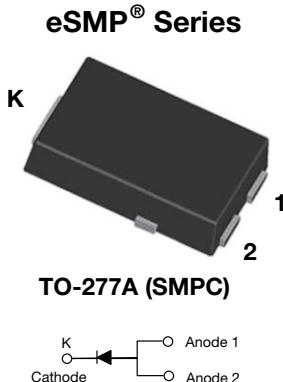


High Current Density Standard Avalanche Surface Mount Rectifiers



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Glass passivated pellet 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



RoHS
COMPLIANT
HALOGEN
FREE

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	4.0 A
V_{RRM}	200 V, 400 V, 600 V, 800 V, 1000 V
I_{FSM}	100 A
E_{AS}	20 mJ
V_F at $I_F = 4$ A	0.92 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	AS4PD	AS4PG	AS4PJ	AS4PK	AS4PM	UNIT
Device marking code		AS4D	AS4G	AS4J	AS4K	AS4M	
Max. repetitive peak reverse voltage	V_{RRM}	200	400	600	800	1000	V
Max. DC forward current (fig. 1)	I_F ⁽¹⁾	4.0					A
	I_F ⁽²⁾	2.4					
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	100					A
Non-repetitive avalanche energy at $T_J = 25$ °C	E_{AS}	20					mJ
		30					
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175					°C

Notes

⁽¹⁾ Mounted on 20 mm x 20 mm pad areas, 1 oz. FR4 PCB

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

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 2.0 \text{ A}$	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	0.962	-	V	
	$I_F = 4.0 \text{ A}$			1.044	1.10		
	$I_F = 2.0 \text{ A}$	$T_A = 125^\circ\text{C}$		0.822	-		
	$I_F = 4.0 \text{ A}$			0.922	0.98		
Reverse current	rated V_R	$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	0.35	10	μA	
		$T_A = 125^\circ\text{C}$		75	150		
Typical reverse recovery time	$I_F = 0.5 \text{ A}$, $I_R = 1.0 \text{ A}$, $I_{rr} = 0.25 \text{ A}$	t_{rr}		1.8	-	μs	
Typical junction capacitance per diode	4.0 V, 1 MHz	C_J		60	-	pF	

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

⁽²⁾ Pulse test: Pulse width $\leq 40 \text{ ms}$

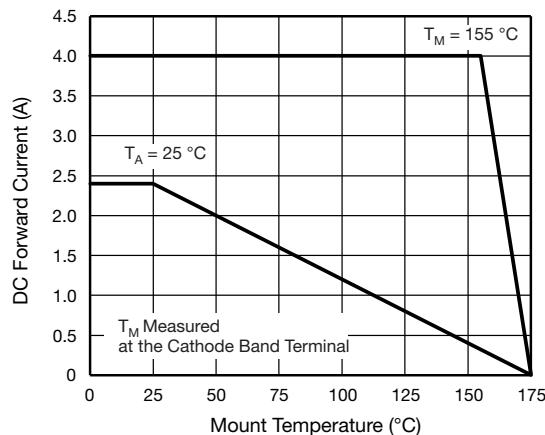
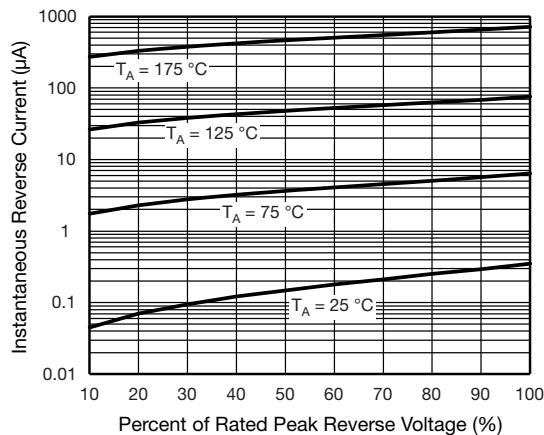
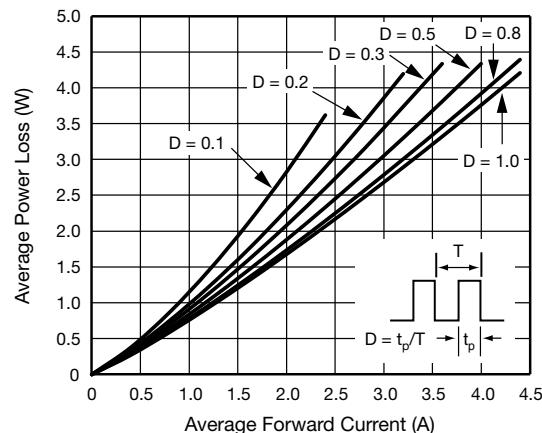
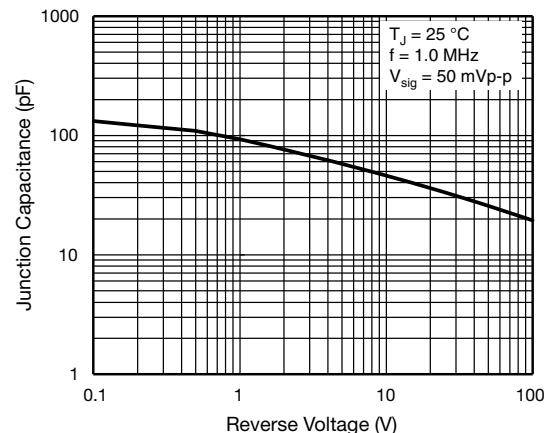
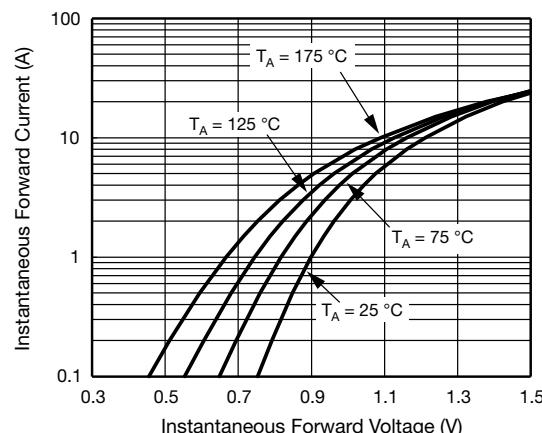
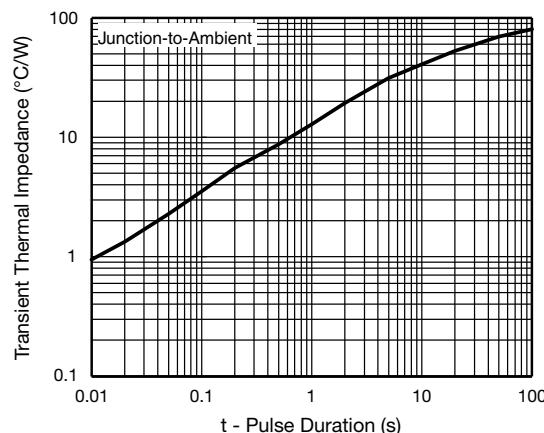
THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	AS4PD	AS4PG	AS4PJ	AS4PK	AS4PM	UNIT
Typical thermal resistance	$R_{\theta JA}$ ⁽¹⁾			80			$^\circ\text{C/W}$
	$R_{\theta JM}$ ⁽²⁾			5			

