Vishay General Semiconductor

# **Ultrafast Plastic Rectifier**



- 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 <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> ( $T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MUR440	MUR460	UNIT	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	400	600		
Working peak reverse voltage	V <sub>RWM</sub>	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		^	
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>	-65 to +175		°C	

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)							
PARAMETER		TEST CONDITIONS	SYMBOL	MUR440	MUR460	UNIT	
Maximum instantaneous forward voltage	3.0 A	T <sub>J</sub> = 150 °C		1.0	5		
	T <sub>1</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	1.25		V		
	4.0 A	IJ=25 C		1.2	8		
Maximum instantaneous reverse current		T <sub>J</sub> = 25 °C	I <sub>B</sub> <sup>(1)</sup>	10			
at rated DC blocking voltage		T <sub>J</sub> = 150 °C	'R \''	25	0	μA	
Max. reverse recovery time	$I_F = 0.5, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t <sub>rr</sub>	50			
Maximum reverse recovery time	$I_F$ = 1.0 A, dI/dt = 50 A/µs, $V_R$ = 30 V, $I_{rr}$ = 10 % $I_{RM}$		t <sub>rr</sub>	75	5	ns	
Maximum forward recovery time	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, \text{ recovery to } 1.0 \text{ V}$		t <sub>fr</sub>	50	)		

Note

 $^{(1)}$  Pulse test:  $t_p$  = 300  $\mu s,~duty~cycle \leq 2~\%$ 

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HALOGEN

FREE





PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	4.0 A			
V <sub>RRM</sub>	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 <sub>J</sub> max.	175 °C			
Package	DO-201AD			
Circuit configuration	Single			



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<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MUR440	MUR460	UNIT	
Typical thermal resistance junction to ambient	R <sub>0JA</sub> <sup>(1)</sup>	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	
MUR460-M3/54	1.138	54	1400	13" diameter paper tape and reel	
MUR460-M3/73	1.138	73	1000	Ammo pack packaging	

### **RATINGS AND CHARACTERISTICS CURVES** (T<sub>A</sub> = 25 °C unless otherwise noted)

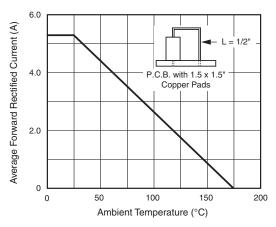


Fig. 1 - Forward Current Derating Curve

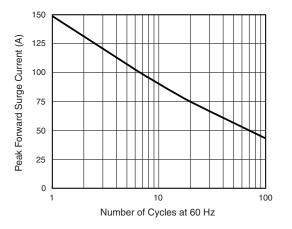


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

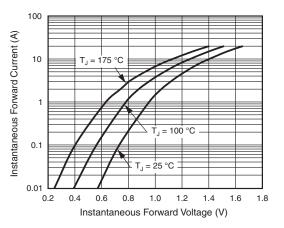


Fig. 3 - Typical Instantaneous Forward Characteristics

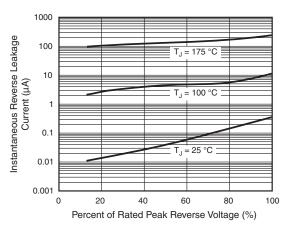
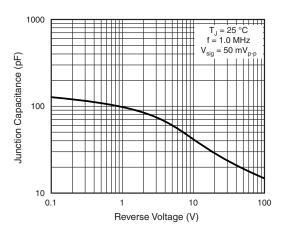


Fig. 4 - Typical Reverse Characteristics



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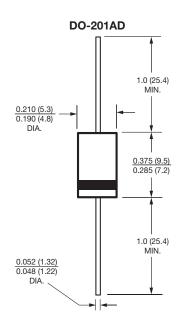


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Fig. 5 - Typical Junction Capacitance per Leg

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





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