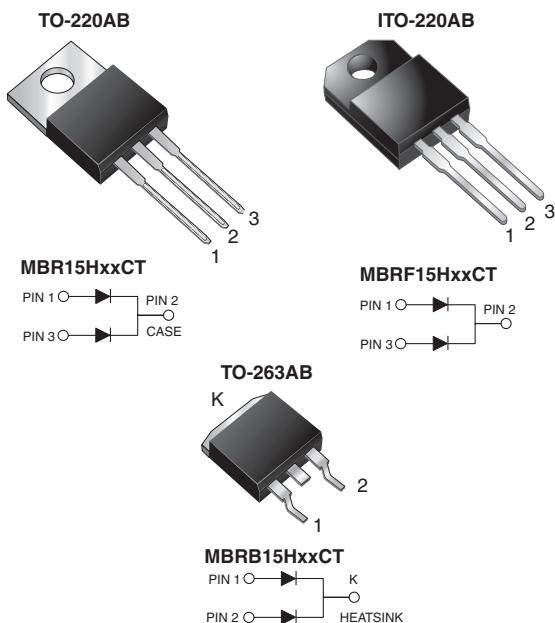


Dual Common Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



RoHS
COMPLIANT

FEATURES

- 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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

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

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	
$I_{F(AV)}$	7.5 A x 2
V_{RRM}	35 V, 60 V
I_{FSM}	150 A
V_F	0.55 V, 0.61 V
I_R	50 μ A
T_J max.	175 °C

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)								
PARAMETER	SYMBOL	MBR15H35CT	MBR15H45CT	MBR15H50CT	MBR15H60CT	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			
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$ total device per diode	15				A		
Non-repetitive avalanche energy at 25 °C, $I_{AS} = 4$ A, $L = 10$ mH per diode		7.5						
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 $t_p = 2.0$ μ s, 1 kHz	I_{RRM}	1.0		0.5				
Peak non-repetitive reverse energy (8/20 μ s waveform)	E_{RSM}	20		10		mJ		
Electrostatic discharge capacitor voltage Human body model: $C = 100$ F, $R = 1.5$ k Ω	V_C	25				kV		
Voltage rate of change (rated V_R)	dV/dt	10 000				V/ μ 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		

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	TEST CONDITIONS		MBR15H35CT		MBR15H50CT		UNIT
				TYP.	MAX.	TYP.	MAX.	
Maximum instantaneous forward voltage per diode	V_F ⁽¹⁾	$I_F = 7.5\text{ A}$	$T_J = 25^\circ\text{C}$	-	0.63	-	0.73	V
		$I_F = 7.5\text{ A}$	$T_J = 125^\circ\text{C}$	0.50	0.55	0.58	0.61	
		$I_F = 15\text{ A}$	$T_J = 25^\circ\text{C}$	-	0.75	-	0.87	
		$I_F = 15\text{ A}$	$T_J = 125^\circ\text{C}$	0.61	0.66	0.68	0.72	
Maximum reverse current per diode	I_R ⁽²⁾	Rated V_R	$T_J = 25^\circ\text{C}$	-	50	-	50	μA
			$T_J = 125^\circ\text{C}$	3.0	10	2.0	10	mA

