

Vishay General Semiconductor

COMPLIANT

HALOGEN

FREE

Miniature Ultrafast Plastic Rectifier



PRIMARY CHARACTERISTICS						
I _{F(AV)}	4.0 A					
V _{RRM}	50 V, 100 V, 150 V, 200 V					
I _{FSM}	150 A					
t _{rr}	20 ns					
V_{F}	0.95 V					
T _J max.	150 °C					
Package	DO-201AD					
Circuit configuration	Single					

FEATURES

- · Glass passivated pellet chip junction
- Ultrafast reverse recovery time
- Low forward voltage drop
- · Low switching losses, high efficiency
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer and telecommunication.

MECHANICAL DATA

Case: DO-201AD

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade 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

E3 and M3 suffix meets JESD 201 class 1A whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	UG4A	UG4B	UG4C	UG4D	UNIT	
Maximum repetitive peak reverse voltage	V _{RRM}	50	100	150	200		
Maximum RMS voltage	V _{RMS}	35	70	105	140	V	
Maximum DC blocking voltage	V_{DC}	50	100	150	200		
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	4.0					
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	150				A	
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150				°C	

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT				
Maximum instantaneous forward voltage	I _F = 4.0 A	V _F ⁽¹⁾	0.95	V				
Maximum DC reverse current			- I _R	5.0	μА			
at rated DC blocking voltage				300				
Maximum reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t _{rr}	20				
Typical reverse recovery time	$I_F = 4.0 \text{ A, dI/dt} = 50 \text{ A/}\mu\text{s, V}_R = 30 \text{ V,} \\ I_{rr} = 10 \text{ \% } I_{RM}$	T _J = 25 °C	- t _{rr}	30	ns			
		T _J = 100 °C		50				
Typical stored charge	$I_F = 4.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, V_B = 30 \text{ V},$	T _J = 25 °C	0	15	nC			
	I _{rr} = 10 % I _{RM}	T _J = 100 °C	Q _{rr}	30				
Typical junction capacitance	4.0 V, 1 MHz	CJ	20	pF				

Note

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



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THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	UG4A	UG4B	UG4C	UG4D	UNIT
Typical thermal resistance	R _{0JA} (1)	25			°C/W	

Note

 $^{^{(2)}}$ Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length

ORDERING INFORMATION (Example)							
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE			
UG4D-E3/54	1.138	54	1400	13" diameter paper tape and reel			
UG4D-E3/73	1.138	73	1000	Ammo pack packaging			
UG4D-M3/54	1.138	54	1400	13" diameter paper tape and reel			
UG4D-M3/73	1.138	73	1000	Ammo pack packaging			

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

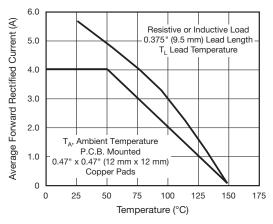


Fig. 1 - Forward Current Derating Curves

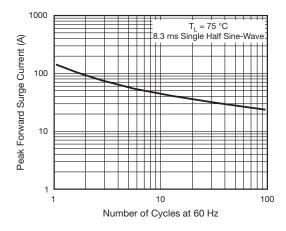


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

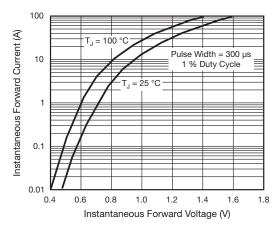


Fig. 3 - Typical Instantaneous Forward Characteristics

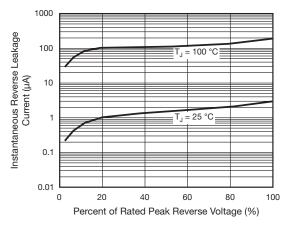
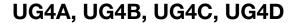


Fig. 4 - Typical Reverse Leakage Characteristics





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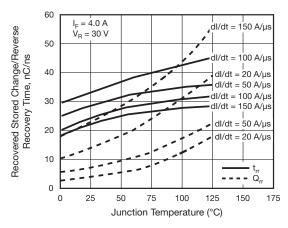


Fig. 5 - Reverse Switching Characteristics

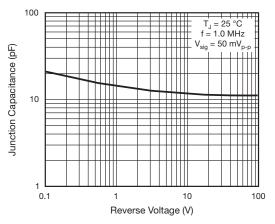
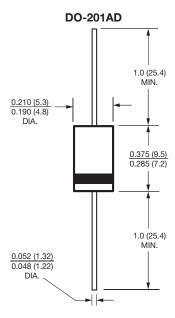


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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