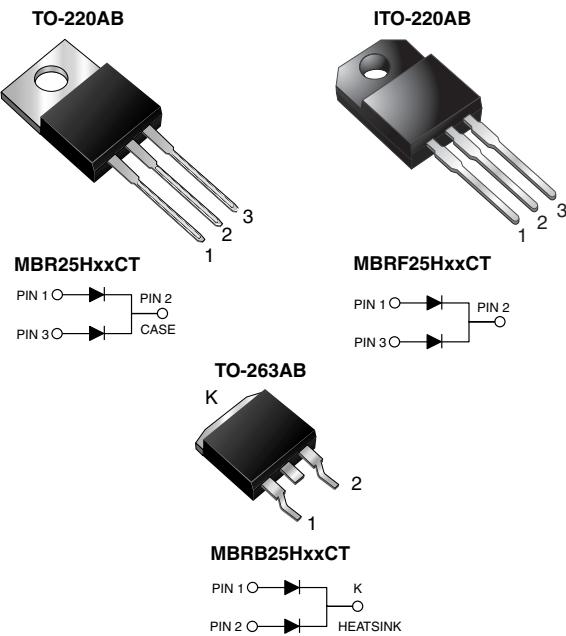


# Dual Common Cathode Schottky Rectifier

## High Barrier Technology for Improved High Temperature Performance



## 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
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB and ITO-220AB package)
- AEC-Q101 qualified
- 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-220AB, ITO-220AB, TO-263AB

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102  
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** As marked

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

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

PARAMETER	SYMBOL	MBR25H35CT	MBR25H45CT	MBR25H50CT	MBR25H60CT	UNIT	
Maximum repetitive peak reverse voltage	$V_{RRM}$	35	45	50	60	V	
Working peak reverse voltage	$V_{RWM}$	35	45	50	60		
Maximum DC blocking voltage	$V_{DC}$	35	45	50	60		
Max. average forward rectified current (fig. 1)	total device per diode	$I_{F(AV)}$	30				
			15				
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	$I_{FSM}$	150				A	
Peak repetitive reverse surge current per diode at $t_p = 2.0$ $\mu$ s, 1 kHz	$I_{RRM}$	1.0		0.5		A	
Peak non-repetitive reverse energy (8/20 $\mu$ s waveform)	$E_{RSR}$	25		20		mJ	

<b>MAXIMUM RATINGS</b> ( $T_C = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	MBR25H35CT	MBR25H45CT	MBR25H50CT	MBR25H60CT	UNIT
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 (rated $V_R$ )	$dV/dt$		10 000			$\text{V}/\mu\text{s}$
Operating junction and storage temperature range	$T_J, T_{STG}$		- 65 to + 175			$^\circ\text{C}$
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1 \text{ min}$	$V_{AC}$		1500			V

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25^\circ\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	TEST CONDITIONS		MBR25H35CT		MBR25H50CT	MBR25H60CT	UNIT
				TYP.	MAX.			
Maximum instantaneous forward voltage per diode	$V_F$ <sup>(1)</sup>	$I_F = 15 \text{ A}$	$T_J = 25^\circ\text{C}$	-	0.64	-	0.70	V
			$T_J = 125^\circ\text{C}$	0.50	0.54	0.56	0.60	
		$I_F = 30 \text{ A}$	$T_J = 25^\circ\text{C}$	-	0.74	-	0.85	
			$T_J = 125^\circ\text{C}$	0.63	0.67	0.68	0.72	
Maximum reverse current per diode	$I_R$ <sup>(2)</sup>	Rated $V_R$	$T_J = 25^\circ\text{C}$	-	100	-	100	$\mu\text{A}$
			$T_J = 125^\circ\text{C}$	6.0	20	4.0	20	mA

**Notes**

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

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

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Thermal resistance, junction to case per diode	$R_{\theta JC}$	1.5	4.5	1.5	$^\circ\text{C}/\text{W}$

