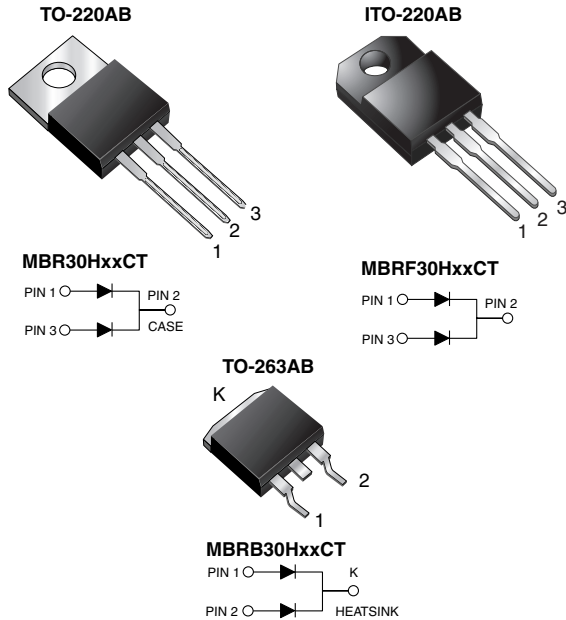


## Dual Common Cathode Schottky Rectifier

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 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, 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  
 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 15 A
$V_{RRM}$	35 V to 60 V
$I_{FSM}$	150 A
$V_F$	0.56 V, 0.59 V
$I_R$	80 $\mu$ A, 60 $\mu$ A
$T_J$ max.	175 °C
Package	TO-220AB, ITO-220AB, TO-263AB
Diode variations	Dual common cathode

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)						
PARAMETER	SYMBOL	MBR30H35CT	MBR30H45CT	MBR30H50CT	MBR30H60CT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	35	45	50	60	V
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
		15				
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 $t_p = 2$ $\mu$ s, 1 kHz	$I_{RRM}$	1.0		0.5		A
Peak non-repetitive reverse energy (8/20 $\mu$ s waveform)	$E_{RSM}$	25		20		mJ



<b>MAXIMUM RATINGS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	MBR30H35CT	MBR30H45CT	MBR30H50CT	MBR30H60CT	UNIT
Non-repetitive avalanche energy per diode at $25\text{ }^\circ\text{C}$ , $I_{AS} = 4\text{ A}$ , $L = 10\text{ mH}$	$E_{AS}$	80				mJ
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				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> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	MBR30H35CT MBR30H45CT	MBR30H50CT MBR30H60CT	UNIT
Maximum instantaneous forward voltage per diode <sup>(1)</sup>	$I_F = 15\text{ A}$	$T_C = 25\text{ }^\circ\text{C}$	$V_F$	-	0.62	V
	$I_F = 15\text{ A}$	$T_C = 125\text{ }^\circ\text{C}$		0.49	0.56	
	$I_F = 30\text{ A}$	$T_C = 25\text{ }^\circ\text{C}$		-	0.73	
	$I_F = 30\text{ A}$	$T_C = 125\text{ }^\circ\text{C}$		0.62	0.67	
Maximum reverse current per diode at working peak reverse voltage <sup>(2)</sup>	$T_J = 25\text{ }^\circ\text{C}$		$I_R$	-	80	$\mu\text{A}$
	$T_J = 125\text{ }^\circ\text{C}$			5.0	15	4.0

**Notes**

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

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

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR30H45CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MBRF30H45CT-E3/45	1.99	45	50/tube	Tube
TO-263AB	MBRB30H45CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MBRB30H45CT-E3/81	1.35	81	800/teel	Tape and reel
TO-220AB	MBR30H45CTHE3/45 <sup>(1)</sup>	1.85	45	50/tube	Tube
ITO-220AB	MBRF30H45CTHE3/45 <sup>(1)</sup>	1.99	45	50/tube	Tube
TO-263AB	MBRB30H45CTHE3/45 <sup>(1)</sup>	1.35	45	50/tube	Tube
TO-263AB	MBRB30H45CTHE3/81 <sup>(1)</sup>	1.35	81	800/teel	Tape and reel
TO-263AB	MBRB30H45CTHE3_A/P <sup>(1)</sup>	1.35	P	50/tube	Tube
TO-263AB	MBRB30H45CTHE3_A/I <sup>(1)</sup>	1.35	I	800/teel	Tape and reel

