

### Vishay General Semiconductor

### **Miniature Ultrafast Plastic Rectifier**



PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	4.0 A				
V <sub>RRM</sub>	50 V to 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				

#### **FEATURES**





· Low forward voltage drop

• Low switching losses, high efficiency

• High forward surge capability

• Solder dip 275 °C max. 10 s, per JESD 22-B106

 Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

#### **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

Terminals: Matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test **Polarity:** Color band denotes cathode end

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

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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °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	- μΑ		
at rated DC blocking voltage		T <sub>A</sub> = 100 °C		300			
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	20	ns		
Typical reverse recovery time	$I_F = 4.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, \\ V_R = 30 \text{ V}, I_{rr} = 10 \text{ \% } I_{RM}$	T <sub>J</sub> = 25 °C	- t <sub>rr</sub>	30	- ns		
		T <sub>J</sub> = 100 °C		50			
Typical stored charge	I <sub>F</sub> = 4.0 A, dI/dt = 50 A/µs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 10 % I <sub>RM</sub>	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

 $<sup>^{(1)}\,</sup>$  Pulse test: 300  $\mu s$  pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	UG4A	UG4B	UG4C	UG4D	UNIT
Typical thermal resistance	R <sub>0JA</sub> (1)	25				°C/W

#### Note

<sup>(1)</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			

#### **RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

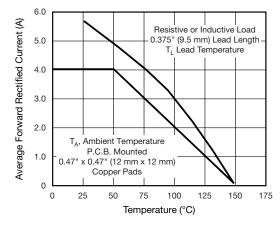


Fig. 1 - Forward Current Derating Curves

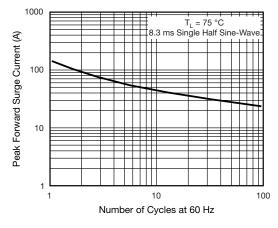


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current



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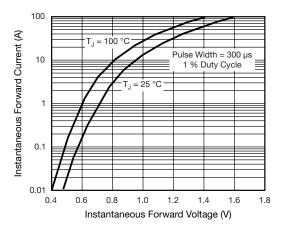


Fig. 3 - Typical Instantaneous Forward Characteristics

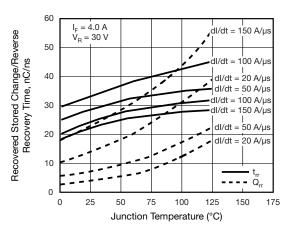


Fig. 5 - Reverse Switching Charateristics

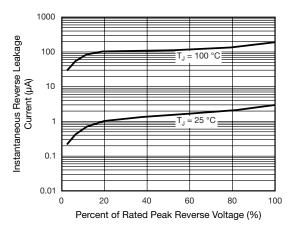


Fig. 4 - Typical Reverse Leakage Characteristics

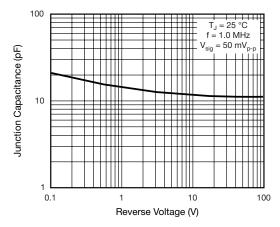
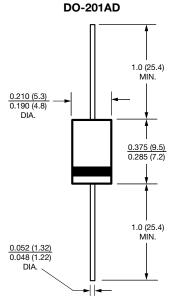


Fig. 6 - Typical Junction Capacitance

## $\begin{picture}(100,0)\put(0,0){\line(1,0){100}} \put(0,0){\line(1,0){100}} \put(0,0){\line(1,0){100$





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Vishay

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## Vishay:

<u>UG4B-E3/1</u> <u>UG4D-E3/1</u> <u>UG4A-E3/51</u> <u>UG4A-E3/54</u> <u>UG4A-E3/73</u> <u>UG4B-E3/54</u> <u>UG4B-E3/73</u> <u>UG4C-E3/51</u> <u>UG4C-E3/54</u> <u>UG4D-E3/54</u> <u>UG4D-E3/73</u>