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR25H45CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MBRF25H45CT-E3/45	1.99	45	50/tube	Tube
TO-263AB	MBRB25H45CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MBRB25H45CT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AB	MBR25H45CTHE3/45 <sup>(1)</sup>	1.85	45	50/tube	Tube
ITO-220AB	MBRF25H45CTHE3/45 <sup>(1)</sup>	1.99	45	50/tube	Tube
TO-263AB	MBRB25H45CTHE3/45 <sup>(1)</sup>	1.35	45	50/tube	Tube
TO-263AB	MBRB25H45CTHE3/81 <sup>(1)</sup>	1.35	81	800/reel	Tape and reel

**Note**

(1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

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

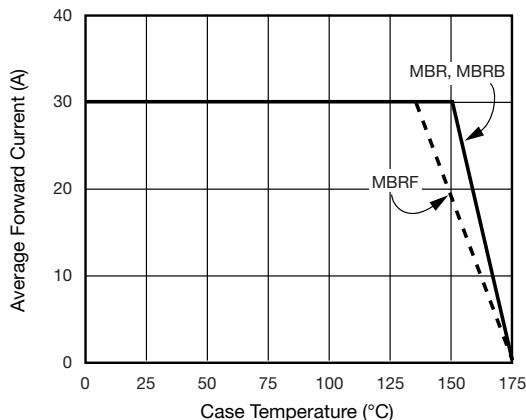


Fig. 1 - Forward Derating Curve (Total)