**Note**

- <sup>(1)</sup> AEC-Q101 qualified



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

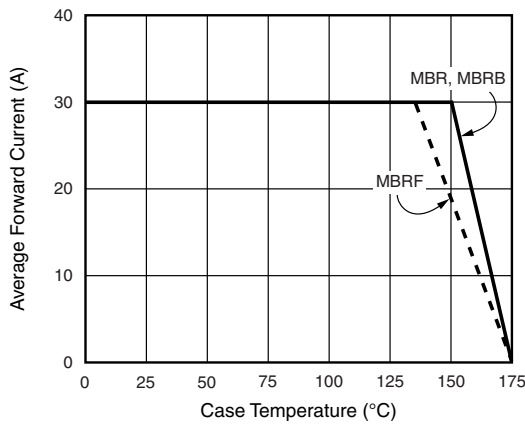


Fig. 1 - Forward Derating Curve

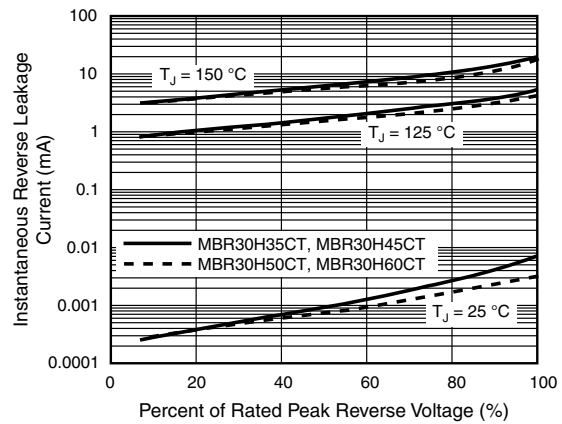


Fig. 4 - Typical Reverse Characteristics Per Diode

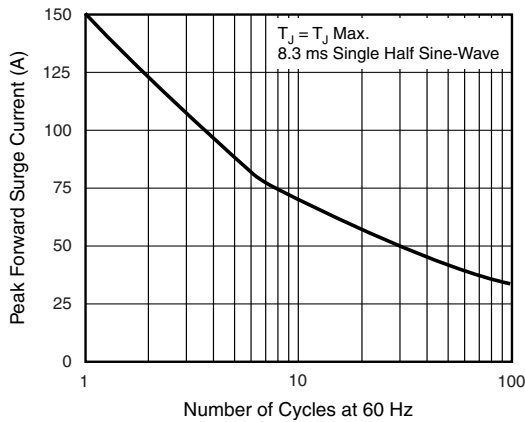


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

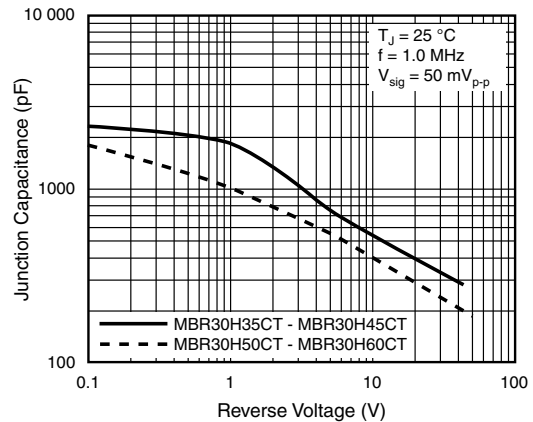


Fig. 5 - Typical Junction Capacitance Per Diode

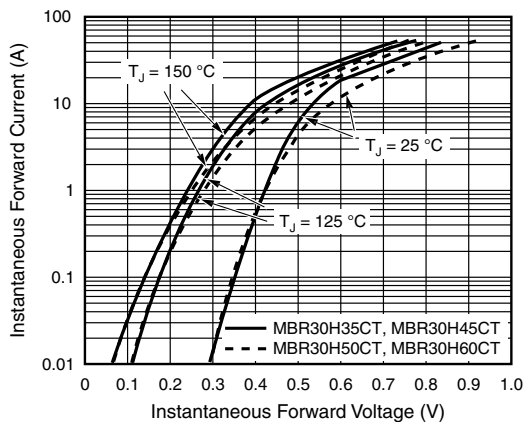


