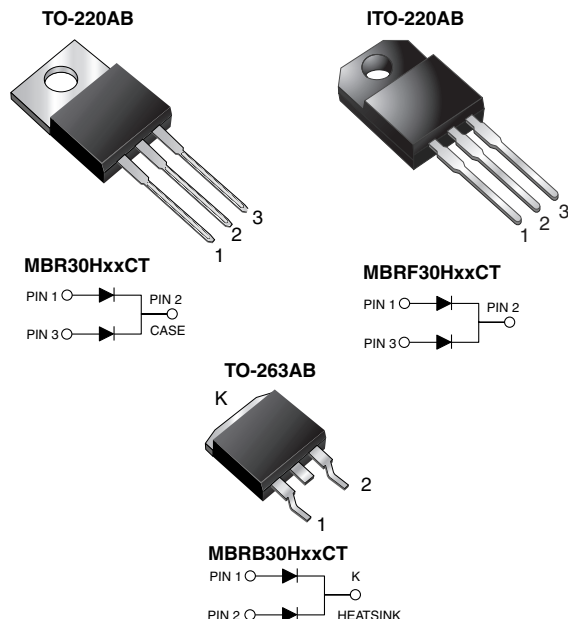




Dual Common Cathode Schottky Rectifier

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

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 μ A, 60 μ 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) total device per diode	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 μs, 1 kHz	I _{RRM}	1.0		0.5		A
Peak non-repetitive reverse energy (8/20 μs waveform)	E _{RSM}	25		20		mJ

**MAXIMUM RATINGS** ($T_A = 25\text{ }^{\circ}\text{C}$ 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/ μs
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

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

PARAMETER	TEST CONDITIONS		SYMBOL	MBR30H35CT MBR30H45CT		MBR30H50CT MBR30H60CT		UNIT
Maximum instantaneous forward voltage per diode ⁽¹⁾	I _F = 15 A	T _C = 25 °C	V _F	-	0.62	-	0.68	V
	I _F = 15 A	T _C = 125 °C		0.49	0.56	0.55	0.59	
	I _F = 30 A	T _C = 25 °C		-	0.73	-	0.83	
	I _F = 30 A	T _C = 125 °C		0.62	0.67	0.68	0.71	
Maximum reverse current per diode at working peak reverse voltage ⁽²⁾		T _J = 25 °C	I _R	-	80	-	60	μA
		T _J = 125 °C		5.0	15	4.0	15	mA

Notes⁽¹⁾ Pulse test: 300 μs pulse width, 1 % duty cycle⁽²⁾ Pulse test: pulse width $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ($T_A = 25\text{ }^{\circ}\text{C}$ 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	$^{\circ}\text{C/W}$

ORDERING INFORMATION (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 ⁽¹⁾	1.85	45	50/tube	Tube
ITO-220AB	MBRF30H45CTHE3/45 ⁽¹⁾	1.99	45	50/tube	Tube
TO-263AB	MBRB30H45CTHE3/45 ⁽¹⁾	1.35	45	50/tube	Tube
TO-263AB	MBRB30H45CTHE3/81 ⁽¹⁾	1.35	81	800/teel	Tape and reel
TO-263AB	MBRB30H45CTHE3_A/P ⁽¹⁾	1.35	P	50/tube	Tube
TO-263AB	MBRB30H45CTHE3_A/I ⁽¹⁾	1.35	I	800/teel	Tape and reel

