 1, per J-STD-020, LF maximum peak of  $260\text{ °C}$
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- **Halogen-free**



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
$V_{RRM}$	45 V
$I_{FSM}$	200 A
$E_{AS}$	20 mJ
$V_F$ at $I_F = 10\text{ A}$	0.56 V
$I_R$	5.5 $\mu\text{A}$
$T_J$ max.	175 °C

## TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters or polarity protection application.

## 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 ( $T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	SS10PH45	UNIT
Device marking code		10H45	
Maximum repetitive peak reverse voltage	$V_{RRM}$	45	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	$I_{FSM}$	200	A
Non-repetitive avalanche energy at $I_{AS} = 2\text{ A}$ , $T_J = 25\text{ °C}$	$E_{AS}$	20	mJ
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 175	°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage <sup>(1)</sup>	I <sub>F</sub> = 5 A I <sub>F</sub> = 10 A	T <sub>A</sub> = 25 °C	V <sub>F</sub>	0.54 0.64	- 0.72	V
	I <sub>F</sub> = 5 A I <sub>F</sub> = 10 A	T <sub>A</sub> = 125 °C		0.45 0.56	- 0.64	
Reverse current <sup>(2)</sup>	rated V <sub>R</sub>	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C	I <sub>R</sub>	5.5 3.9	80 10	μA mA
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	400	-	pF

**Notes:**

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	SS10PH45	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	60	°C/W
	R <sub>θJL</sub>	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
SS10PH45-E3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH45-E3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10PH45HE3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH45HE3/87A <sup>(1)</sup>	0.10	87A	6500	13" diameter plastic tape and reel
SS10PH45-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH45-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10PH45HM3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH45HM3/87A <sup>(1)</sup>	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)

