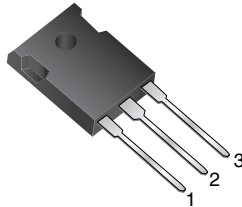


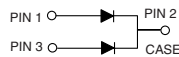


## Dual Common-Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



TO-247AD (TO-3P)



### FEATURES

- 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
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters or polarity protection application.

### MECHANICAL DATA

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

Epoxy meets UL 94V-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 to 60 V
$I_{FSM}$	400 A
$V_F$	0.55 V, 0.60 V
$T_J \text{ max.}$	175 °C

### MAXIMUM RATINGS ( $T_A = 25$ °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, $I_{AS} = 4$ A, $L = 10$ 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 $\mu$ s waveform)	$E_{RSM}$	30		25		mJ
Electrostatic discharge capacitor voltage human body model: $C = 100$ pF, $R = 1.5$ k $\Omega$	$V_C$	25				kV
Voltage rate of change at (rated $V_R$ )	$dV/dt$	10 000				V/ $\mu$ s
Operating junction temperature range	$T_J$	- 65 to + 175				°C
Storage temperature range	$T_{STG}$	- 65 to + 175				°C

**Note:**(1) 2.0  $\mu$ s pulse width,  $f = 1.0$  kHz



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

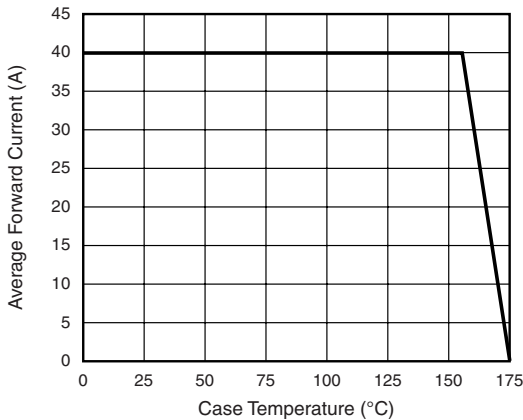


Figure 1. Forward Current Derating Curve

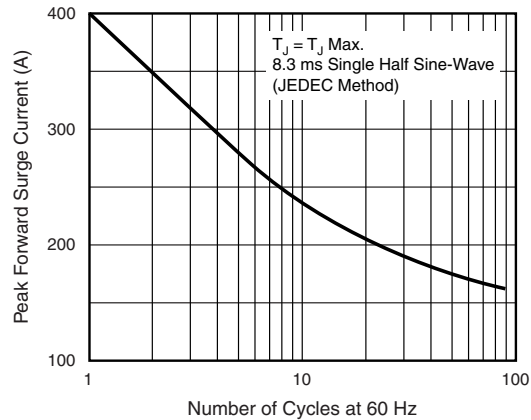


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

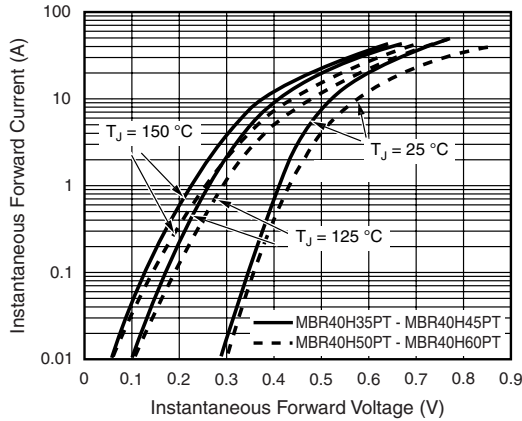


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

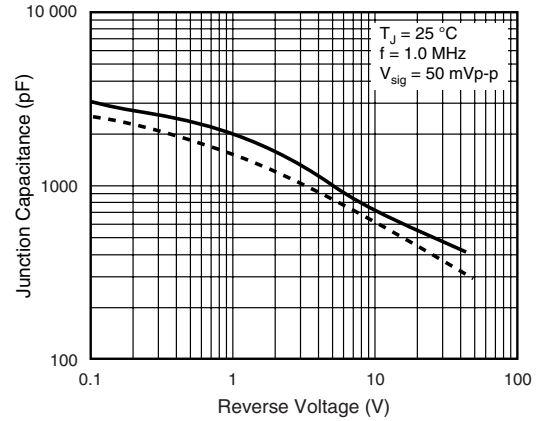


Figure 5. Typical Junction Capacitance Per Diode

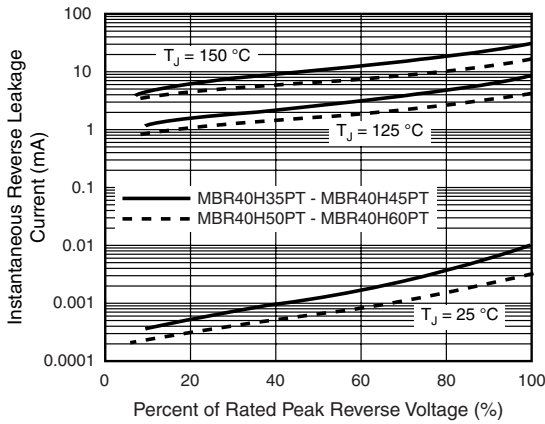


Figure 4. Typical Reverse Characteristics Per Diode

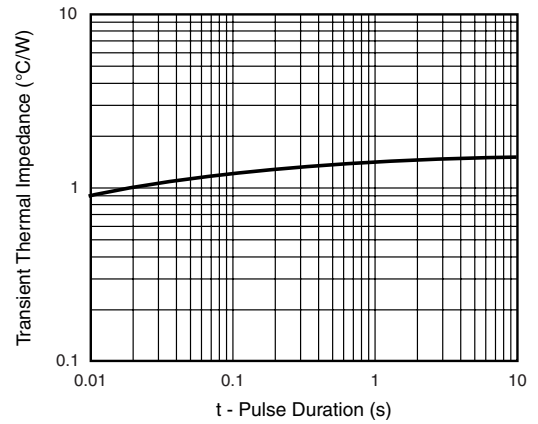
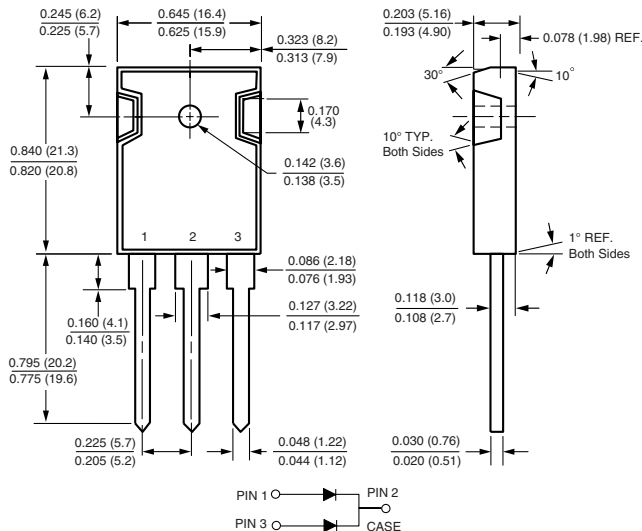


Figure 6. Typical Transient Thermal Impedance Per Diode

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

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





## Disclaimer

All product specifications and data are subject to change without notice.

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