

## MBR4035PT, MBR4045PT, MBR4050PT, MBR4060PT

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### Vishay General Semiconductor

# **Dual Common Cathode Schottky Rectifier**



PRIMARY CHARACTERISTICS						
I <sub>F(AV)</sub>	40 A					
$V_{RRM}$	35 V, 45 V, 50 V, 60 V					
I <sub>FSM</sub>	400 A					
V <sub>F</sub>	0.60 V, 0.62 V					
T <sub>J</sub> max.	150 °C					
Package	TO-247AD (TO-3P)					
Diode variations	Common cathode					

#### **FEATURES**

- Power pack
- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- 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 low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

#### **MECHANICAL DATA**

Case: TO-247AD (TO-3P)

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: As marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	MBR4035PT	MBR4045PT	MBR4050PT	MBR4060PT	UNIT		
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	35	45	50	60	V		
Maximum working peak reverse voltage	$V_{RWM}$	35	45	50	60	V		
Maximum DC blocking voltage	$V_{DC}$	35	45	50	60	V		
Maximum average forward rectified current T <sub>C</sub> = 125 °C	I <sub>F(AV)</sub>	40						
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I <sub>FSM</sub>	400						
Peak repetitive reverse surge current per diode	I <sub>RRM</sub> <sup>(1)</sup>	2.0 1.0		.0	Α			
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000 V/						
Operating junction temperature range	TJ	- 65 to + 150				°C		
Storage temperature range	T <sub>STG</sub>	- 65 to + 175			°C			

#### Note

(1) 2.0 µs pulse width, f = 1.0 kHz



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)									
PARAMETER	SYMBOL	TEST CONDITIONS		MBR4035PT	MBR4045PT	MBR4050PT	MBR4060PT	UNIT	
Maximum instantaneous forward voltage per diode	V <sub>F</sub> <sup>(1)</sup>	$I_F = 20 \text{ A}$	T <sub>J</sub> = 25 °C	0.70		0.72			
		$I_F = 20 \text{ A}$	T <sub>J</sub> = 125 °C	0.60		0.62		V	
		$I_F = 40 A$	T <sub>J</sub> = 25 °C	0.80		-			
		$I_F = 40 \text{ A}$	T <sub>J</sub> = 125 °C	0.75		-			
Maximum instantaneous reverse current at rated DC blocking	le I <sub>R</sub> (1)		$T_J = 25  ^{\circ}C$	1.0			mA		
voltage per diode			T <sub>J</sub> = 125 °C	100			IIIA		

#### Note

<sup>(1)</sup> Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	MBR4035PT	MBR4045PT	MBR4050PT	MBR4060PT	UNIT	
Thermal resistance, junction to case per diode	$R_{ heta JC}$		1	.2		°C/W	

ORDERING INFORMATION (Example)								
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE			
TO-247AD	MBR4045PT-E3/45	6.13	45	30/tube	Tube			

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

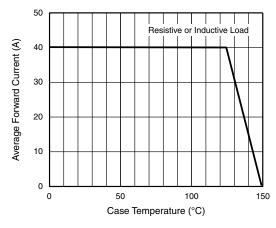


Fig. 1 - Forward Current Derating Curve

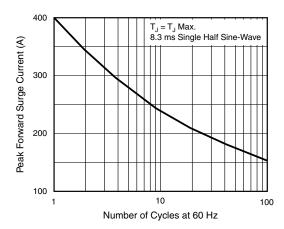


Fig. 2 - Maximum Non-Repetitve Peak Forward Surge Current Per Diode





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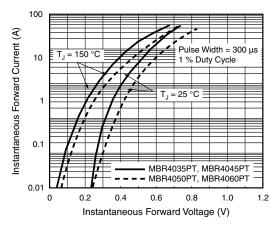


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

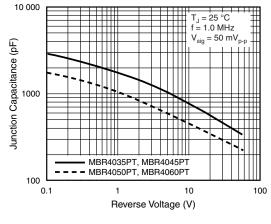


Fig. 5 - Typical Junction Capacitance Per Diode

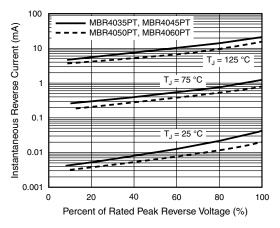


Fig. 4 - Typical Reverse Characteristics Per Diode

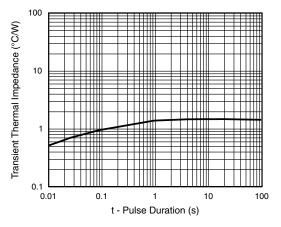
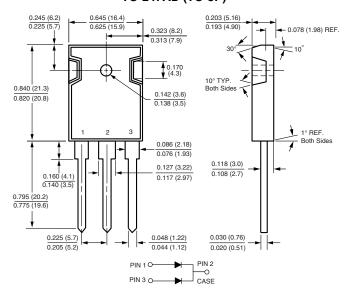


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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

### TO-247AD (TO-3P)





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