Note⁽¹⁾ AEC-Q101 qualified



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

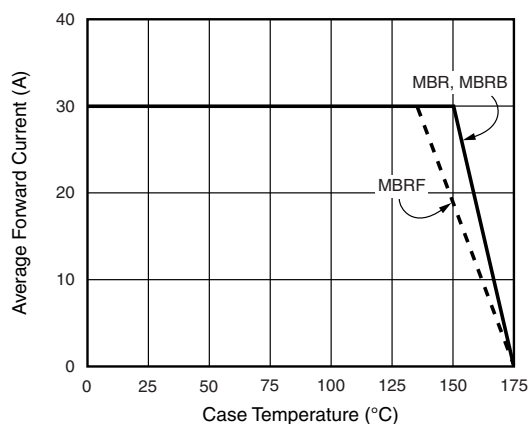


Fig. 1 - Forward Derating Curve

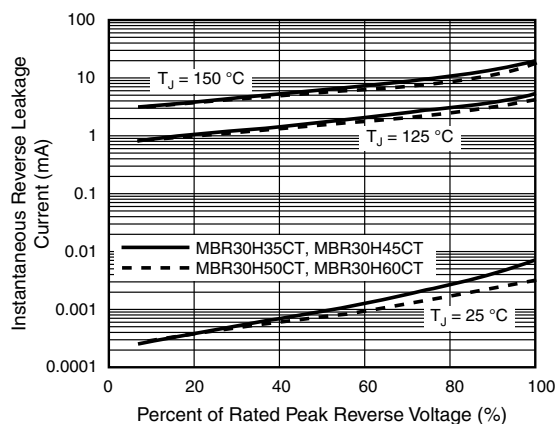


Fig. 4 - Typical Reverse Characteristics Per Diode

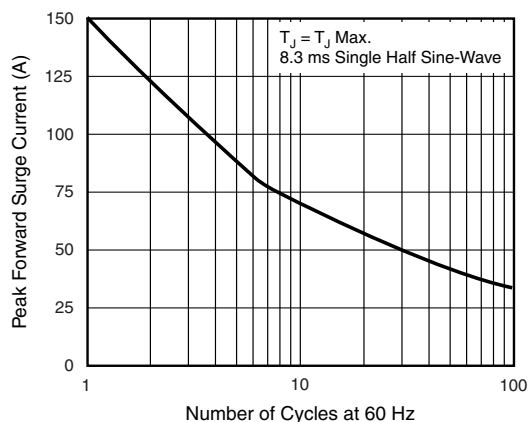


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

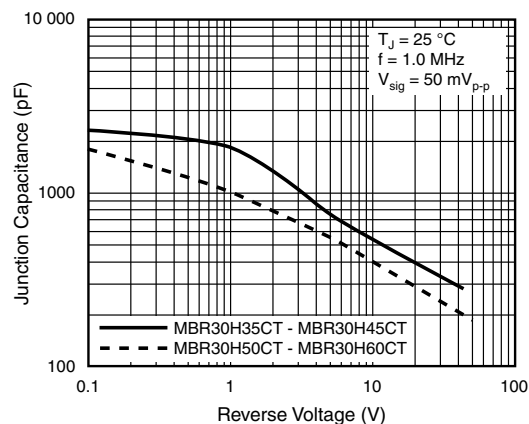


Fig. 5 - Typical Junction Capacitance Per Diode

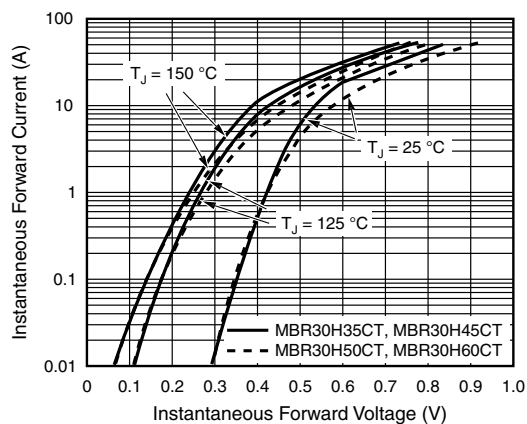