Notes

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

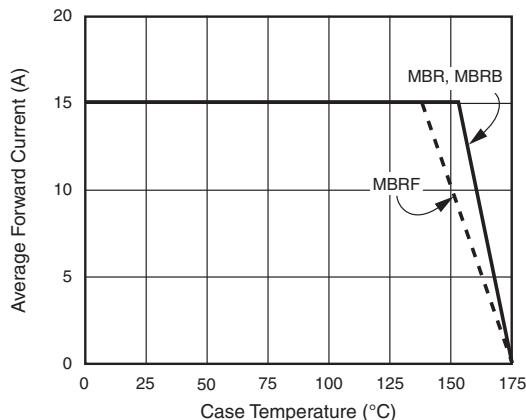
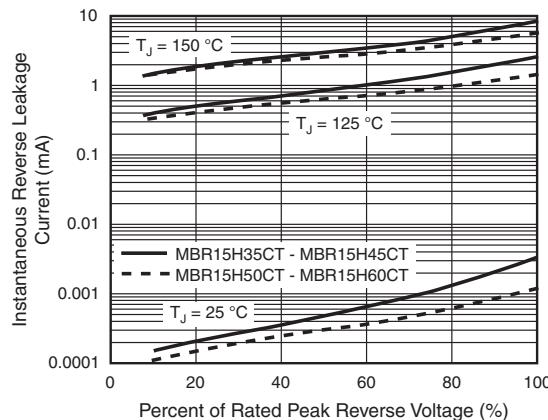
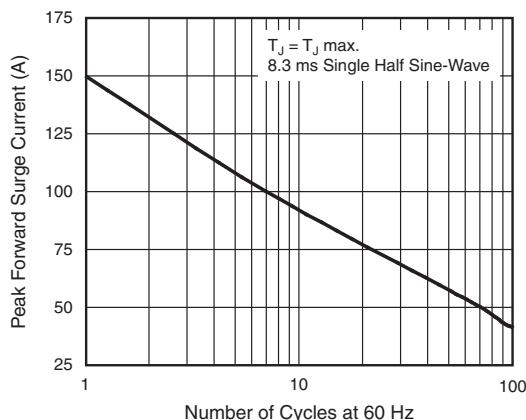
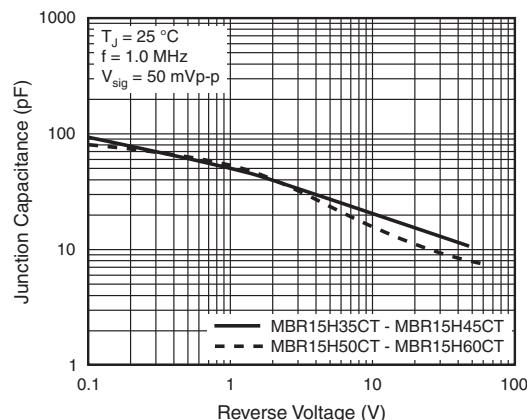
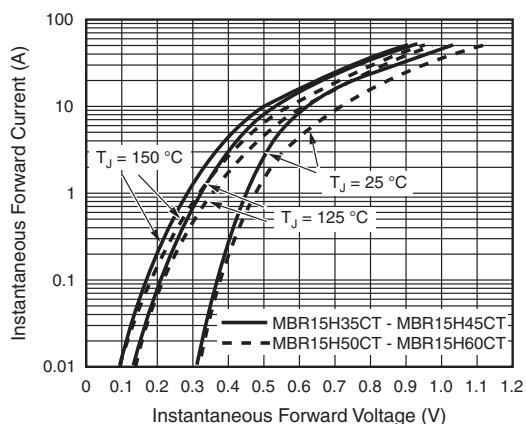
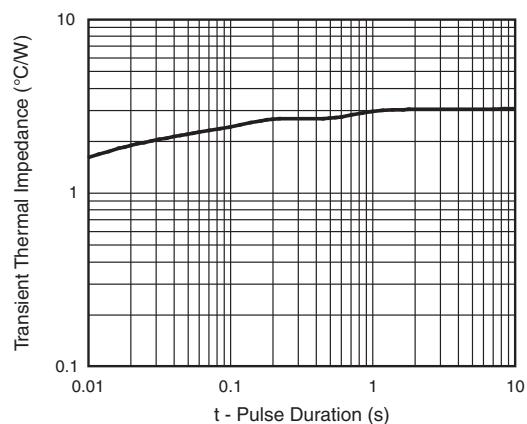
(2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Maximum thermal resistance per diode	$R_{\theta\text{JC}}$	3.0	5.0	3.0	$^\circ\text{C/W}$