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

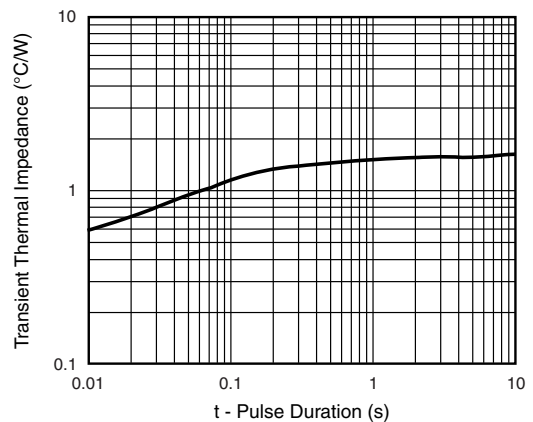
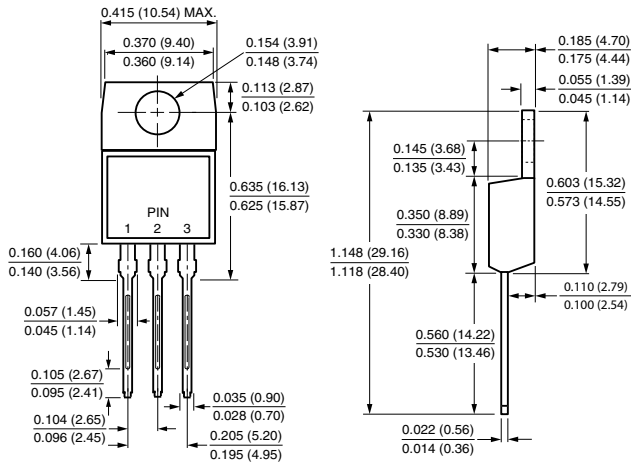


Fig. 6 - Typical Transient Thermal Impedance Per Diode

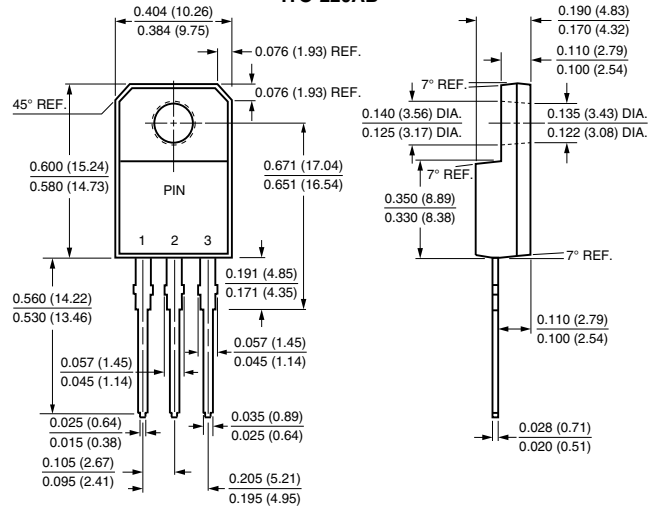


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

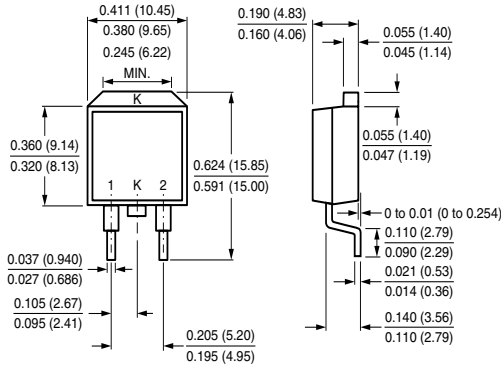
### TO-220AB



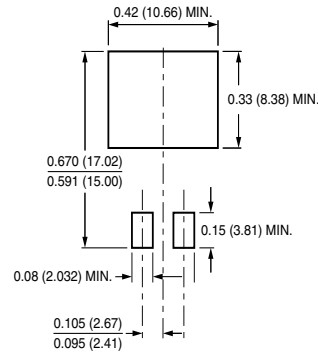
### ITO-220AB



### TO-263AB



### Mounting Pad Layout





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