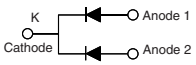
SS12P4C

Vishay General Semiconductor

High Current Density Surface Mount Schottky Barrier Rectifiers

eSMP™ Series

TO-277A (SMPC)



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 6.0 A
V_{RRM}	40 V
I_{FSM}	150 A
E_{AS}	20 mJ
V_F at I_F = 1.0 A	0.24 V
T_J max.	125 °C

TYPICAL APPLICATIONS

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

FEATURES

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- 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
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**

MECHANICAL DATA

Case: TO-277A (SMPC)

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHM3 - halogen-free and RoHS compliant, automotive grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

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

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

PARAMETER		SYMBOL	SS12P4C	UNIT
Device marking code			S124C	
Maximum repetitive peak reverse voltage		V_{RRM}	40	V
Maximum average forward rectified current (fig. 1) (1)	total device per diode	$I_{F(AV)}$	12 6.0	A
Maximum average forward rectified current (2)	total device	$I_{F(AV)}$	3.5	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	150	A
Non-repetitive avalanche energy at T_J = 25 °C, L = 60 mH per diode		E_{AS}	20	mJ
Peak repetitive reverse current at t_p = 2 µs, 1 kHz, at T_J = 25 °C per diode		I_{RRM}	1.0	A
Operating junction and storage temperature range		T_J, T_{STG}	- 55 to + 125	°C

Notes

(1) Mounted on 30 mm x 30 mm Al P.C.B. with 50 mm x 25 mm x 100 mm fin heat sink

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

For technical questions within your region, please contact one of the following:
DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

SS12P4C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode (1)	I_F = 1 A I_F = 3 A I_F = 6 A	T_A = 25 °C	V_F	0.34 0.40 0.46	- - 0.52	V
	I_F = 1 A I_F = 3 A I_F = 6 A	T_A = 100 °C		0.24 0.31 0.40	- - 0.45	
Reverse current per diode per diode (2)	Rated V_R	T_A = 25 °C T_A = 100 °C	I_R	129 11.9	500 25	µA mA
Typical junction capacitance per diode	4.0 V, 1 MHz		C_J	400	-	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	SS12P4C	UNIT
Typical thermal resistance per device	$R_{\theta JA}$ (1) $R_{\theta JM}$ (2)	100 3	°C/W

Notes

(1) Free air, mounted on recommended copper pad area. Thermal resistance $R_{\theta JA}$ - junction to ambient.

(2) Mounted on 30 mm x 30 mm Al P.C.B. with 50 mm x 25 mm x 100 mm fin heat sink. Thermal resistance $R_{\theta JM}$ - junction to mount.

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS12P4C-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS12P4C-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS12P4CHM3/86A (1)	0.10	86A	1500	7" diameter plastic tape and reel
SS12P4CHM3/87A (1)	0.10	87A	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

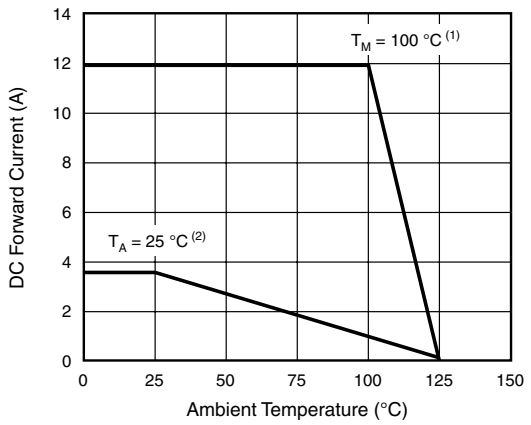

Figure 1. Maximum Forward Current Derating Curve

Notes

(1) Mounted on 30 mm x 30 mm Al P.C.B. with 50 mm x 25 mm x 100 mm fin heat sink, T_M measured at the terminal of cathode band ($R_{\theta JM}$ = 3 °C/W)