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

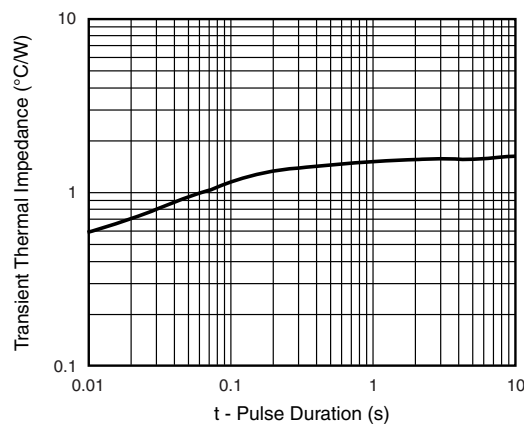
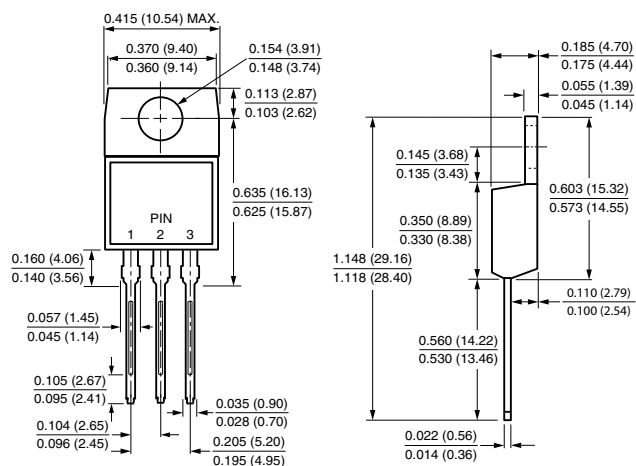


Fig. 6 - Typical Transient Thermal Impedance Per Diode

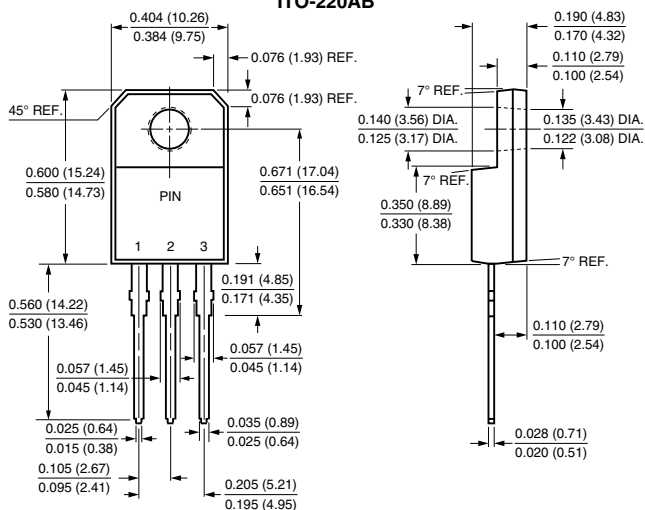


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

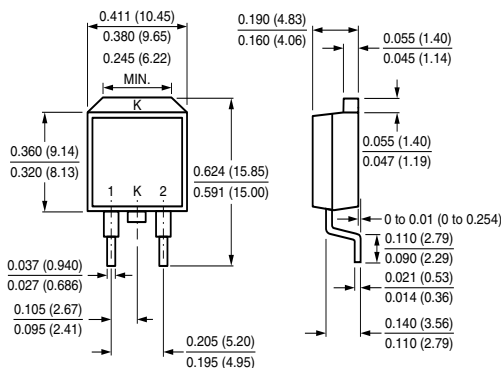
TO-220AB



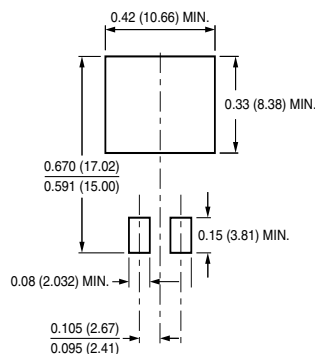
ITO-220AB



TO-263AB



Mounting Pad Layout





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