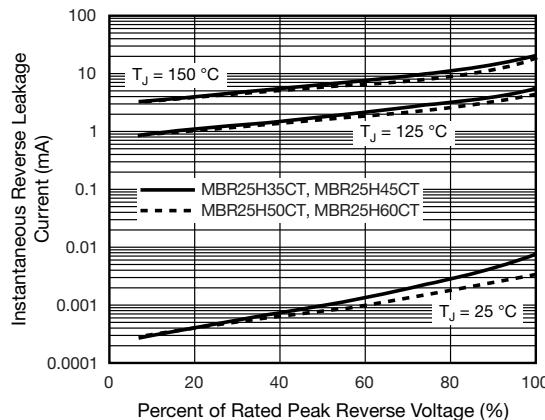


Fig. 4 - Typical Reverse Characteristics Per Diode

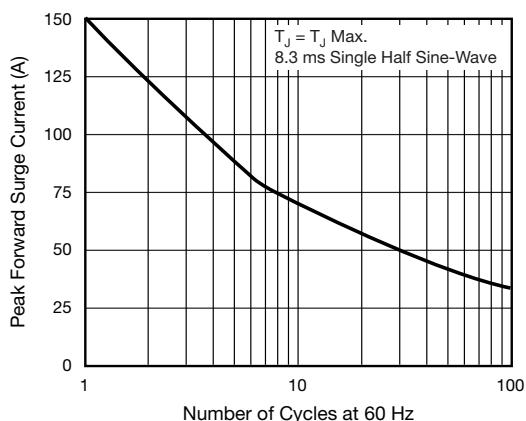


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

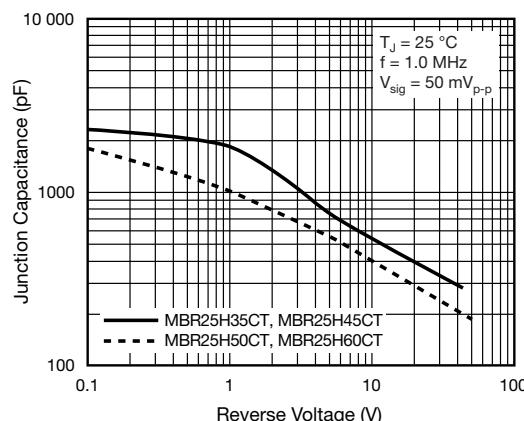


Fig. 5 - Typical Junction Capacitance Per Diode

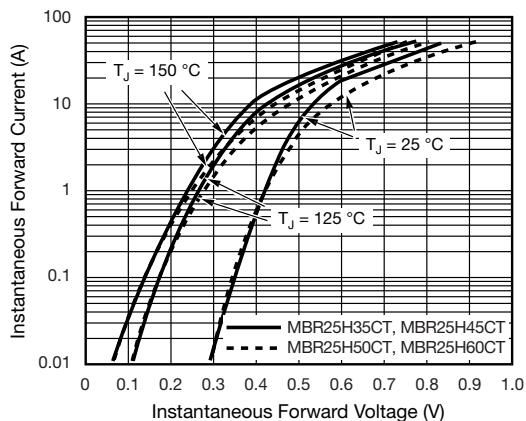


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

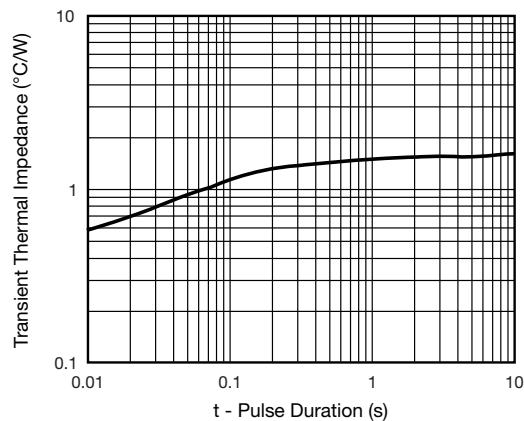
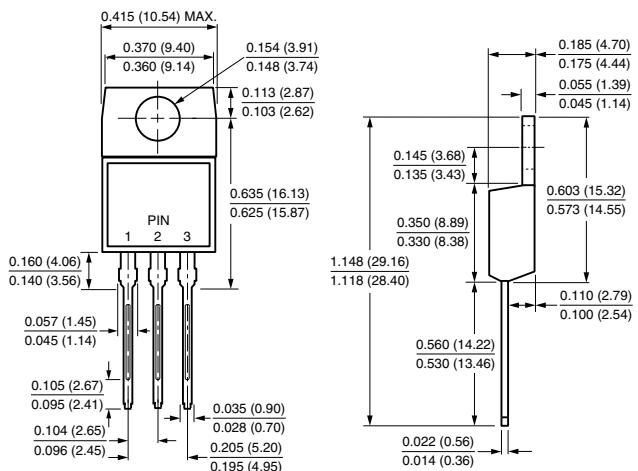


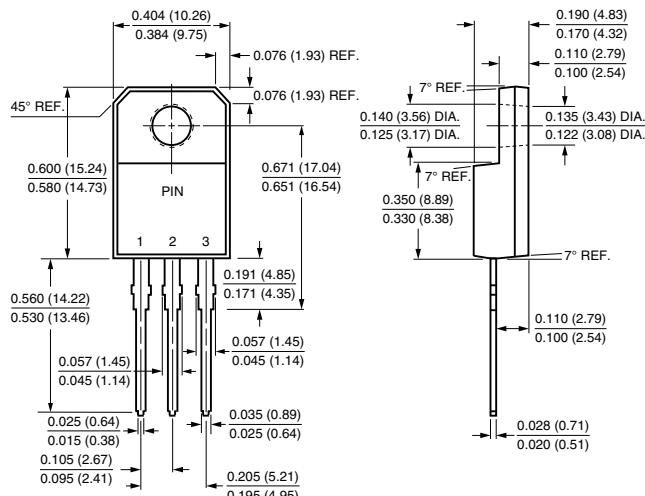
Fig. 6 - Typical Transient Thermal Impedance Per Diode

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

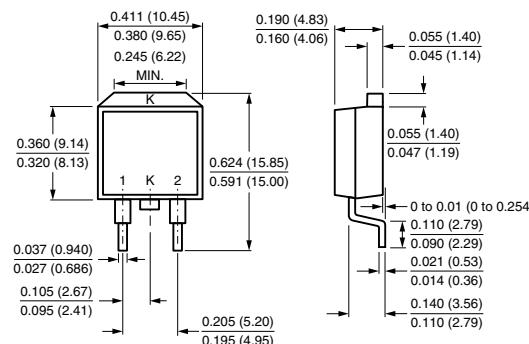
TO-220AB



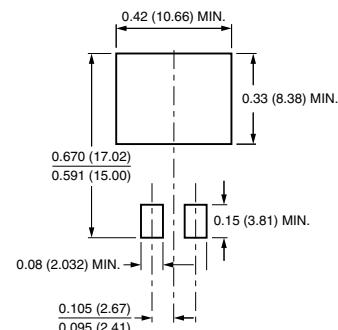
ITO-220AB



TO-263AB



## Mounting Pad Layout



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