

AR1PD, AR1PG, AR1PJ, AR1PK, AR1PM

Vishay General Semiconductor

Surface Mount Fast Avalanche Rectifiers



Cathode O Anode

ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS						
I _{F(AV)} 1.0 A						
V _{RRM} 200 V, 400 V, 600 V, 800 V, 100						
I _{FSM} 30 A, 25 A						
t _{rr}	140 ns, 120 ns					
V _F	1.15 V, 1.4 V					
I _R	1 µA					
E _{AS}	20 mJ					
T _J max.	175 °C					
Package SMP (DO-220AA)						
Circuit configuration	Single					

FEATURES

- Very low profile typical height of 1.0 mm
- · Ideal for automated placement
- · Glass passivated pellet chip junction
- Fast switching for high efficiency
- Low reverse current
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 gualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, inverters, converters, and freewheeling diodes for consumer, automotive, and telecommunication.

MECHANICAL DATA

Case: SMP (DO-220AA)

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 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	AR1PD	AR1PG	AR1PJ	AR1PK	AR1PM	UNIT	
Device marking code		ARD	ARG	ARJ	ARK	ARM		
Maximum repetitive peak reverse voltage	V _{RRM}	200	400	600	800	1000	V	
Average forward current	I _{F(AV)}	1.0 A					A	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	30 25				А		
Non-repetitive avalanche energy at $I_{AS} = 1.0 \text{ A}, T_A = 25 \text{ °C}$	E _{AS}	20 m					mJ	
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +175 °C					°C	



COMPLIANT HALOGEN FREE



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)									
PARAMETER	TEST CO	ONDITIONS	SYMBOL	AR1PD AR1PG AR1PJ		AR1PK	AR1PM	UNIT	
Maximum instantaneous	I _F = 1.0 A	$T_{A} = 25 \text{ °C}$ $T_{A} = 125 \text{ °C}$ V_{F}		V _F ⁽¹⁾ 1.25		1.6		v	
forward voltage	1F = 1.0 A	T _A = 125 °C	VF \		1.15		1.4		V
Maximum reverse current	Rated V _R	T _A = 25 °C	I _B ⁽²⁾	1.0				μA	
Maximum reverse current	naleu v _R	T _A = 125 °C	'R ` ′	100				μΛ	
Maximum reverse recovery time	I _F = 0.5 A, I _{rr} = 0.25 A	_R = 1.0 A,	t _{rr}	140		120		ns	
Typical junction capacitance	4.0 V, 1 Mł	Ηz	CJ	12.5 8.5		.5	pF		

Notes

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

⁽²⁾ Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS ($T_A = 25$ °c unless otherwise noted)								
PARAMETER	SYMBOL	AR1PD	AR1PG	AR1PJ	AR1PK	AR1PM	UNIT	
Typical thermal resistance	R _{0JA} ⁽¹⁾	132					°C/W	
	R _{0JM} ⁽¹⁾	15					0/10	

Note

(1) Free air, mounted on recommended copper pad area. Thermal resistance R_{0JA} - junction to ambient, R_{0JM} - junction to mount at the terminal cathode band

ORDERING INFORMATION (Example)							
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE			
AR1PJ-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel			
AR1PJ-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel			
AR1PJHM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel			
AR1PJHM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel			

Note

⁽¹⁾ Automotive grade

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

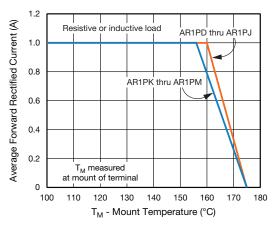


Fig. 1 - Maximum Forward Current Derating Curve

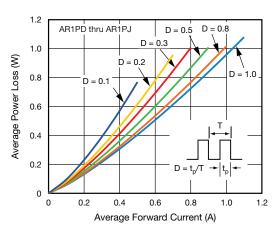


Fig. 2 - Forward Power Loss Characteristics

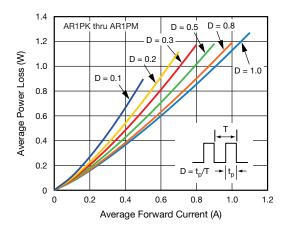
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Fig. 3 - Forward Power Loss Characteristics

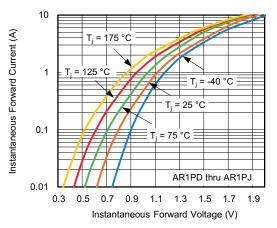


Fig. 4 - Typical Instantaneous Forward Characteristics

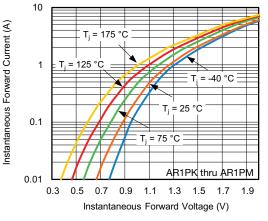


Fig. 5 - Typical Instantaneous Forward Characteristics

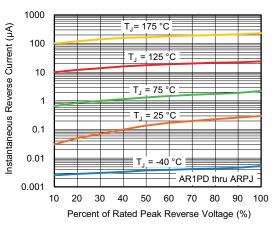
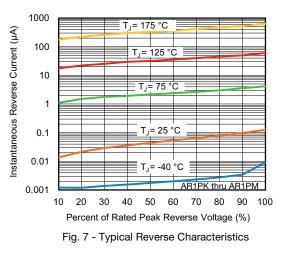


Fig. 6 - Typical Reverse Characteristics



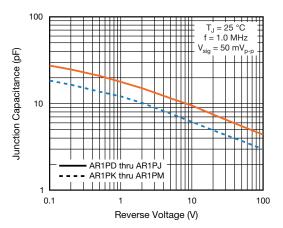


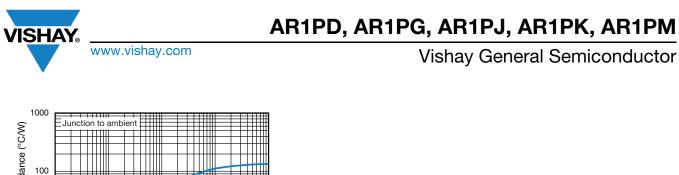
Fig. 8 - Typical Junction Capacitance

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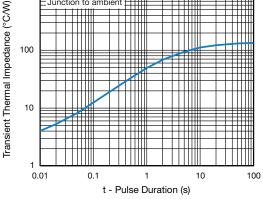
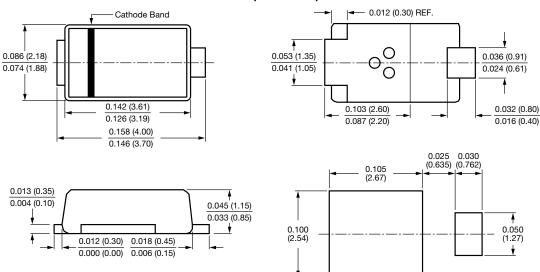


Fig. 9 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



SMP (DO-220AA)



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