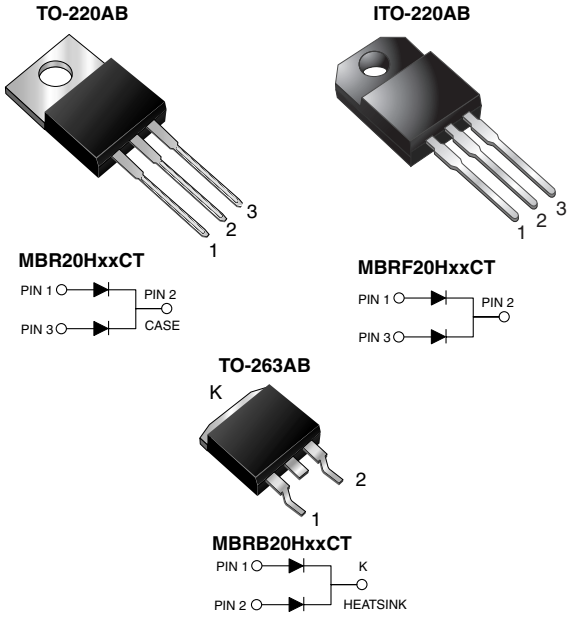
Dual Common-Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



FEATURES

- 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 dip 260 °C, 40 s (for TO-220AB and ITO-220AB package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters or polarity protection application.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A x 2
V_{RRM}	35 V to 60 V
I_{FSM}	150 A
V_F	0.55 V, 0.61 V
I_R	100 µA
T_J max.	175 °C

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, TO-263AB

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	MBR20H35CT	MBR20H45CT	MBR20H50CT	MBR20H60CT	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
Max. average forward rectified current (Fig. 1) total device / per diode	$I_{F(AV)}$	20 / 10				A
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 µs, 1 kHz	I_{RRM}	1.0		0.5		A
Peak non-repetitive reverse energy (8/20 µs waveform)	E_{RSM}	20		10		mJ

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**MBR20H35CT**	**MBR20H45CT**	**MBR20H50CT**	**MBR20H60CT**	**UNIT**
Electrostatic discharge capacitor voltage Human body model: C = 100 pF, R = 1.5 kΩ	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				°C
Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min	V_{AC}	1500				V

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)								
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**MBR20H35CT MBR20H45CT**		**MBR20H50CT MBR20H60CT**		**UNIT**
				TYP.	**MAX.**	**TYP.**	**MAX.**	
Maximum instantaneous forward voltage per diode (1)	I_F = 10 A I_F = 10 A I_F = 20 A I_F = 20 A	T_J = 25 °C T_J = 125 °C T_J = 25 °C T_J = 125 °C	V_F	- 0.49 - 0.62	0.63 0.55 0.75 0.68	- 0.57 - 0.68	0.71 0.61 0.85 0.71	V
Maximum reverse current at rated V_R per diode (2)		T_J = 25 °C T_J = 125 °C	I_R	- 4.0	100 12	- 2.0	100 12	µA mA

Notes:

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**MBR**	**MBRF**	**MBRB**	**UNIT**
Thermal resistance, junction to case per diode	$R_{\theta JC}$	2.0	4.0	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	MBR20H45CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MBRF20H45CT-E3/45	1.99	45	50/tube	Tube
TO-263AB	MBRB20H45CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MBRB20H45CT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AB	MBR20H45CTHE3/45 (1)	1.85	45	50/tube	Tube
ITO-220AB	MBRF20H45CTHE3/45 (1)	1.99	45	50/tube	Tube
TO-263AB	MBRB20H45CTHE3/45 (1)	1.35	45	50/tube	Tube
TO-263AB	MBRB20H45CTHE3/81 (1)	1.35	81	800/reel	Tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

For technical questions within your region, please contact one of the following:
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RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