(2) Free air, mounted on recommended copper pad area ($R_{\theta JA}$ = 100 °C/W)

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Document Number: 89141
Revision: 24-Nov-09

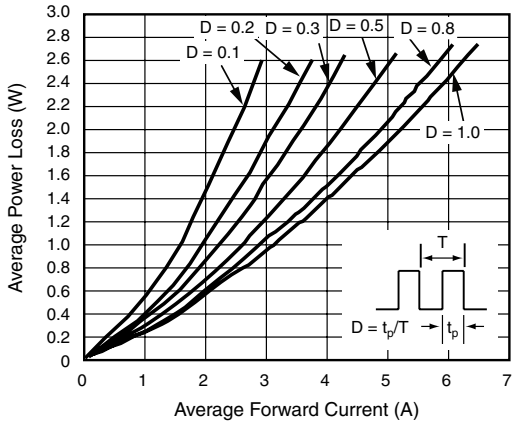


Figure 2. Forward Power Loss Characteristics Per Diode

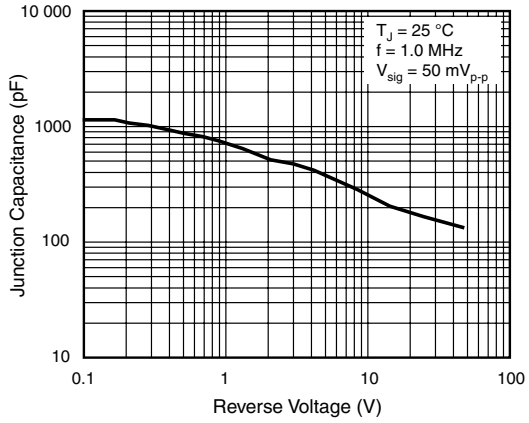


Figure 5. Typical Junction Capacitance Per Diode

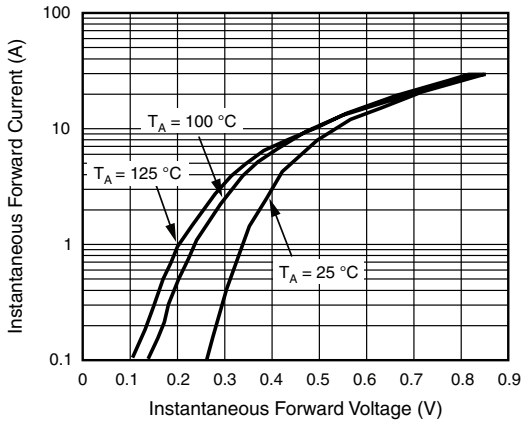


