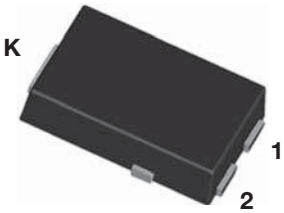
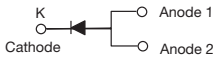
High Current Density Standard Avalanche Surface Mount Rectifiers

eSMP® Series



TO-277A (SMPC)



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Glass passivated pallet chip junction
- Controlled avalanche characteristics
- Low leakage current
- High forward surge 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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	200 V, 400 V, 600 V, 800 V, 1000 V
I_{FSM}	70 A
E_{AS}	20 mJ
V_F at I_F = 3 A	0.90 V
T_J max.	175 °C
Package	TO-277A (SMPC)
Diode variations	Single die

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, automotive and telecommunication.

MECHANICAL DATA

Case: TO-277A (SMPC)

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 AEC-Q101 qualified

Base P/NHM3_X - halogen-free, RoHS-compliant and AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,.....)

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	AS3PD	AS3PG	AS3PJ	AS3PK	AS3PM	UNIT
Device marking code			AS3D	AS3G	AS3J	AS3K	AS3M	
Max. repetitive peak reverse voltage		V_{RRM}	200	400	600	800	1000	V
Max. DC forward current (fig. 1)		I_F (1)	3.0					A
		I_F (2)	2.1					
Peak forward surge current 10 ms single half sine-wave superimposed on rated load		I_{FSM}	70					A
Non-repetitive avalanche energy at T_J = 25 °C	I_{AS} = 2.5 A max.	E_{AS}	20					mJ
	I_{AS} = 1.0 A typical		30					
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +175					°C

Notes

(1) Mounted on 10 mm x 10 mm pad areas, 1 oz. FR4 PCB

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

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 1.5 A	T_A = 25 °C	V_F (1)	0.92	-	V
	I_F = 3.0 A			1.00	1.10	
	I_F = 1.5 A	T_A = 125 °C		0.81	-	
	I_F = 3.0 A			0.90	0.95	
Reverse current	rated V_R	T_A = 25 °C	I_R (2)	0.28	10	µA
		T_A = 125 °C		62	150	
Typical reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	1.2	-	µs
Typical junction capacitance per diode	4.0 V, 1 MHz		C_J	37	-	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**	**AS3PD**	**AS3PG**	**AS3PJ**	**AS3PK**	**AS3PM**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	80					°C/W
	$R_{\theta JM}$ (2)	5					

Notes

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

(2) Units mounted on PCB with 10 mm x 10 mm copper pad areas, 1 oz. FR4 PCB; $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
AS3PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
AS3PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
AS3PJHM3/86A (1)	0.10	86A	1500	7" diameter plastic tape and reel
AS3PJHM3/87A (1)	0.10	87A	6500	13" diameter plastic tape and reel
AS3PJHM3_A/H (1)	0.10	H	1500	7" diameter plastic tape and reel
AS3PJHM3_A/I (1)	0.10	I	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

