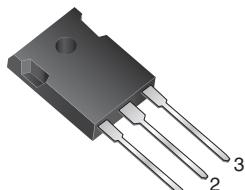


Dual Common Cathode Schottky Rectifier

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



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 μ 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_{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)	$I_{F(AV)}$	30				A		
Non-repetitive avalanche energy per diode at 25 °C, $I_{AS} = 1.5$ 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}	200				A		
Peak repetitive reverse surge current per diode	$I_{RRM}^{(1)}$	2.0		1.0		A		
Peak non-repetitive reverse energy (8/20 μ s waveform)	E_{RSM}	30		20		mJ		
Electrostatic discharge capacitor voltage human body model: $C = 100$ pF, $R = 1.5$ Ω	V_C					mJ		
Voltage rate of change (rated V_R)	dV/dt	10 000				V/ μ s		
Operating junction temperature range	T_J	- 65 to + 175				°C		
Storage temperature range	T_{STG}	- 65 to + 175				°C		

Note

⁽¹⁾ 2.0 μ s pulse width, $f = 1.0$ kHz

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ 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⁾	$I_F = 20\text{ A}$	$T_J = 25^\circ\text{C}$	-	0.66	-	0.74	V
		$I_F = 20\text{ A}$	$T_J = 125^\circ\text{C}$	0.54	0.58	0.60	0.63	
		$I_F = 30\text{ A}$	$T_J = 25^\circ\text{C}$	-	0.73	-	0.83	
		$I_F = 30\text{ A}$	$T_J = 125^\circ\text{C}$	0.62	0.66	0.66	0.70	
Maximum reverse current at rated V_R per diode	I_R ⁽²⁾		$T_J = 25^\circ\text{C}$	-	150	-	150	μA
			$T_J = 125^\circ\text{C}$	6.0	25	4.0	25	mA

Notes

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

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

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

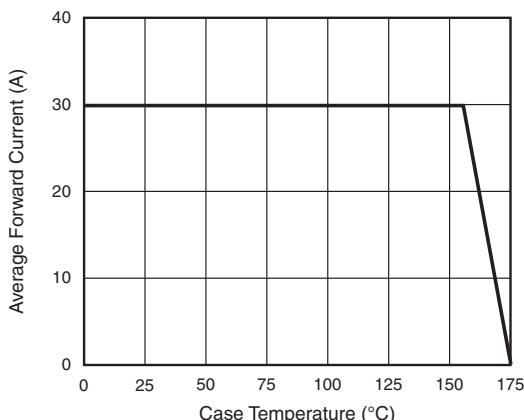
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

