

## High Current Density Surface Mount Schottky Rectifiers

### eSMP® Series



DO-220AA (SMP)

AUTOMOTIVE  
GRADE  
Available



RoHS  
COMPLIANT  
HALOGEN  
FREE

### FEATURES

- Very low profile - typical height of 1.0 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:** DO-220AA (SMP)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

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

**Polarity:** Color band denotes the cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
$V_{RRM}$	40 V
$I_{FSM}$	50 A
$E_{AS}$	11.25 mJ
$V_F$	0.50 V
$T_J \text{ max.}$	150 °C

### TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters and polarity protection applications.

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	SS3P4	UNIT
Device marking code		34	
Maximum repetitive peak reverse voltage	$V_{RRM}$	40	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	3.0	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	50	A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$ , $I_{AS} = 1.5\text{ A}$ , $L = 10\text{ mH}$	$E_{AS}$	11.25	mJ
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000	V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150	°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage	I <sub>F</sub> = 3 A	T <sub>J</sub> = 25 °C	0.55	0.60	V
		T <sub>J</sub> = 125 °C	0.50	0.55	
Maximum reverse current at rated V <sub>R</sub>		T <sub>J</sub> = 25 °C	-	150	μA
		T <sub>J</sub> = 125 °C	7.5	50	mA
Typical junction capacitance	4.0 V, 1 MHz	C <sub>J</sub>	130		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 specified)			
PARAMETER	SYMBOL	SS3P4	UNIT
Typical thermal resistance (1)	R <sub>θJA</sub> (1)	85	°C/W
	R <sub>θJL</sub> (1)	15	
	R <sub>θJC</sub> (1)	20	

**Note**

- (1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 5.0 mm x 5.0 mm copper pad areas. R<sub>θJL</sub> is measured at the terminal of cathode band. R<sub>θJC</sub> is measured at the top center of the body

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS3P4-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SS3P4-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
SS3P4HM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel
SS3P4HM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel

**Note**

- (1) Automotive grade

**RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

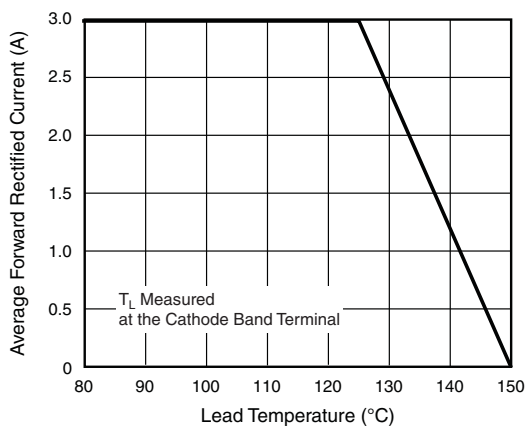


Fig. 1 - Forward Current Derating Curve

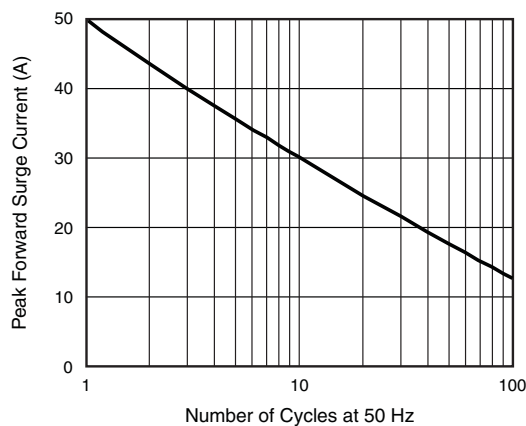


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

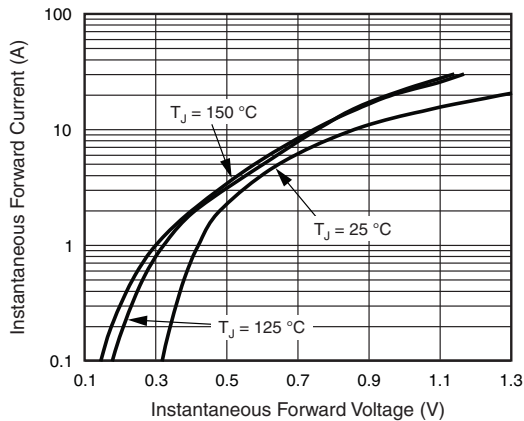


Fig. 3 - Typical Instantaneous Forward Characteristics

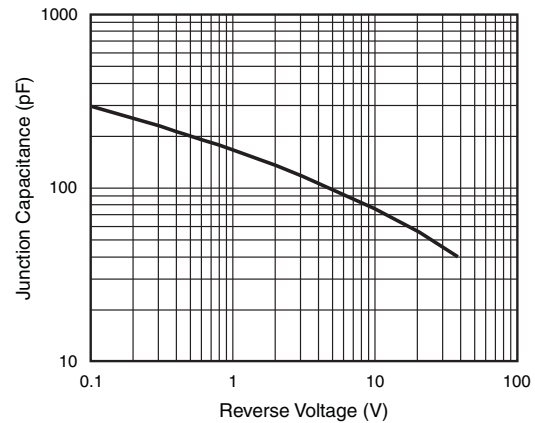


Fig. 5 - Typical Junction Capacitance

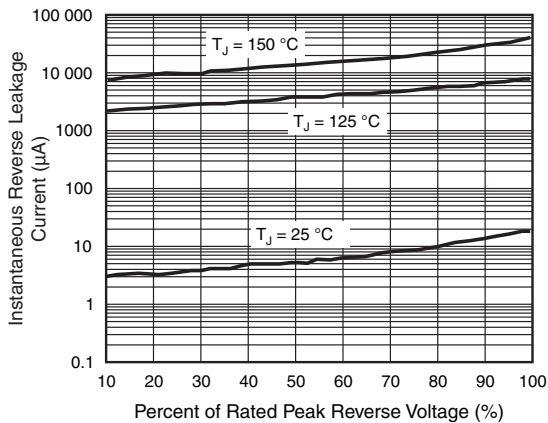


Fig. 4 - Typical Reverse Leakage Characteristics

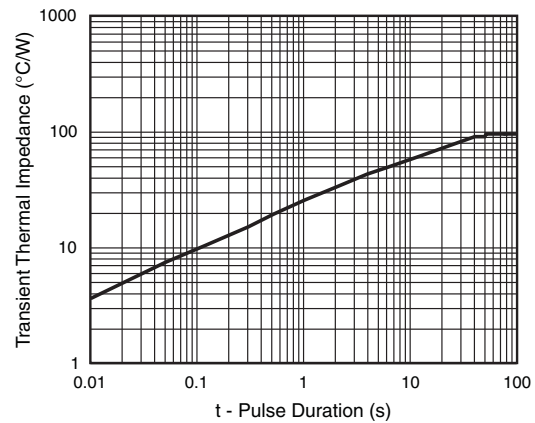
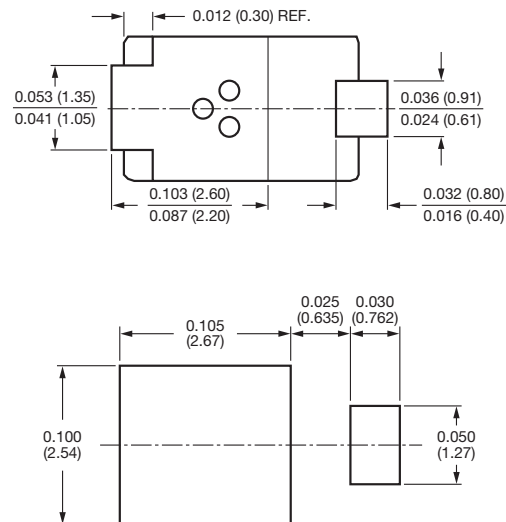
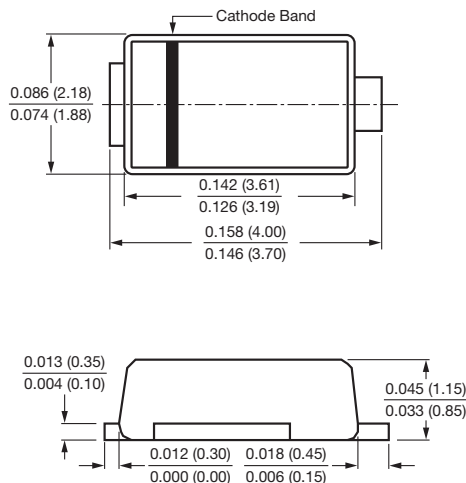


Fig. 6 - Typical Transient Thermal Impedance

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

**DO-220AA (SMP)**





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