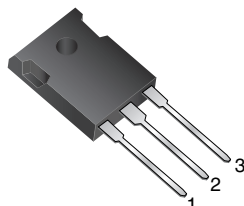
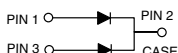


## Dual Common Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



TO-3P (TO-247AD)



RoHS  
COMPLIANT

### 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)

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

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
$T_J$ max.	175 °C
Package	TO-3P (TO-247AD)
Circuit configuration	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 <sub>RRM</sub>	35	45	50	60	V
Maximum working peak reverse voltage	V <sub>RWM</sub>	35	45	50	60	V
Maximum DC blocking voltage	V <sub>DC</sub>	35	45	50	60	V
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	40				A
Non-repetitive avalanche energy per diode at 25 °C, I <sub>AS</sub> = 4 A, L = 10 mH	E <sub>AS</sub>	80				mJ
Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load per diode	I <sub>FSM</sub>	400				A
Peak repetitive reverse surge current per diode (1)	I <sub>RRM</sub>	2.0		1.0		A
Peak non-repetitive reverse energy (8/20 μs waveform)	E <sub>RSM</sub>	30		25		mJ
Electrostatic discharge capacitor voltage human body model: C = 100 pF, R = 1.5 kΩ	V <sub>C</sub>	25				kV
Voltage rate of change at (rated V <sub>R</sub> )	dV/dt	10 000				V/μs
Operating junction temperature range	T <sub>J</sub>	-65 to +175				°C
Storage temperature range	T <sub>STG</sub>	-65 to +175				°C

#### Note

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

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  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>	$I_F = 20\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_F$	-	0.63	-	0.69	V
	$I_F = 20\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$		0.49	0.55	0.56	0.60	
	$I_F = 40\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$		-	0.73	-	0.83	
	$I_F = 40\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$		0.62	0.66	0.68	0.72	
Maximum reverse current at rated $V_R$ per diode <sup>(2)</sup>		$T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	$I_R$	- 9.0	150 25	- 6.0	150 25	$\mu\text{A}$ mA

**Notes**<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(2)</sup> Pulse test: Pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS**

PARAMETER	SYMBOL	MBR40H35PT	MBR40H45PT	MBR40H50PT	MBR40H60PT	UNIT
Thermal resistance, junction to case per diode	$R_{\theta JC}$	1.2				$^{\circ}\text{C/W}$