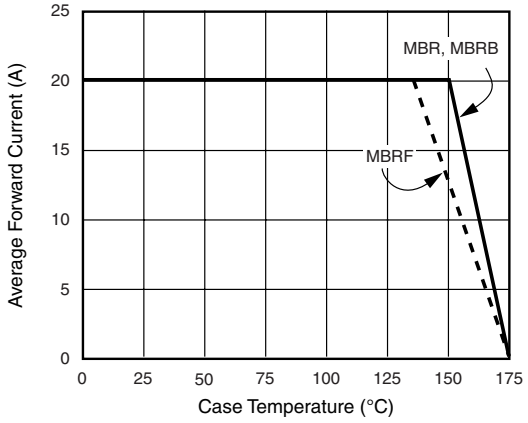


Figure 1. Forward Derating Curve (Total)

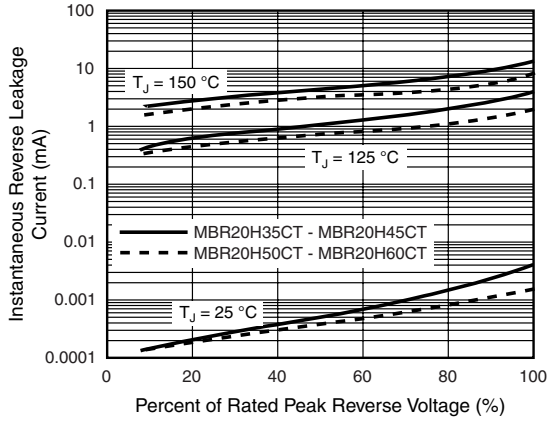


Figure 4. Typical Reverse Characteristics Per Diode

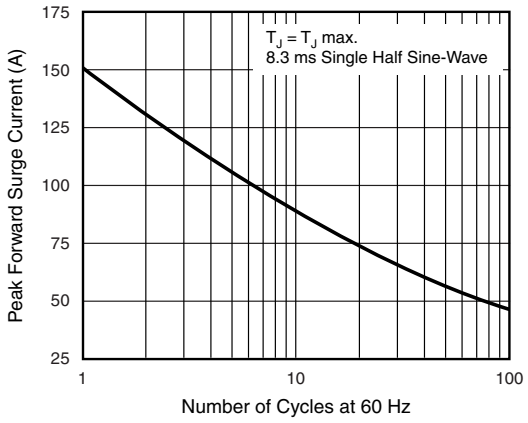


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

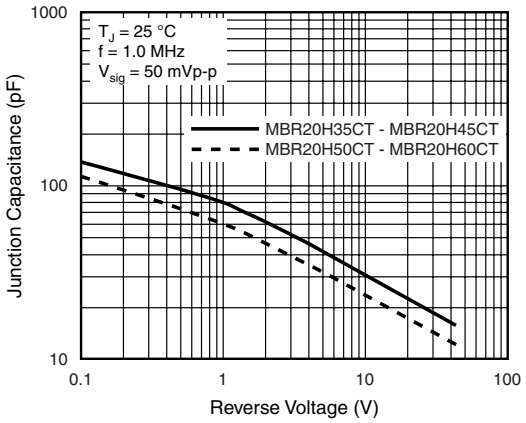


Figure 5. Typical Junction Capacitance Per Diode

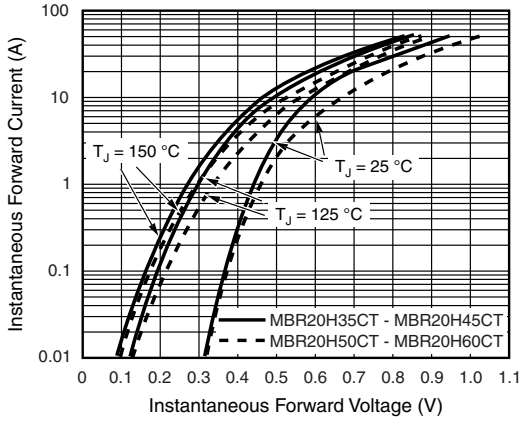