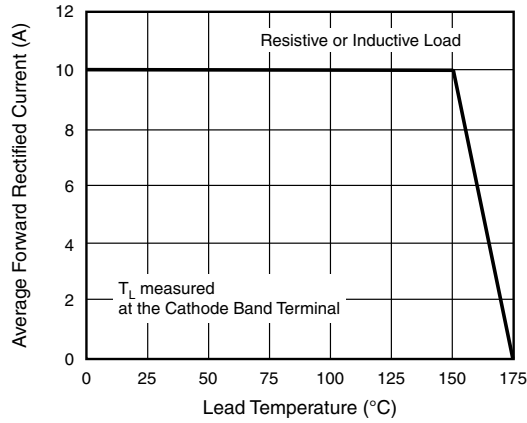


Figure 1. Maximum Forward Current Derating Curve

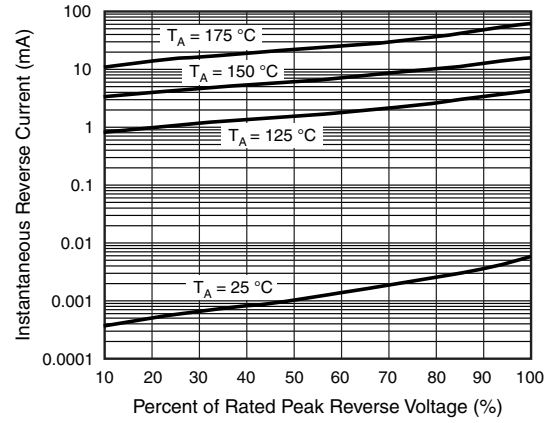


Figure 4. Typical Reverse Characteristics

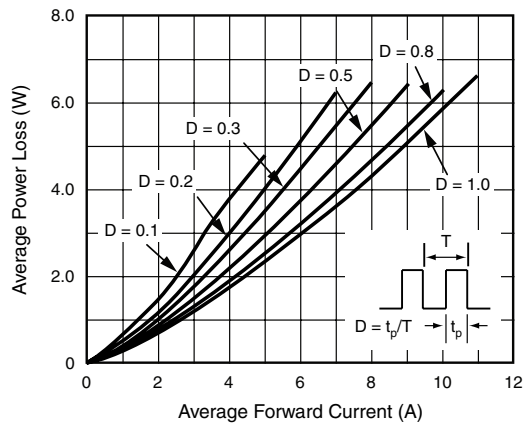


Figure 2. Forward Power Loss Characteristics

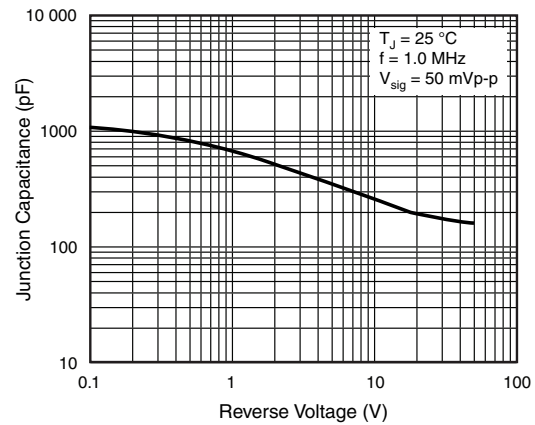


Figure 5. Typical Junction Capacitance

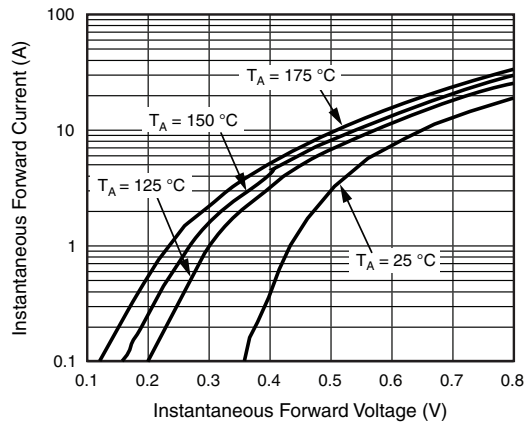


Figure 3. Typical Instantaneous Forward Characteristics

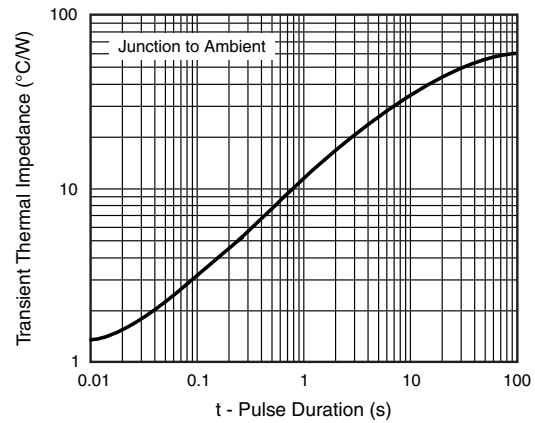
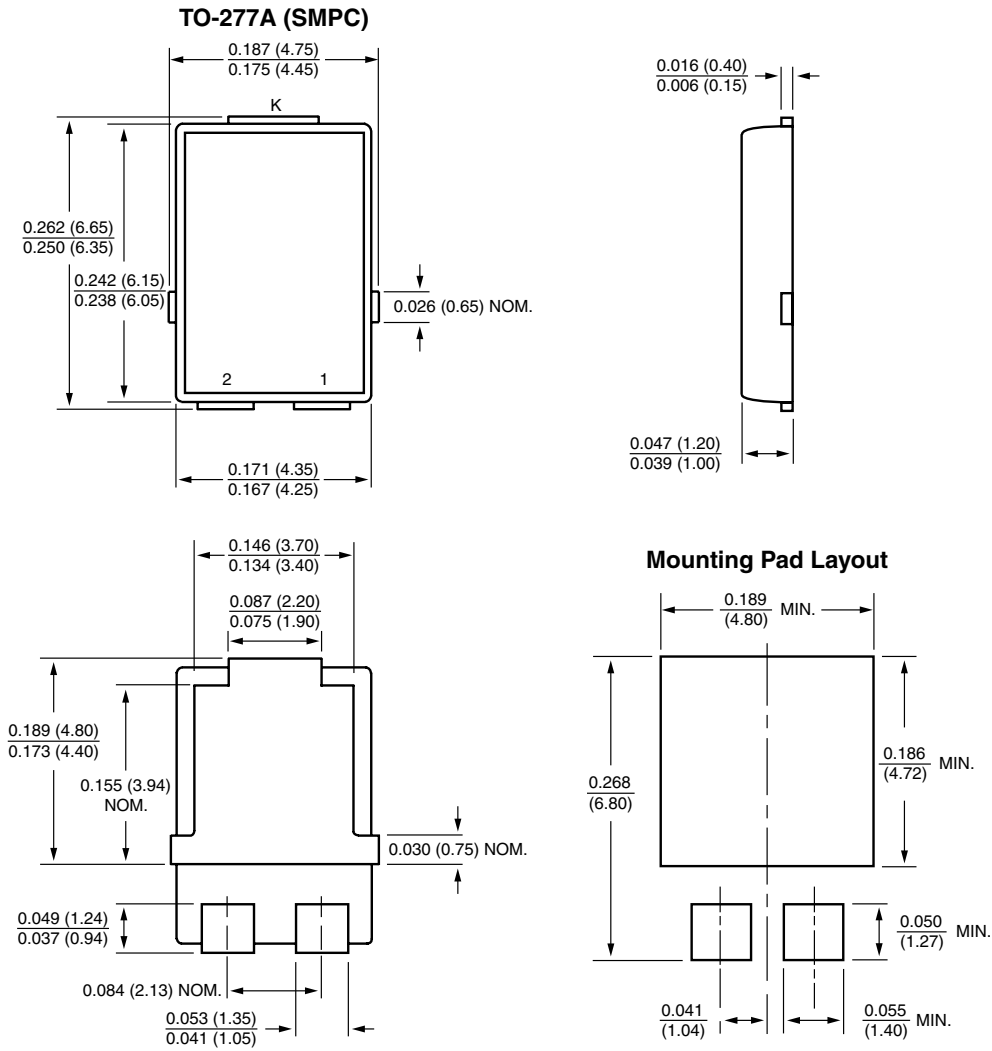


Figure 6. Typical Transient Thermal Impedance



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)



Conform to JEDEC TO-277A



## Disclaimer

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

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