ORDERING INFORMATION (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 ⁽¹⁾	1.85	45	50/tube	Tube
ITO-220AB	MBRF15H45CTHE3/45 ⁽¹⁾	1.99	45	50/tube	Tube
TO-263AB	MBRB15H45CTHE3/45 ⁽¹⁾	1.35	45	50/tube	Tube
TO-263AB	MBRB15H45CTHE3/81 ⁽¹⁾	1.35	81	800/reel	Tape and reel

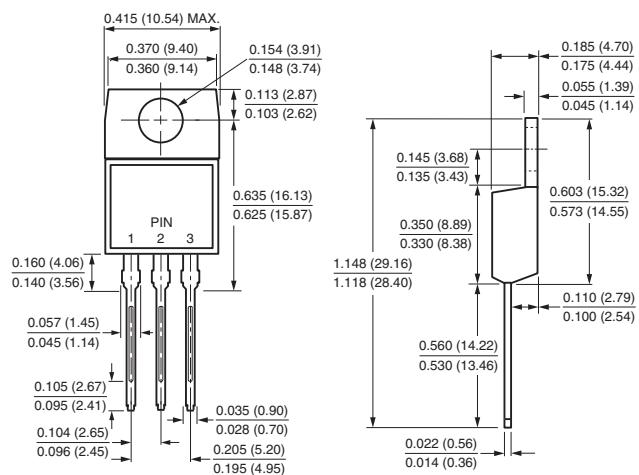
Note

(1) AEC-Q101 qualified

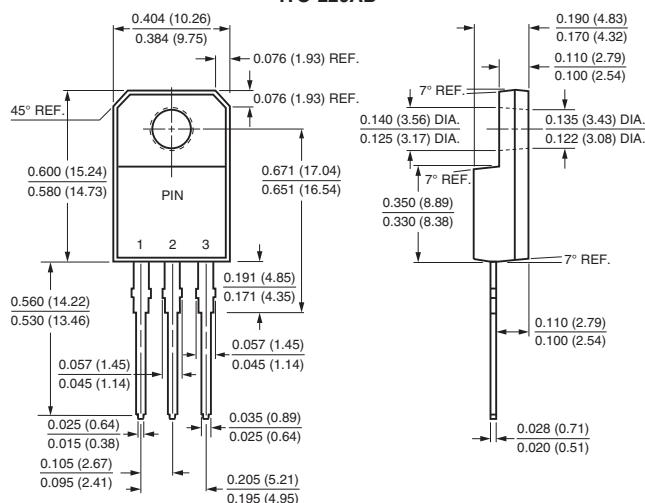
RATINGS AND CHARACTERISTICS CURVES
 $(T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Forward Derating Curve 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)

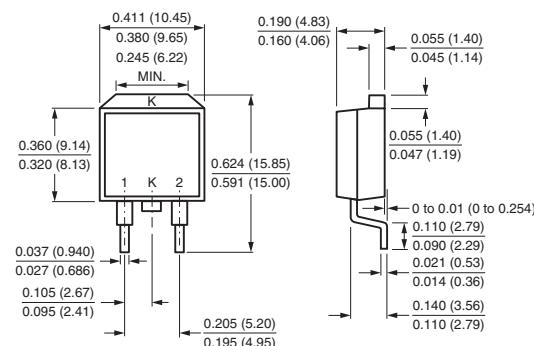
TO-220AB



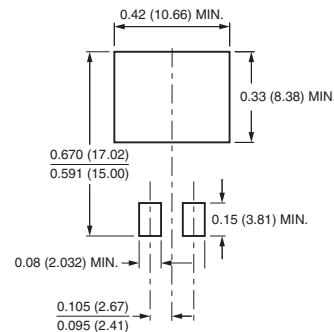
ITO-220AB



TO-263AB



Mounting Pad Layout



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