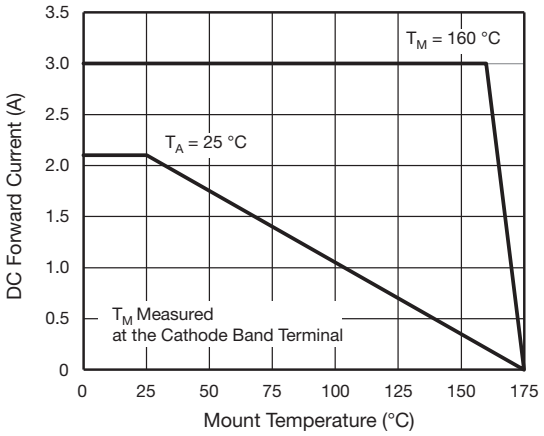


Fig. 1 - Maximum Forward Current Derating Curve

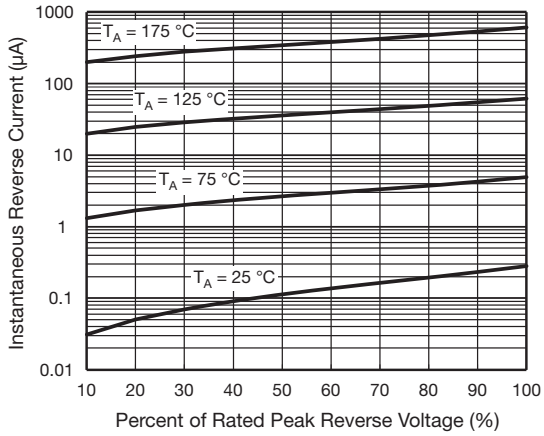


Fig. 4 - Typical Reverse Leakage Characteristics

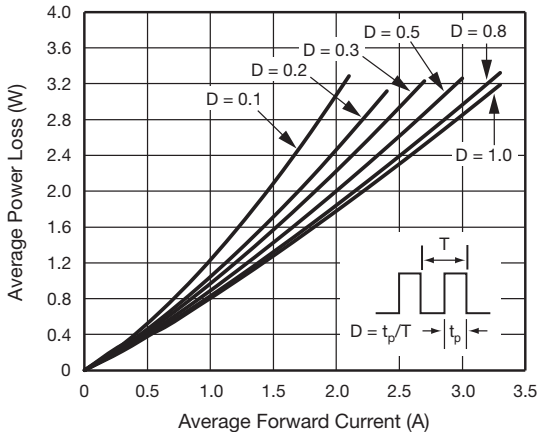


Fig. 2 - Forward Power Loss Characteristics

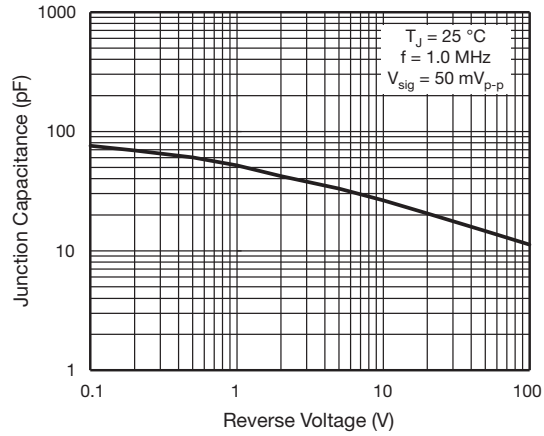


Fig. 5 - Typical Junction Capacitance