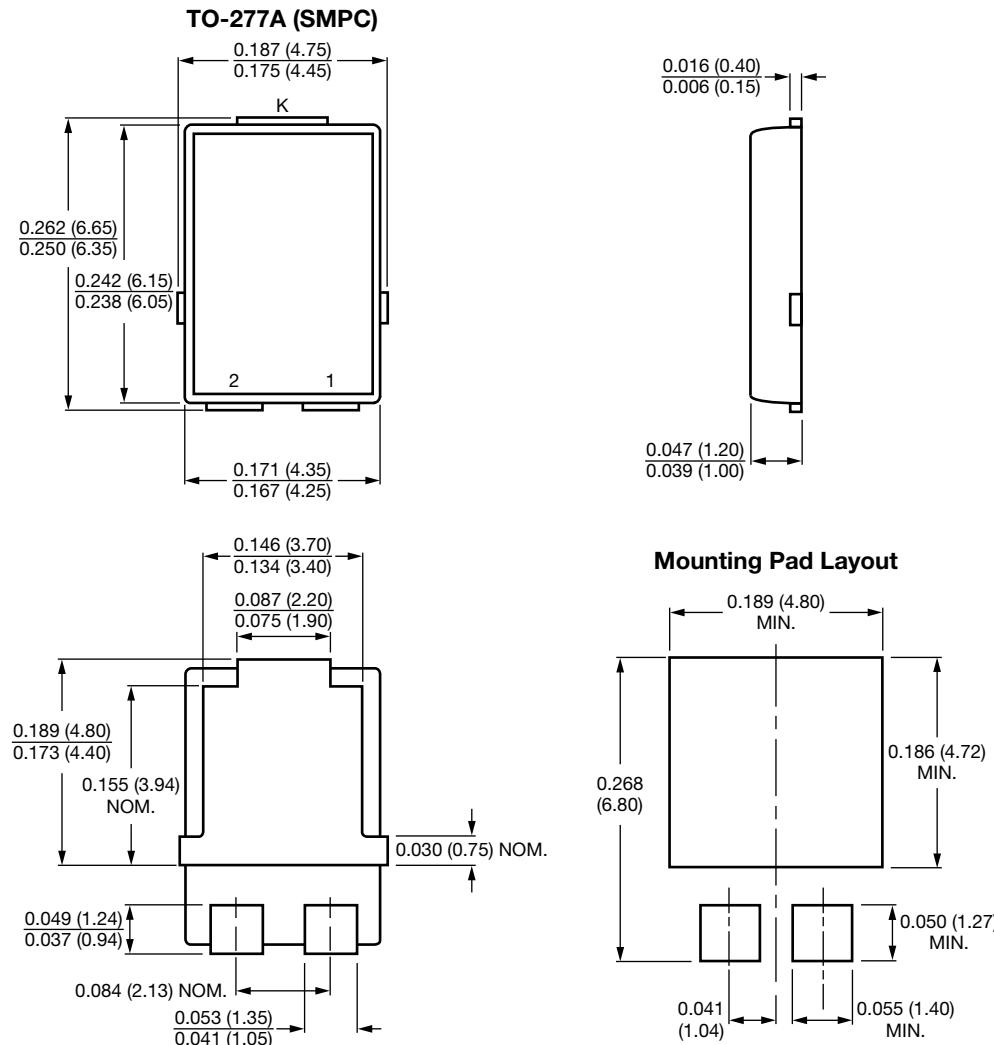
Notes
⁽¹⁾ Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

⁽²⁾ Units mounted on PCB with 20 mm x 20 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
AS4PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
AS4PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
AS4PJHM3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
AS4PJHM3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel
AS4PJHM3_A/H ⁽¹⁾	0.10	H	1500	7" diameter plastic tape and reel
AS4PJHM3_A/I ⁽¹⁾	0.10	I	6500	13" diameter plastic tape and reel

Note
⁽¹⁾ AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Max. 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)


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