

## Vishay General Semiconductor

RoHS COMPLIANT

# **Ultrafast Plastic Rectifier**



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	4.0 A			
$V_{RRM}$	400 V, 600 V			
I <sub>FSM</sub>	150 A			
t <sub>rr</sub>	50 ns			
V <sub>F</sub> at I <sub>F</sub>	1.05 V			
$T_{J}$ max.	175 °C			
Package	DO-201AD			
Diode variations	Single die			

#### **FEATURES**

- · Glass passivated pellet chip junction
- Ultrafast reverse recovery time
- Low forward voltage drop
- · Low leakage current
- 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 <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

### **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	MUR440	MUR460	UNIT	
Maximum repetitive peak reverse voltage	$V_{RRM}$	400	600		
Working peak reverse voltage	$V_{RWM}$	400	600	V	
Maximum DC blocking voltage	V <sub>DC</sub>	400	600		
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	4.0		A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	150			
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +175		°C	

<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	MUR440	MUR460	UNIT	
Maximum instantaneous forward voltage	3.0 A	T <sub>J</sub> = 150 °C	V <sub>F</sub> <sup>(1)</sup>	1.0	05		
	3.0 A	T 05 °C		1.25		V	
	4.0 A	T <sub>J</sub> = 25 °C		1.:	28		
Maximum instantaneous reverse current	Maximum instantaneous reverse current T <sub>J</sub> = 25 °C		I <sub>R</sub> <sup>(1)</sup>	10			
at rated DC blocking voltage		T <sub>J</sub> = 150 °C	'R \"	25	50	μA	
Max. reverse recovery time	I <sub>F</sub> = 0.5, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	50			
Maximum reverse recovery time	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, V_R = 30 \text{ V}, I_{rr} = 10 \% I_{RM}$		t <sub>rr</sub>	7	5	ns	
Maximum forward recovery time	$I_F = 1.0 \text{ A}$ , $dI/dt = 100 \text{ A/}\mu\text{s}$ , recovery to 1.0 V		t <sub>fr</sub>	5	0		

#### Note

<sup>(1)</sup> Pulse test:  $t_p = 300 \mu s$ , duty cycle  $\leq 2 \%$ 



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THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	MUR440	MUR460	UNIT		
Typical thermal resistance junction to ambient	R <sub>0</sub> JA (1)	28		°C/W		

#### Note

<sup>(1)</sup> Lead length = 1/2" on PCB with 1.5" x 1.5" copper surface

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
MUR460-E3/54	1.138	54	1400	13" diameter paper tape and reel		
MUR460-E3/73	1.138	73	1000	Ammo pack packaging		

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

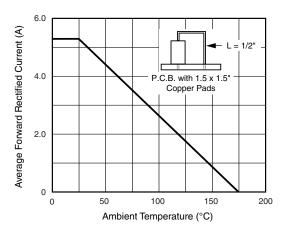


Fig. 1 - Forward Current Derating Curve

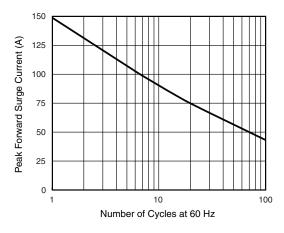


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

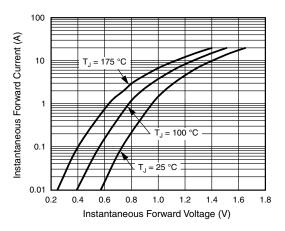


Fig. 3 - Typical Instantaneous Forward Characteristics

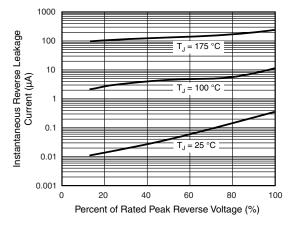


Fig. 4 - Typical Reverse Characteristics



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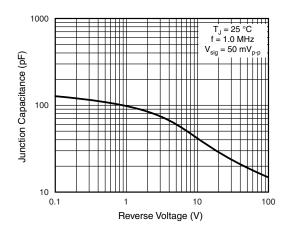
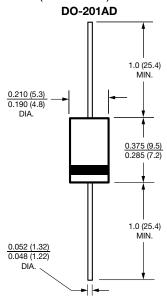


Fig. 5 - Typical Junction Capacitance per Leg

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





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