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Vishay Semiconductor/Diodes Division
AR3PDHM3/86A

For any questions, you can email us directly:
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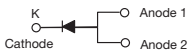
AR3PD, AR3PG, AR3PJ

Vishay General Semiconductor

Fast Switching 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 pellet chip junction
- Fast reverse recovery time
- 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
I_{FSM}	50 A
t_{rr}	140 ns
E_{AS}	20 mJ
V_F at I_F = 3.0 A	1.04 V
T_J max.	175 °C
Package	TO-277A (SMPC)
Diode variation	Single die

TYPICAL APPLICATIONS

For use in lighting, fast switching 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 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

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

PARAMETER	SYMBOL	AR3PD	AR3PG	AR3PJ	UNIT
Device marking code		AR3D	AR3G	AR3J	
Maximum repetitive peak reverse voltage	V_{RRM}	200	400	600	V
Maximum DC forward current (fig. 1)	I_F (1)	3.0			A
	I_F (2)	1.8			
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	50			A
Non-repetitive avalanche energy at T_J = 25 °C, I_{AS} = 2.5 A max.	E_{AS}	20			mJ
Non-repetitive avalanche energy at T_J = 25 °C, I_{AS} = 1.0 A typ.		30			
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175			°C

Notes
(1) Mounted on 14 mm x 14 mm pad areas, 1 oz. FR4 PCB
(2) Free air, mounted on recommended pad area

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 3.0 A	T_A = 25 °C	V_F (1)	1.24	1.6	V
		T_A = 125 °C		1.04	1.20	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	0.33	10	µA
		T_A = 125 °C		44	250	
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	122	140	ns
Typical junction capacitance per diode	Rated V_R = 4.0 V, 1 MHz		C_J	44	-	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**	**AR3PD**	**AR3PG**	**AR3PJ**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	85			°C/W
	$R_{\theta JM}$ (2)	5			

Notes

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

(2) Units mounted on PCB with 14 mm x 14 mm copper pad areas; $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
AR3PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
AR3PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
AR3PJHM3/86A (1)	0.10	86A	1500	7" diameter plastic tape and reel
AR3PJHM3/87A (1)	0.10	87A	6500	13" diameter plastic tape and reel
AR3PJHM3_A/H (1)	0.10	H	1500	7" diameter plastic tape and reel
AR3PJHM3_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)

