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[Vishay Semiconductor/Diodes Division](#)  
[MBR40H35PT-E3/45](#)

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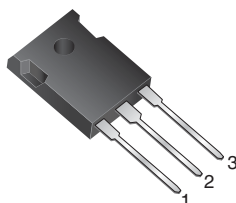
# MBR40H35PT, MBR40H45PT, MBR40H50PT, MBR40H60PT

www.vishay.com

Vishay General Semiconductor

## Dual Common Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



TO-247AD (TO-3P)



### 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 260 °C, 40 s
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

### 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)

Epoxy meets UL 94 V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	40 A
$V_{RRM}$	35 V, 45 V, 50 V, 60 V
$I_{FSM}$	400 A
$V_F$	0.55 V, 0.60 V
$T_J \text{ max.}$	175 °C
Package	TO-247AD
Diode variations	Common cathode

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	MBR40H35PT	MBR40H45PT	MBR40H50PT	MBR40H60PT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	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 (fig. 1)	$I_{F(AV)}$	40				A
Non-repetitive avalanche energy per diode at 25 °C, $I_{AS} = 4\text{ A}$ , $L = 10\text{ mH}$	$E_{AS}$	80				mJ
Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	400				A
Peak repetitive reverse surge current per diode <sup>(1)</sup>	$I_{RRM}$	2.0		1.0		A
Peak non-repetitive reverse energy (8/20 μs waveform)	$E_{RSM}$	30		25		mJ
Electrostatic discharge capacitor voltage human body model: $C = 100\text{ pF}$ , $R = 1.5\text{ k}\Omega$	$V_C$	25				kV
Voltage rate of change at (rated $V_R$ )	$dV/dt$	10 000				V/μs
Operating junction temperature range	$T_J$	-65 to +175				°C
Storage temperature range	$T_{STG}$	-65 to +175				°C

#### Note

(1) 2.0 μs pulse width,  $f = 1.0\text{ kHz}$



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## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25 °C unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	MBR40H35PT MBR40H45PT		MBR40H50PT MBR40H60PT		UNIT
			TYP.	MAX.	TYP.	MAX.	
Maximum instantaneous forward voltage per diode <sup>(1)</sup>	I <sub>F</sub> = 20 A T <sub>J</sub> = 25 °C	V <sub>F</sub>	-	0.63	-	0.69	V
	I <sub>F</sub> = 20 A T <sub>J</sub> = 125 °C		0.49	0.55	0.56	0.60	
	I <sub>F</sub> = 40 A T <sub>J</sub> = 25 °C		-	0.73	-	0.83	
	I <sub>F</sub> = 40 A T <sub>J</sub> = 125 °C		0.62	0.66	0.68	0.72	
Maximum reverse current at rated V <sub>R</sub> per diode <sup>(2)</sup>	T <sub>J</sub> = 25 °C T <sub>J</sub> = 125 °C	I <sub>R</sub>	- 9.0	150 25	- 6.0	150 25	μA mA

### Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

## THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MBR40H35PT	MBR40H45PT	MBR40H50PT	MBR40H60PT	UNIT
Thermal resistance, junction to case per diode	R <sub>θJC</sub>	1.2				°C/W

## ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-247AD	MBR40H45PT-E3/45	6.13	45	30/tube	Tube

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

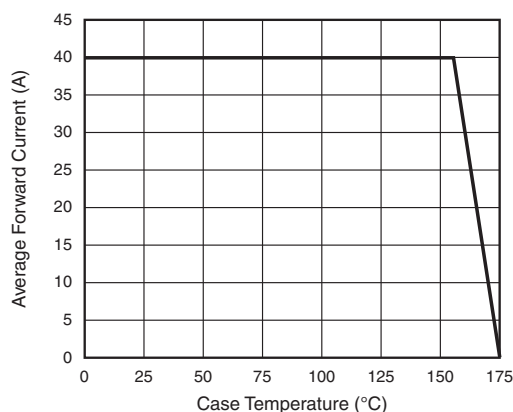


Fig. 1 - Forward Current Derating Curve

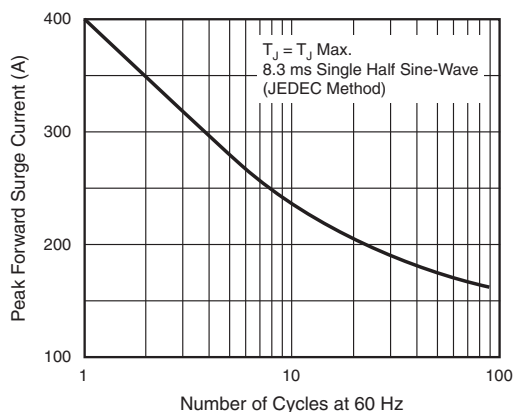


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode



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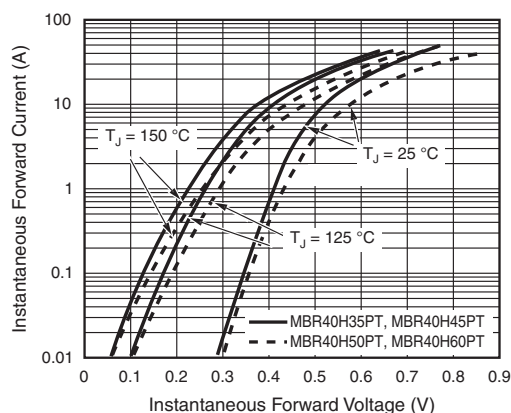


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

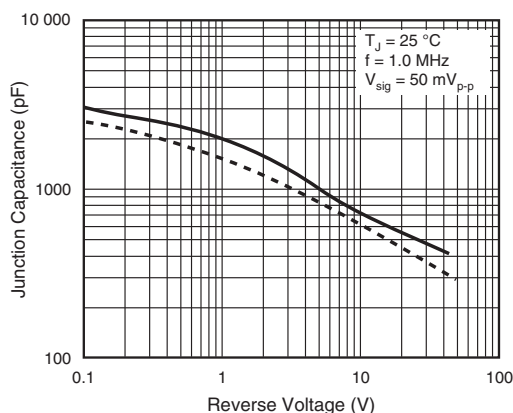


Fig. 5 - Typical Junction Capacitance Per Diode

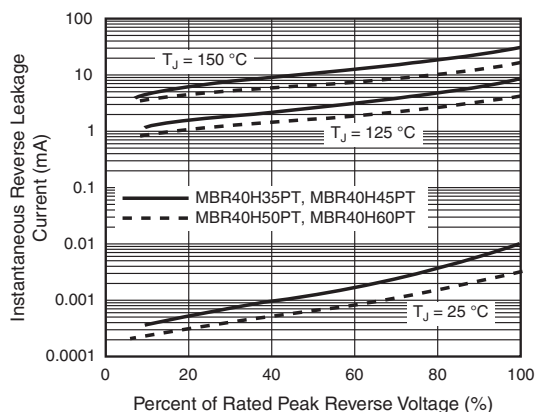


Fig. 4 - Typical Reverse Characteristics Per Diode

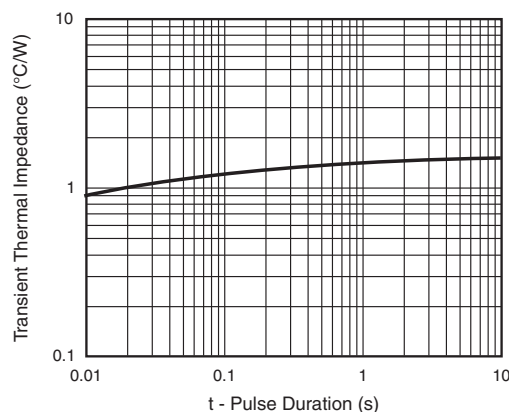
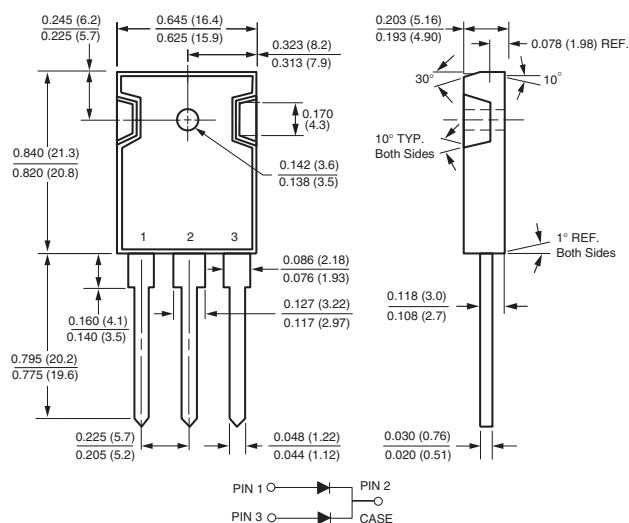


Fig. 6 - Typical Transient Thermal Impedance Per Diode

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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





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