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Vishay General Semiconductor

COMPLIANT

HALOGEN FREE

Surface Mount Ultrafast Plastic Rectifier



DO-214AC (SMA)

PRIMARY CHARACTERISTICS				
I _{F(AV)}	1.0 A			
V_{RRM}	100 V, 150 V, 200 V			
I _{FSM}	30 A			
t _{rr}	15 ns			
V_F at $I_F = 1.0 A$	0.76 V			
T_J max.	150 °C			
Package DO-214AC (SMA				
Diode variations Single die				

FEATURES

- · Oxide planar chip junction
- · Ultrafast recovery time
- · Low forward voltage, low power losses
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: For definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

MECHANICAL DATA

Case: DO-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and

commercial grade

Terminals: Matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	U1B	U1C	U1D	UNIT
Device marking code		U1B	U1C	U1D	
Maximum repetitive peak reverse voltage	V _{RRM}	100	150	200	V
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	1.0			Α
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	30			А
Operating junction and storage temperature range	T _J , T _{STG}	- 55 to + 150			°C



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 0.6 A	T _A = 25 °C	V _F ⁽¹⁾	0.82	0.87	V
	I _F = 1.0 A	1A = 23 C		0.87	0.92	
	I _F = 0.6 A	T _Δ = 100 °C		0.71	0.78	
	I _F = 1.0 A	1A = 100 C		0.76	0.84	
Reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	-	5.0	μΑ
		T _A = 100 °C		55	100	
Reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$	T _A = 25 °C	t _{rr}	-	15	ns
	I _F = 0.6 A, dI/dt = 50 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}	T _A = 25 °C		24	-	
		T _A = 100 °C		29	-	
Storage charge	$I_F = 0.6 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, \ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$	T _A = 25 °C	Q _{rr}	7	-	nC
		T _A = 100 °C		13	-	
Typical junction capacitance	4.0 V, 1 MHz		CJ	6.8	-	pF

Notes

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

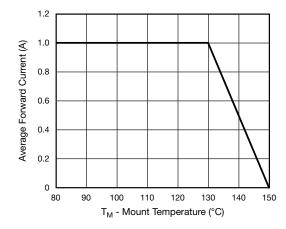
THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	. U1B U1C U1D U			UNIT
Typical thermal resistance	R _{0JA} (1)	115		°C/W	
Typical triefmai resistance	R _{0JM} (1)	22		C/VV	

Note

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

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
U1D-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel	
U1D-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel	

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





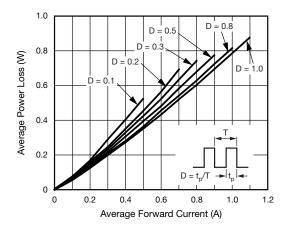


Fig. 2 - Forward Power Loss Characteristics



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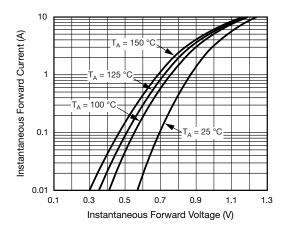


Fig. 3 - Typical Instantaneous Forward Characteristics

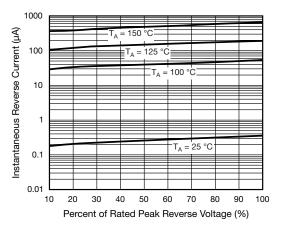


Fig. 4 - Typical Reverse Characteristics

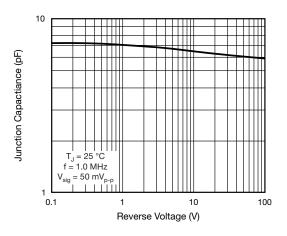


Fig. 5 - Typical Junction Capacitance

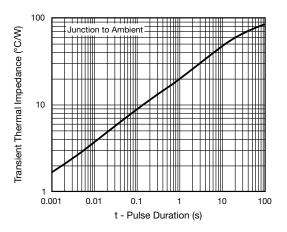
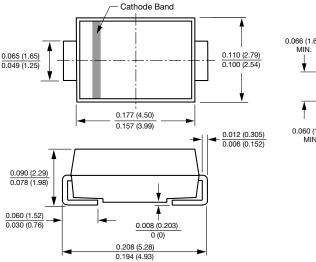
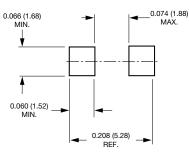


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters) DO-214AC (SMA)



Mounting Pad Layout





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