

AR1PD, AR1PG, AR1PJ, AR1PK, AR1PM

Vishay General Semiconductor

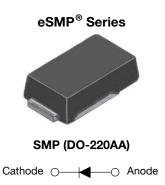
AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN FREE

Surface Mount Fast Avalanche Rectifiers



ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS						
I _{F(AV)}	1.0 A					
V_{RRM}	200 V, 400 V, 600 V, 800 V, 1000 V					
I _{FSM} 30 A, 25 A						
t _{rr}	140 ns, 120 ns					
V_{F}	1.15 V, 1.4 V					
I _R	1 μΑ					
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 qualified
- 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					Α
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	30 25					Α
Non-repetitive avalanche energy at I _{AS} = 1.0 A, T _A = 25 °C	E _{AS}	20					mJ
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175					°C

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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 °C T _A = 125 °C	V _F ⁽¹⁾	V (1) 1.25		1.6		V	
forward voltage	IF = 1.0 A	T _A = 125 °C	VF \''		1.15		1.4		V
Maximum reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	1.0				μА	
Maximum reverse current	$T_A = 125 ^{\circ}\text{C}$		'R ' '	100					
Maximum reverse recovery time	$I_F = 0.5 A,$ $I_{rr} = 0.25 A$	$I_R = 1.0 A,$	t _{rr}	t _{rr} 140			120		ns
Typical junction capacitance	4.0 V, 1 MH	Нz	CJ	12.5		8.	.5	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	BOL AR1PD AR1PG AR1PJ AR1PK AR1PM					UNIT	
Typical thermal resistance	R _{θJA} ⁽¹⁾	132					°C/W	
Typical thermal resistance	R _{0JM} (1)	15					C/VV	

Note

⁽¹⁾ Free air, mounted on recommended copper pad area. Thermal resistance R_{θJA} - junction to ambient, R_{θJM} - 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

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

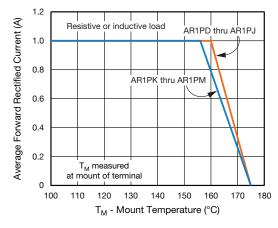


Fig. 1 - Maximum Forward Current Derating Curve

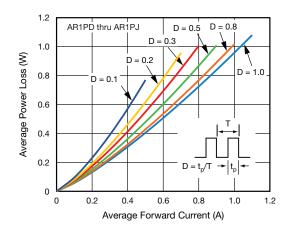


Fig. 2 - Forward Power Loss Characteristics

⁽¹⁾ Automotive grade





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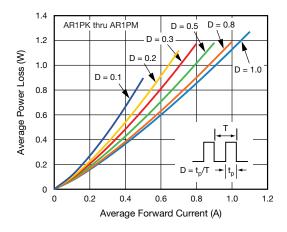


Fig. 3 - Forward Power Loss Characteristics

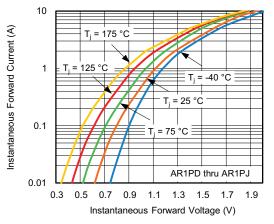


Fig. 4 - Typical Instantaneous Forward Characteristics

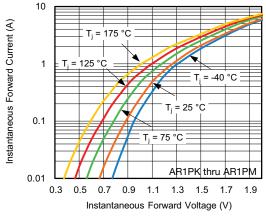


Fig. 5 - Typical Instantaneous Forward Characteristics

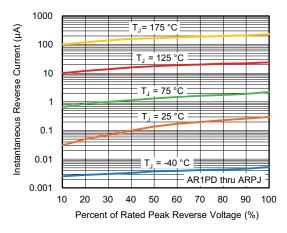


Fig. 6 - Typical Reverse Characteristics

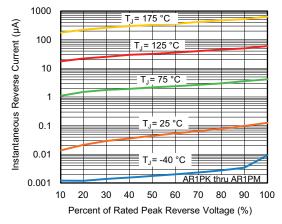


Fig. 7 - Typical Reverse Characteristics

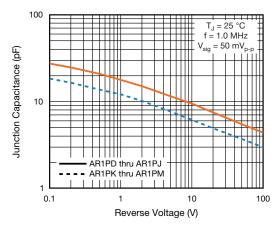


Fig. 8 - Typical Junction Capacitance



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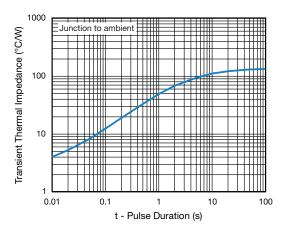
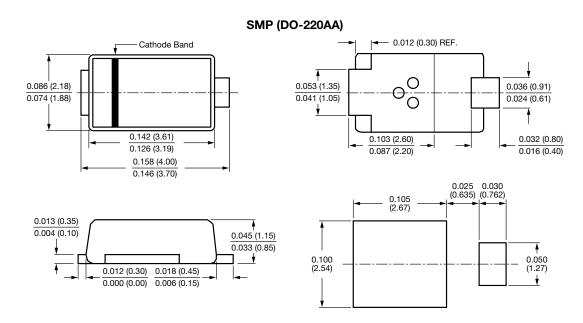


Fig. 9 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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