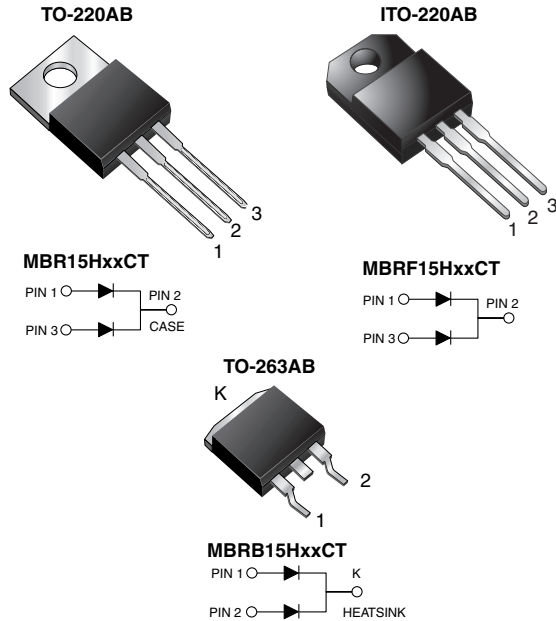


## Dual Common Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



### FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, 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 available  
- Automotive ordering code: base P/NHE3\_A
- 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, and 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

Base P/NHE3\_X - RoHS-compliant, AEC-Q101 qualified

("\_X" denotes revision code, e.g. A, B, ...)

**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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 7.5 A
$V_{RRM}$	45 V, 60 V
$I_{FSM}$	150 A
$V_F$	0.55 V, 0.61 V
$I_R$	50 $\mu$ A
$T_J$ max.	175 °C
Package	TO-220AB, ITO-220AB, TO-263AB
Diode variations	Common cathode

MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	MBR15H45CT	MBR15H60CT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	45	60	V
Working peak reverse voltage	$V_{RWM}$	45	60	
Maximum DC blocking voltage	$V_{DC}$	45	60	
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	total device		A
		per diode		
Non-repetitive avalanche energy at 25 °C, $I_{AS} = 4$ A, $L = 10$ mH per diode	$E_{AS}$	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	
Peak non-repetitive reverse energy (8/20 $\mu$ s waveform)	$E_{RSM}$	20	10	mJ
Electrostatic discharge capacitor voltage Human body model: $C = 100$ F, $R = 1.5$ k $\Omega$	$V_C$	25		kV
Voltage rate of change (rated $V_F$ )	dV/dt	10 000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	-65 to +175		°C
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1$ min	$V_{AC}$	1500		V



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	TEST CONDITIONS		MBR15H45CT		MBR15H60CT		UNIT
				TYP.	MAX.	TYP.	MAX.	
Maximum instantaneous forward voltage per diode	$V_F$ <sup>(1)</sup>	$I_F = 7.5\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	-	0.63	-	0.73	V
		$I_F = 7.5\text{ A}$	$T_J = 125\text{ }^\circ\text{C}$	0.50	0.55	0.58	0.61	
		$I_F = 15\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	-	0.75	-	0.87	
		$I_F = 15\text{ A}$	$T_J = 125\text{ }^\circ\text{C}$	0.61	0.66	0.68	0.72	
Maximum reverse current per diode	$I_R$ <sup>(2)</sup>	Rated $V_R$	$T_J = 25\text{ }^\circ\text{C}$	-	50	-	50	$\mu\text{A}$
			$T_J = 125\text{ }^\circ\text{C}$	3.0	10	2.0	10	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> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Maximum thermal resistance per diode	$R_{\theta JC}$	3.0	5.0	3.0	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR15H45CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MBRF15H45CT-E3/45	1.99	45	50/tube	Tube
TO-263AB	MBRB15H45CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MBRB15H45CT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AB	MBR15H45CTHE3/45 <sup>(1)</sup>	1.85	45	50/tube	Tube
ITO-220AB	MBRF15H45CTHE3/45 <sup>(1)</sup>	1.99	45	50/tube	Tube
TO-263AB	MBRB15H45CTHE3/45 <sup>(1)</sup>	1.35	45	50/tube	Tube
TO-263AB	MBRB15H45CTHE3/81 <sup>(1)</sup>	1.35	81	800/reel	Tape and reel
TO-263AB	MBRB15H45CTHE3_A/P <sup>(1)</sup>	1.35	P	50/tube	Tube
TO-263AB	MBRB15H45CTHE3_A/I <sup>(1)</sup>	1.35	I	800/reel	Tape and reel