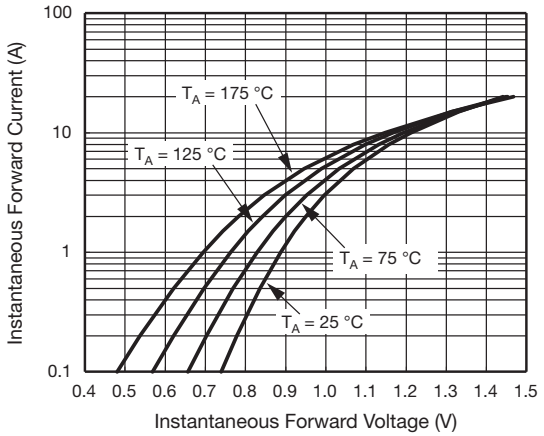


Fig. 3 - Typical Instantaneous Forward Characteristics

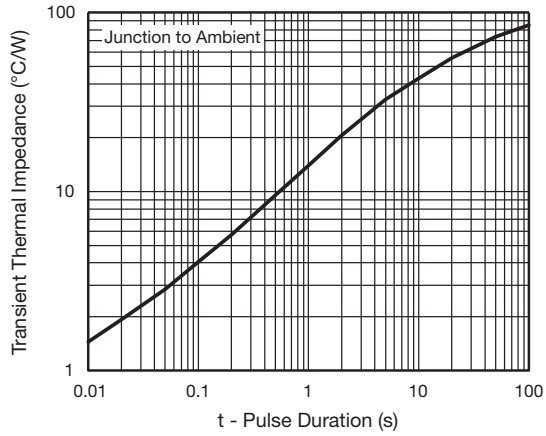
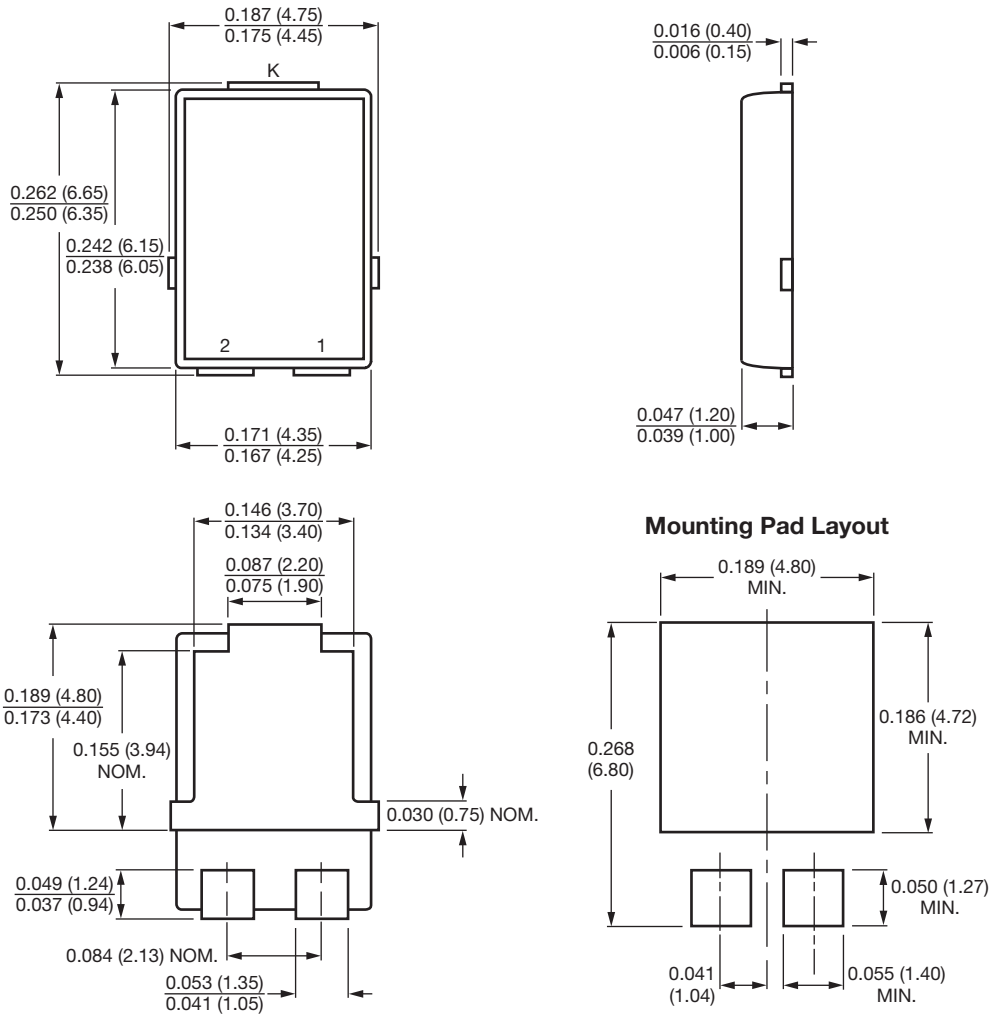


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-277A (SMPC)



Conform to JEDEC® TO-277A

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