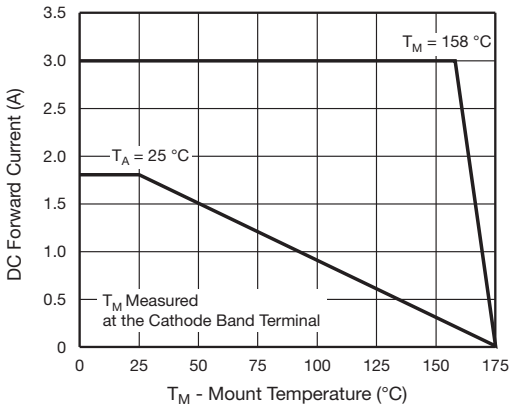


Fig. 1 - Maximum Forward Current Derating Curve

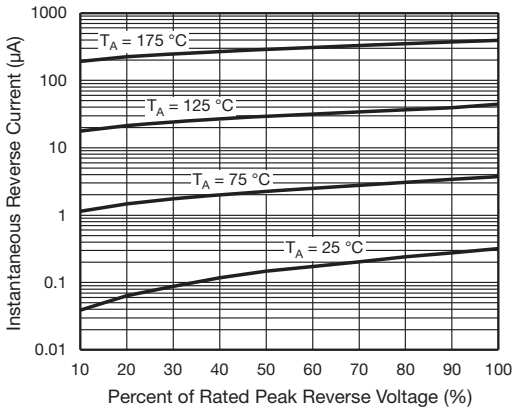


Fig. 4 - Typical Reverse Leakage Characteristics

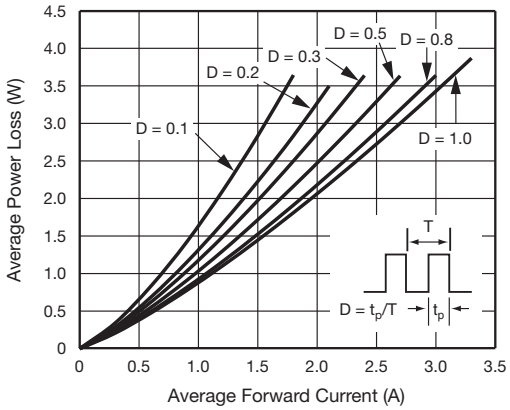


Fig. 2 - Average Power Loss Characteristics

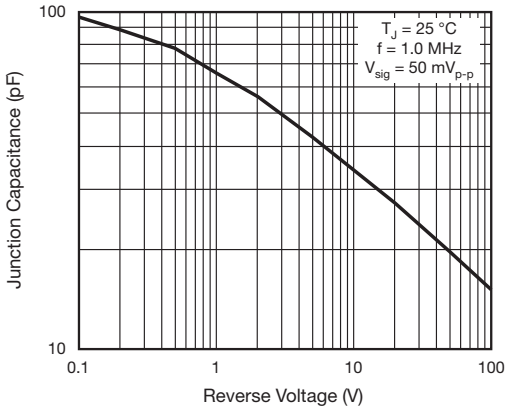


Fig. 5 - Typical Junction Capacitance

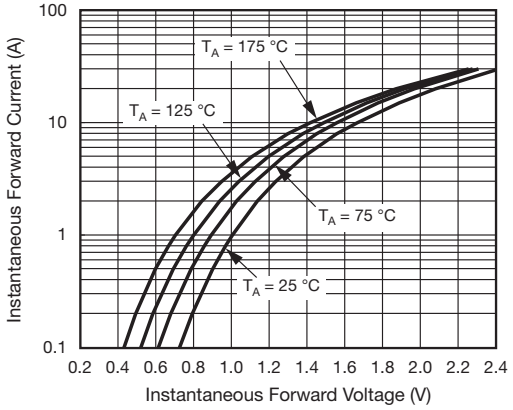


Fig. 3 - Typical Instantaneous Forward Characteristics

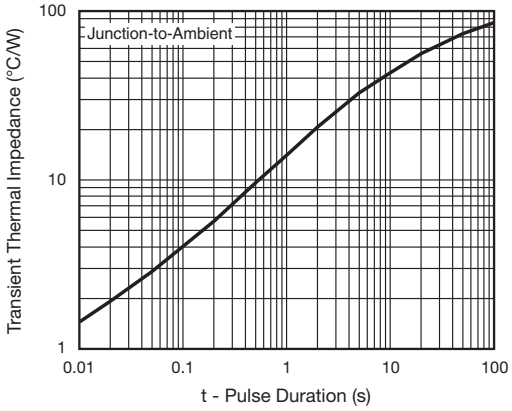
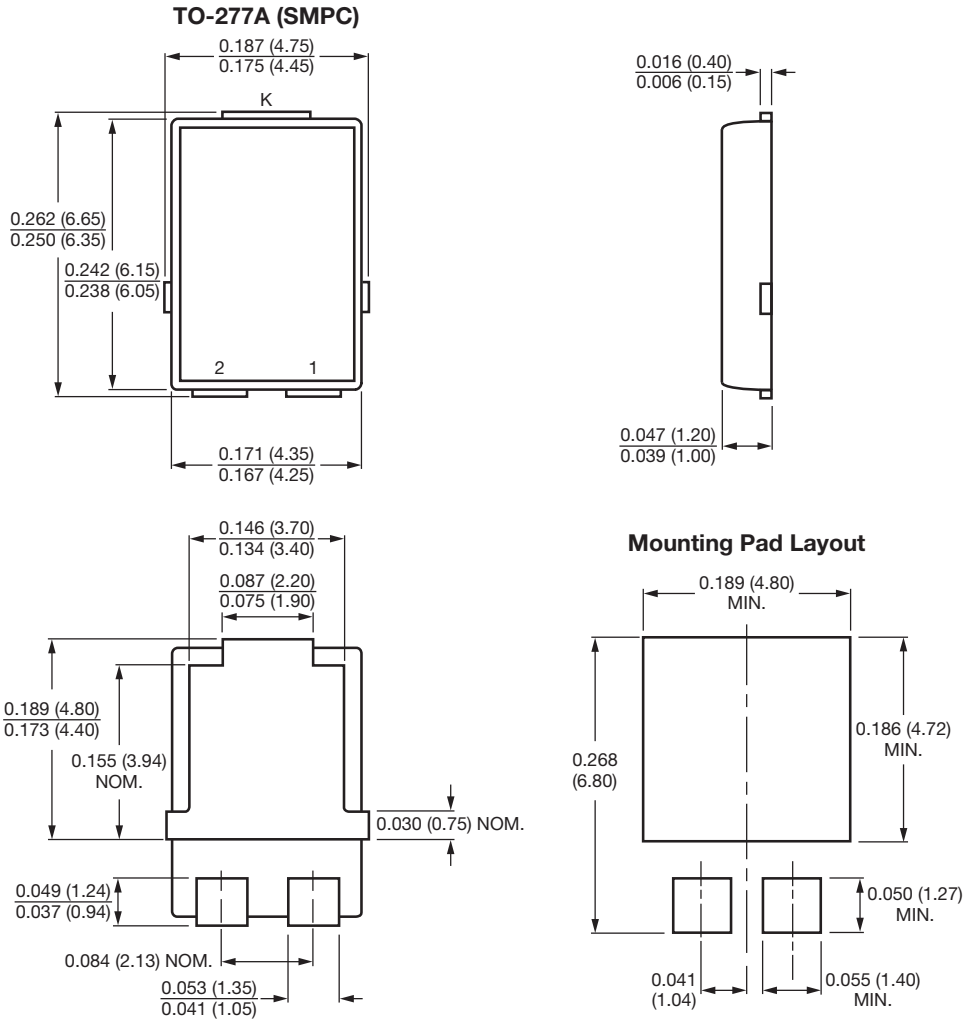


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A

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