**Note**

(1) AEC-Q101 qualified



## RATINGS AND CHARACTERISTICS CURVES (T<sub>C</sub> = 25 °C unless otherwise noted)

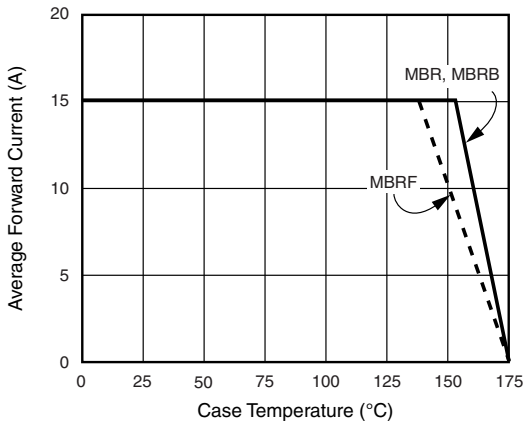


Fig. 1 - Forward Derating Curve Per Diode

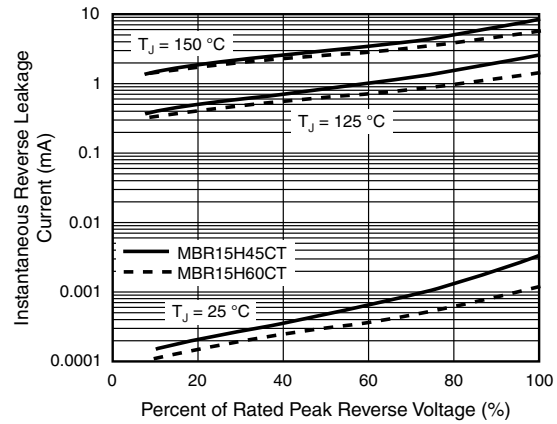


Fig. 4 - Typical Reverse Characteristics Per Diode

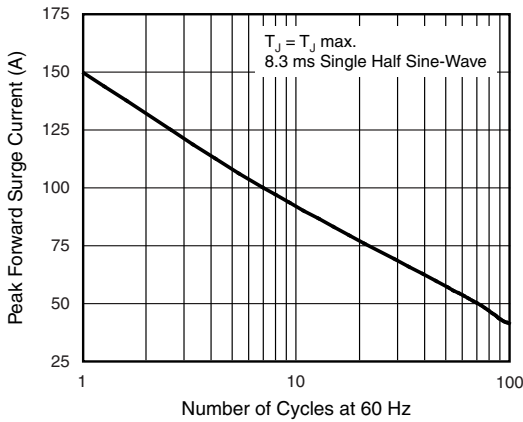


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

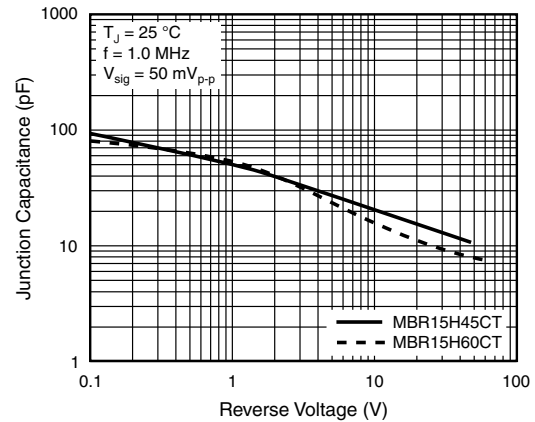


Fig. 5 - Typical Junction Capacitance Per Diode

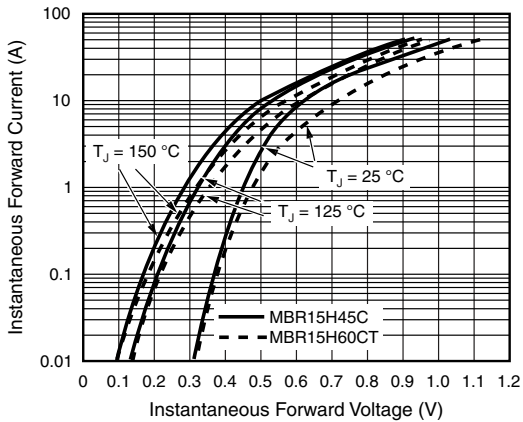