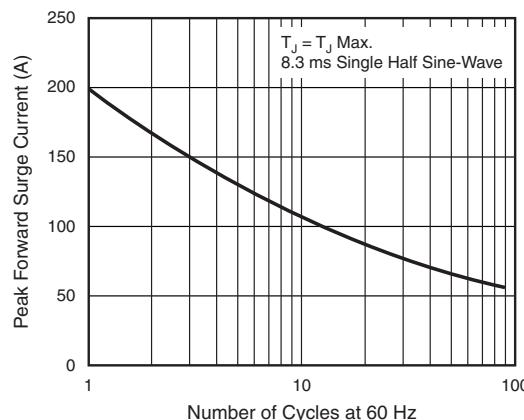


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

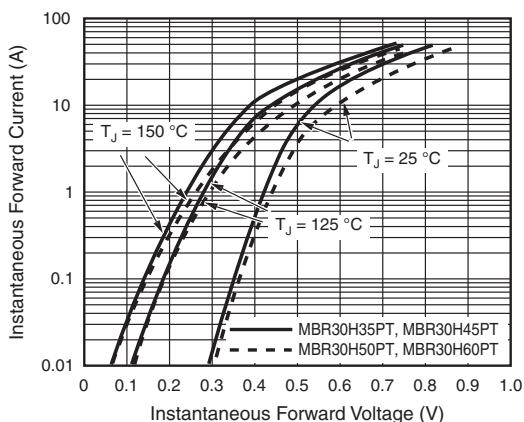


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

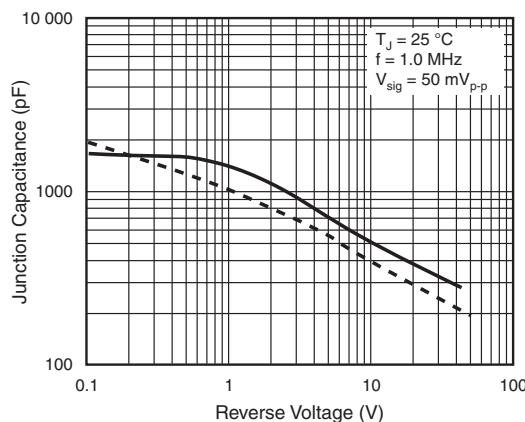


Fig. 5 - Typical Junction Capacitance Per Diode

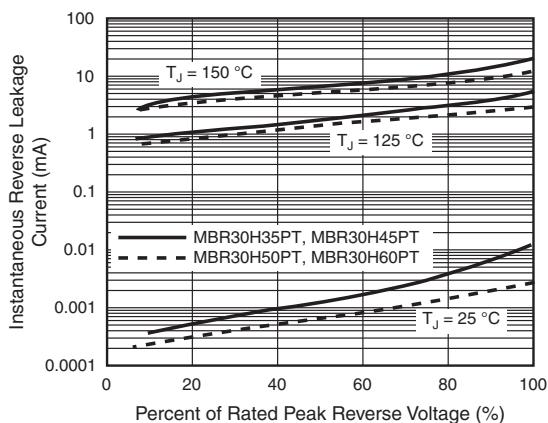


Fig. 4 - Typical Reverse Characteristics Per Diode

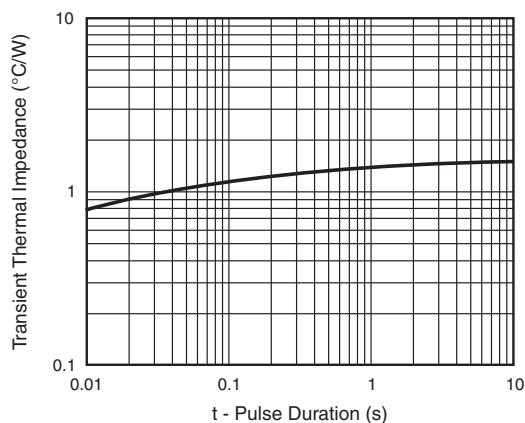
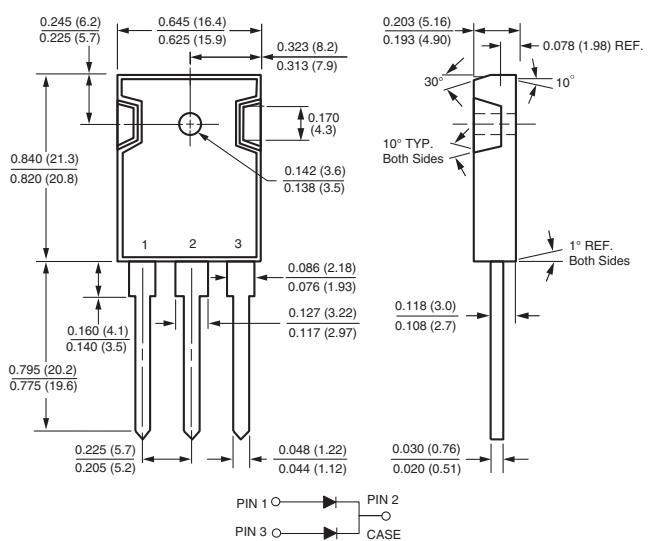


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-247AD (TO-3P)



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