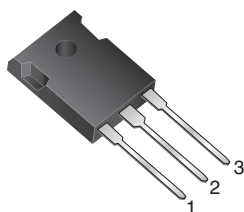




## Dual Common Cathode Schottky Rectifier

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
- Low leakage current
- 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 [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)

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

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	30 A
$V_{RRM}$	35 V, 45 V, 50 V, 60 V
$I_{FSM}$	200 A
$V_F$	0.58 V, 0.63 V
$I_R$	150 $\mu$ A
$T_J$ max.	175 °C
Package	TO-247AD
Diode variations	Dual Common Cathode

### MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	MBR30H35PT	MBR30H45PT	MBR30H50PT	MBR30H60PT	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>	30				A
Non-repetitive avalanche energy per diode at 25 °C, I <sub>AS</sub> = 1.5 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>	200				A
Peak repetitive reverse surge current per diode	I <sub>RRM</sub> <sup>(1)</sup>	2.0		1.0		A
Peak non-repetitive reverse energy (8/20 μs waveform)	E <sub>RSM</sub>	30		20		mJ
Electrostatic discharge capacitor voltage human body model: C = 100 pF, R = 1.5 Ω	V <sub>C</sub>					mJ
Voltage rate of change (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  $\mu$ s pulse width,  $f = 1.0$  kHz



ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	TEST CONDITIONS		MBR30H35PT MBR30H45PT		MBR30H50PT MBR30H60PT		UNIT
				TYP.	MAX.	TYP.	MAX.	
Maximum instantaneous forward voltage per diode	$V_F^{(1)}$	$I_F = 20\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$	-	0.66	-	0.74	V
		$I_F = 20\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$	0.54	0.58	0.60	0.63	
		$I_F = 30\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$	-	0.73	-	0.83	
		$I_F = 30\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$	0.62	0.66	0.66	0.70	
Maximum reverse current at rated $V_R$ per diode	$I_R^{(2)}$	$T_J = 25\text{ }^{\circ}\text{C}$		-	150	-	150	$\mu\text{A}$
		$T_J = 125\text{ }^{\circ}\text{C}$		6.0	25	4.0	25	mA

Notes

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	MBR30H35PT	MBR30H45PT	MBR30H50PT	MBR30H60PT	UNIT
Thermal resistance, junction to case per diode	$R_{\theta JC}$	1.4				$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-247AD	MBR30H45PT-E3/45	6.13	45	30/tube	Tube

RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

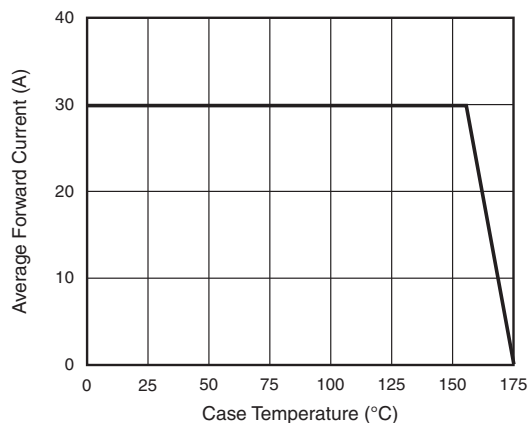


Fig. 1 - Forward Current Derating Curve

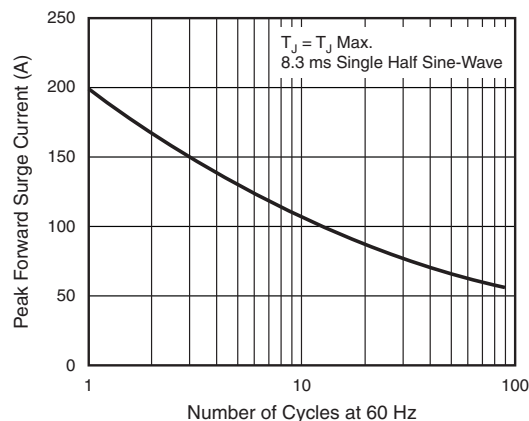


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

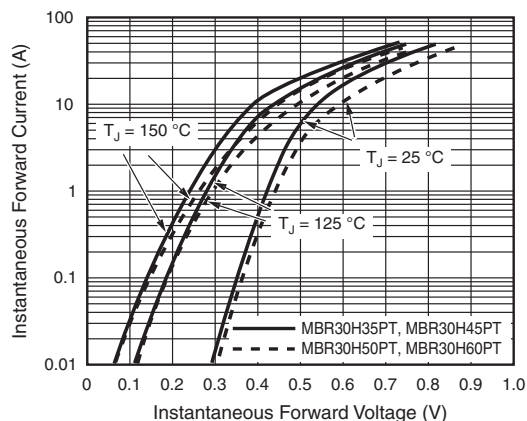


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

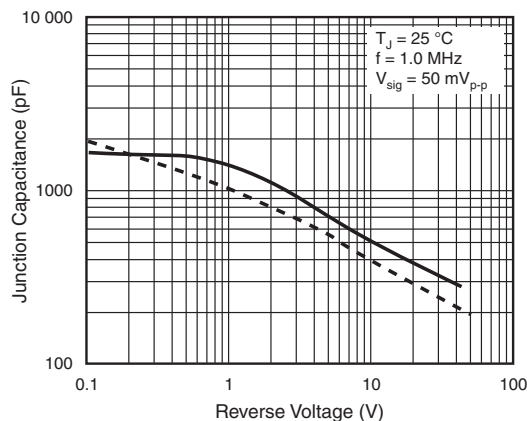


Fig. 5 - Typical Junction Capacitance Per Diode

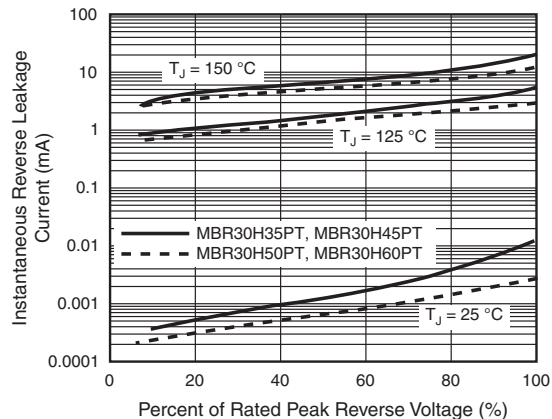


Fig. 4 - Typical Reverse Characteristics Per Diode

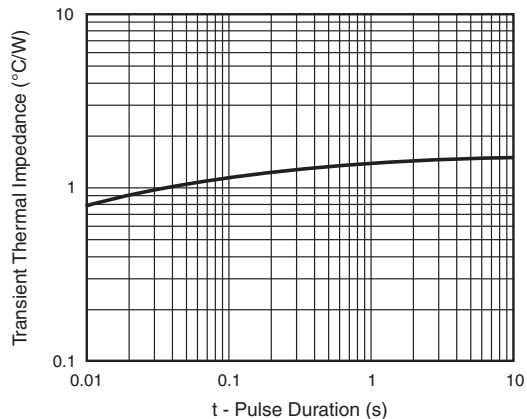
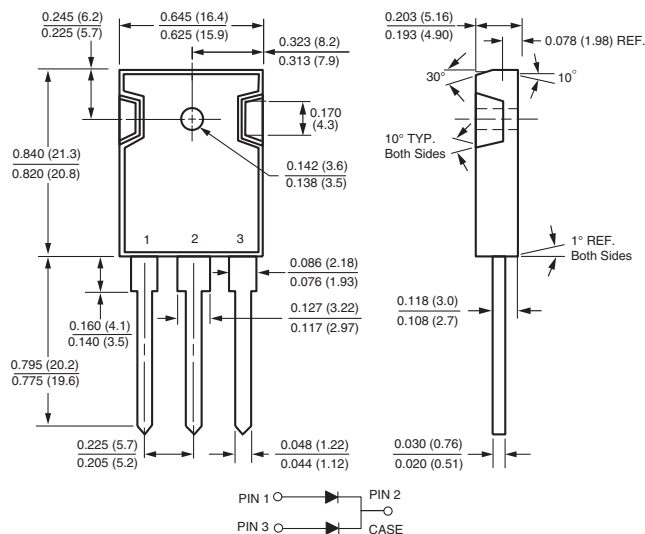


Fig. 6 - Typical Transient Thermal Impedance Per Diode

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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





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