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

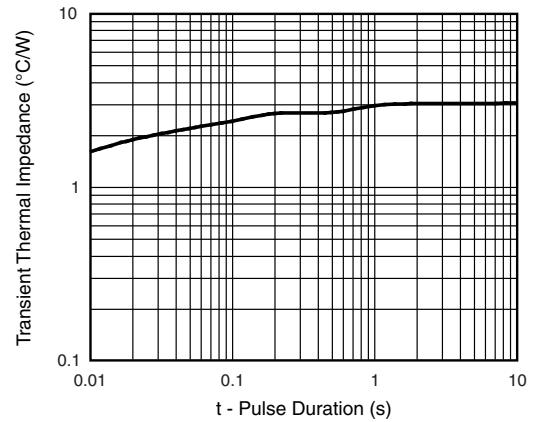
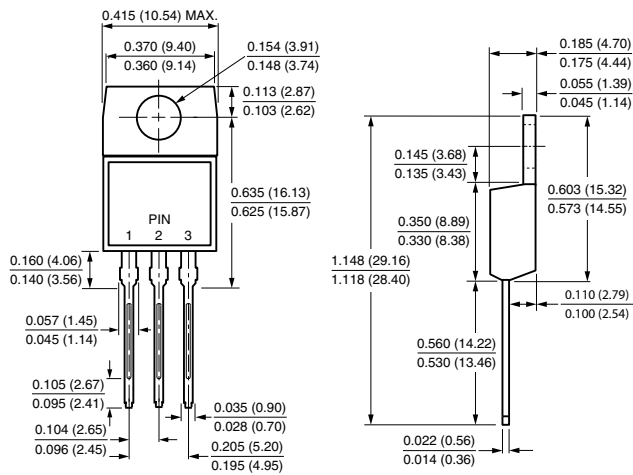


Fig. 6 - Typical Transient Thermal Impedance Per Diode

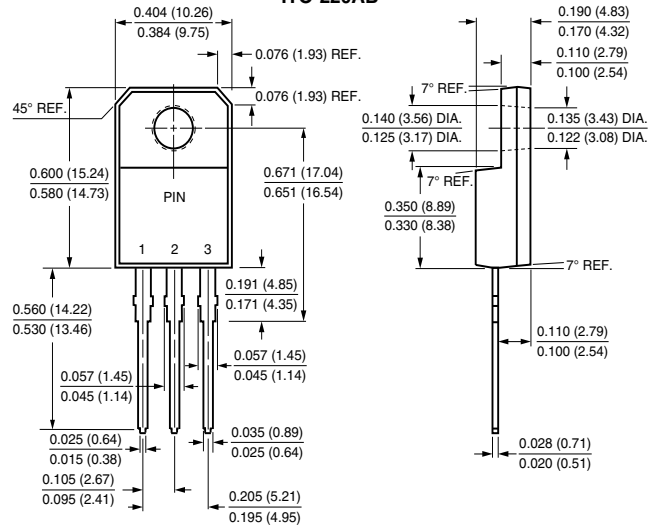


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

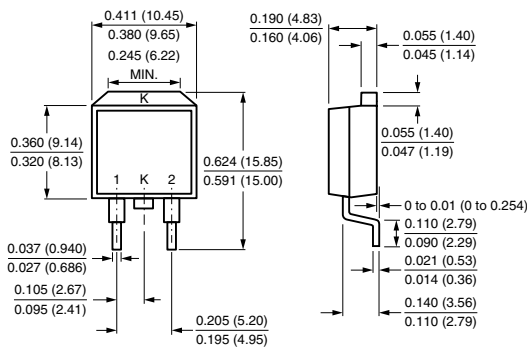
### TO-220AB



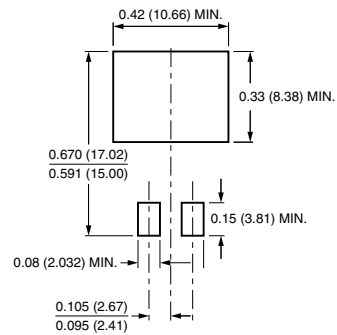
### ITO-220AB



### TO-263AB



### Mounting Pad Layout





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