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

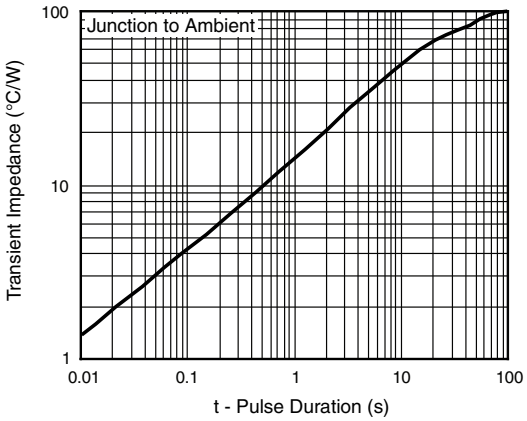


Figure 6. Typical Transient Thermal Impedance Per Device

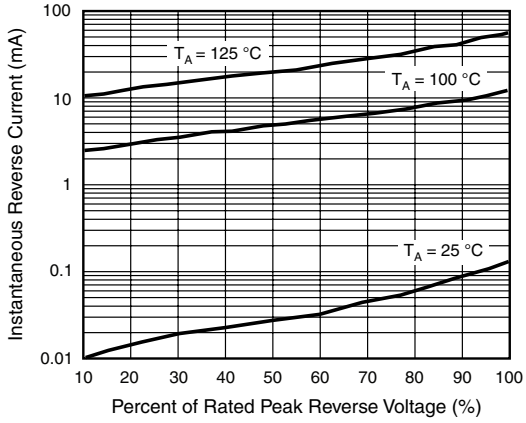
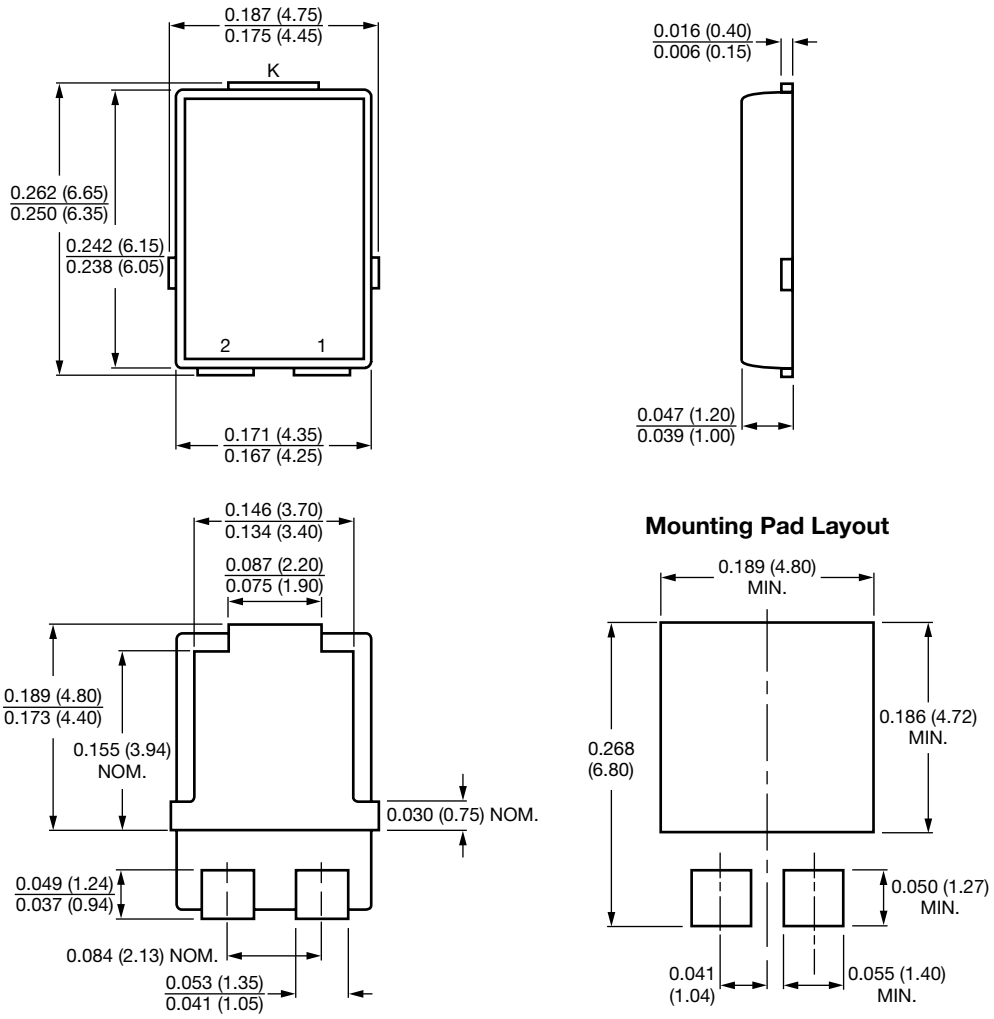


Figure 4. Typical Reverse Leakage Characteristics Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-277A (SMPC)



Mounting Pad Layout

Conform to JEDEC TO-277A

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