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# UG4A, UG4B, UG4C, UG4D

Vishay General Semiconductor

# **Miniature Ultrafast Plastic Rectifier**



PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	4.0 A				
V <sub>RRM</sub>	50 V, 100 V, 150 V, 200 V				
I <sub>FSM</sub>	150 A				
t <sub>rr</sub>	20 ns				
V <sub>F</sub>	0.95 V				
T <sub>J</sub> 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.vishay.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

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

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)								
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT				
Maximum instantaneous forward voltage	I <sub>F</sub> = 4.0 A	V <sub>F</sub> <sup>(1)</sup>	0.95	V				
Maximum DC reverse current	T <sub>A</sub> = 25 °C		- I <sub>R</sub>	5.0	μA			
t rated DC blocking voltage		T <sub>A</sub> = 100 °C		300				
Maximum reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t <sub>rr</sub>	20				
Typical reverse recovery time	$I_F$ = 4.0 A, dI/dt = 50 A/µs, $V_R$ = 30 V, $I_{rr}$ = 10 % $I_{RM}$	T <sub>J</sub> = 25 °C	- t <sub>rr</sub>	30	ns			
		$T_J = 100 \ ^\circ C$		50				
Typical stored charge	$I_F$ = 4.0 A, dI/dt = 50 A/µs, $V_R$ = 30 V, $I_{rr}$ = 10 % $I_{RM}$	T <sub>J</sub> = 25 °C	Q <sub>rr</sub>	15	nC			
		T <sub>J</sub> = 100 °C		30				
Typical junction capacitance	4.0 V, 1 MHz		CJ	20	pF			

#### Note

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

Revision: 06-Aug-2018

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HALOGEN

FREE



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<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	UG4A	UG4B	UG4C	UG4D	UNIT
Typical thermal resistance	R <sub>0JA</sub> <sup>(1)</sup>	25			°C/W	

Note

<sup>(2)</sup> 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)

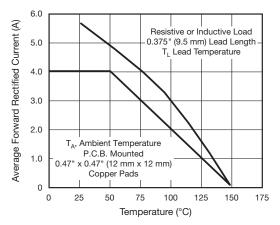


Fig. 1 - Forward Current Derating Curves

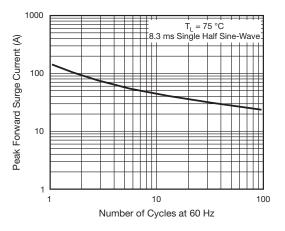


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

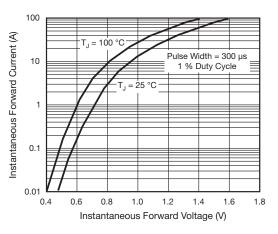


Fig. 3 - Typical Instantaneous Forward Characteristics

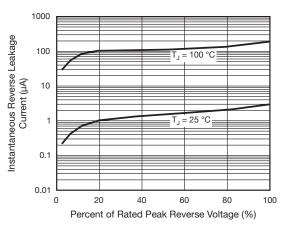


Fig. 4 - Typical Reverse Leakage Characteristics



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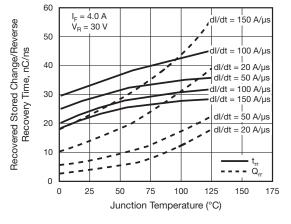


Fig. 5 - Reverse Switching Characteristics

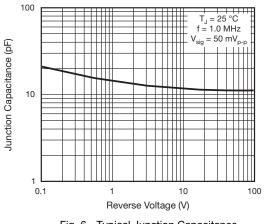
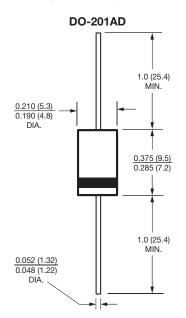


Fig. 6 - Typical Junction Capacitance

#### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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