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

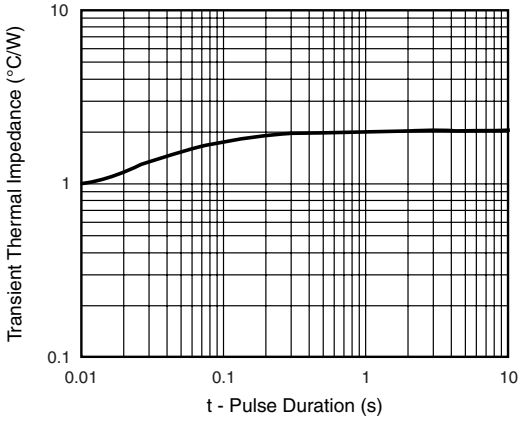
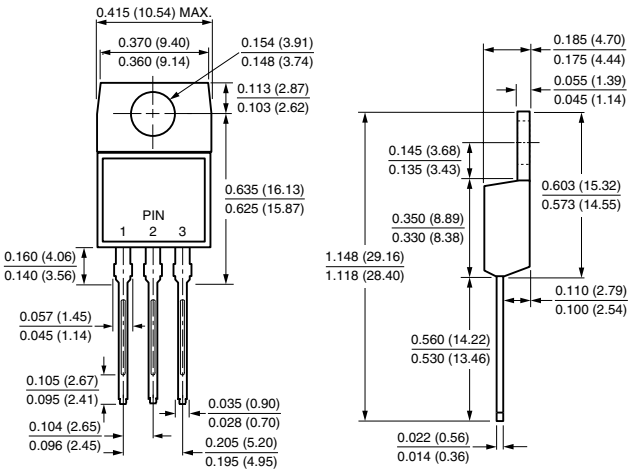


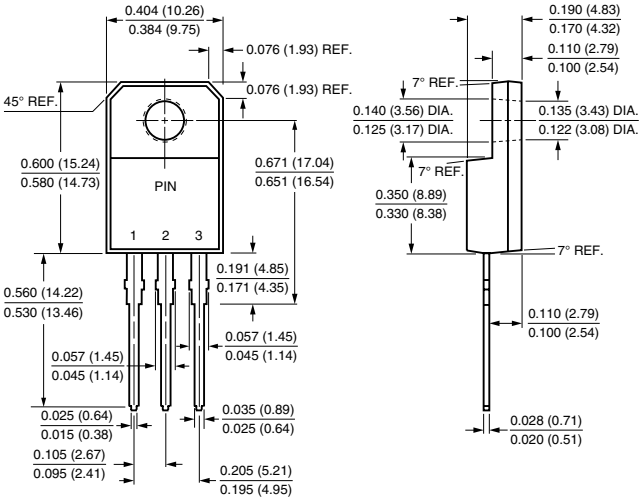
Figure 6. Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

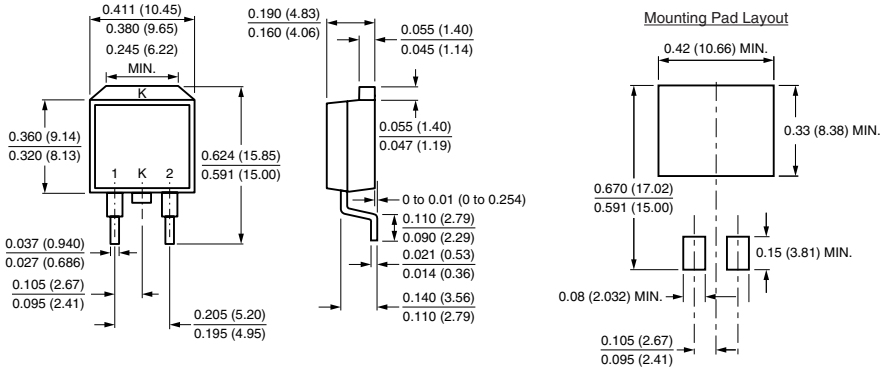
TO-220AB



ITO-220AB



TO-263AB



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