**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 ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

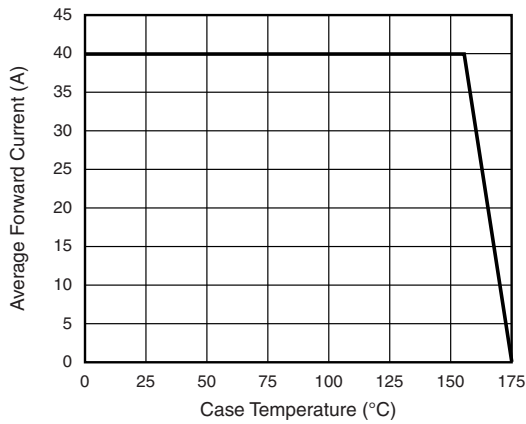


Fig. 1 - Forward Current Derating Curve

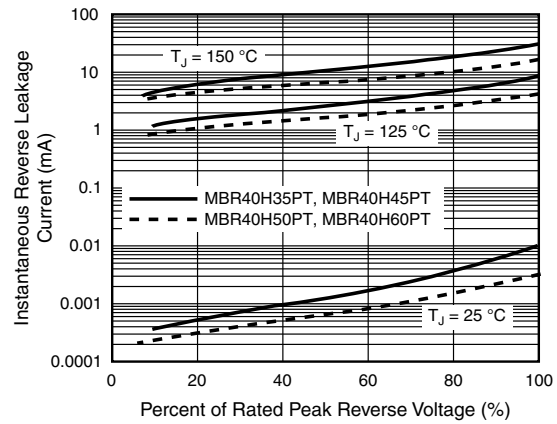


Fig. 4 - Typical Reverse Characteristics Per Diode

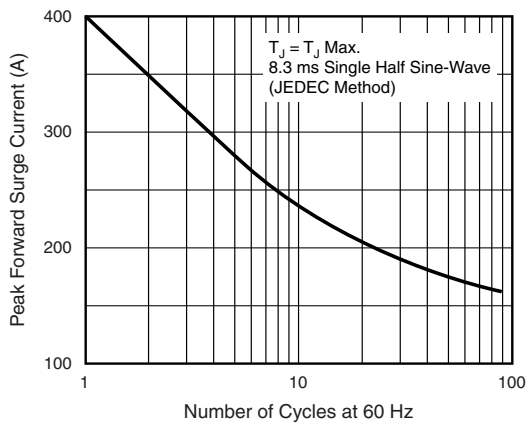


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

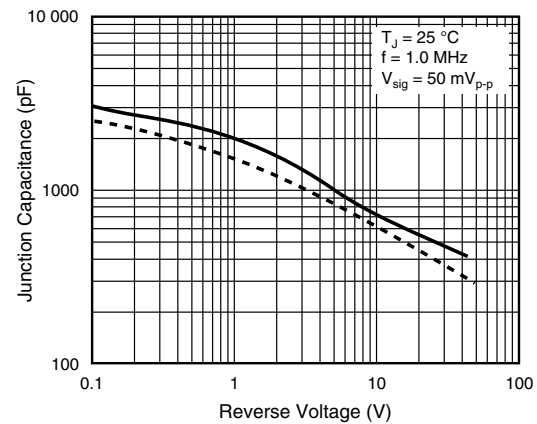


Fig. 5 - Typical Junction Capacitance Per Diode

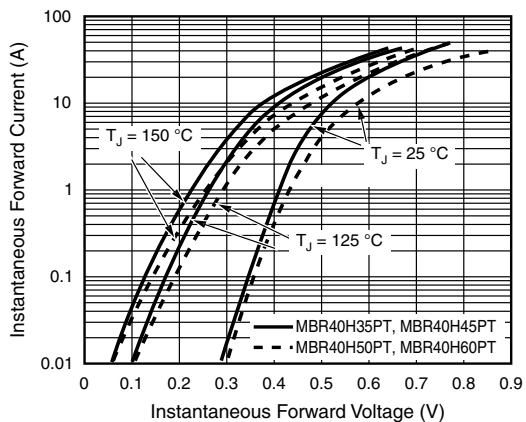


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

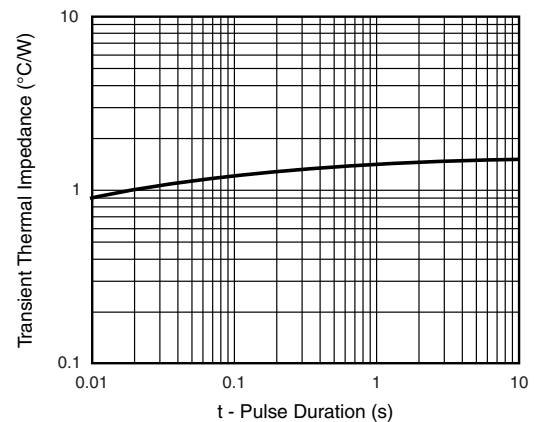
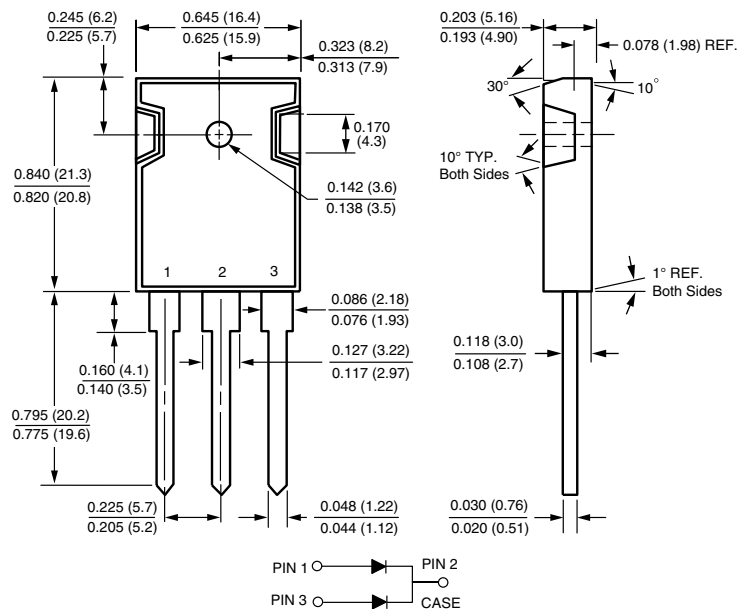


Fig. 6 - Typical Transient Thermal Impedance Per Diode



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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





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