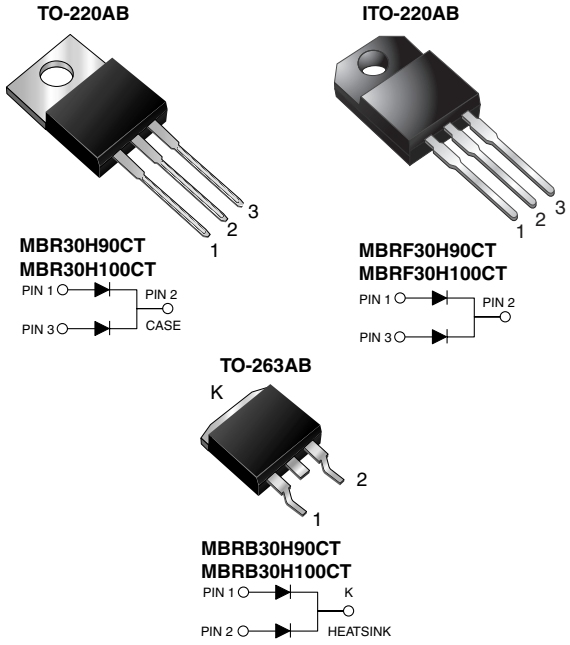
Dual Common-Cathode High-Voltage Schottky Rectifier

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	15 A x 2
V_{RRM}	90 V, 100 V
I_{FSM}	275 A
V_F	0.67 V
I_R	5.0 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	MBR30H90CT	MBR30H100CT	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	90	100	V
Working peak reverse voltage		V_{RWM}	90	100	V
Maximum DC blocking voltage		V_{DC}	90	100	V
Maximum average forward rectified current (Fig. 1)	total device per diode	$I_{F(AV)}$	30 15		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	275		A
Peak repetitive reverse current per diode at t_p = 2 µs, 1 kHz		I_{RRM}	1.0		A
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**	**VALUE**	**UNIT**
Maximum instantaneous forward voltage per diode (1)	I_F = 15 A I_F = 15 A I_F = 30 A I_F = 30 A	T_J = 25 °C T_J = 125 °C T_J = 25 °C T_J = 125 °C	V_F	0.82 0.67 0.93 0.80	V
Maximum reverse current at rated V_R per diode (2)		T_J = 25 °C T_J = 125 °C	I_R	5.0 6.0	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**
Typical thermal resistance per diode	$R_{\theta JC}$	1.9	4.6	1.9	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	MBR30H100CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MBRF30H100CT-E3/45	1.99	45	50/tube	Tube
TO-263AB	MBRB30H100CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MBRB30H100CT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AB	MBR30H100CTHE3/45 (1)	1.85	45	50/tube	Tube
ITO-220AB	MBRF30H100CTHE3/45 (1)	1.99	45	50/tube	Tube
TO-263AB	MBRB30H100CTHE3/45 (1)	1.35	45	50/tube	Tube
TO-263AB	MBRB30H100CTHE3/81 (1)	1.35	81	800/reel	Tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

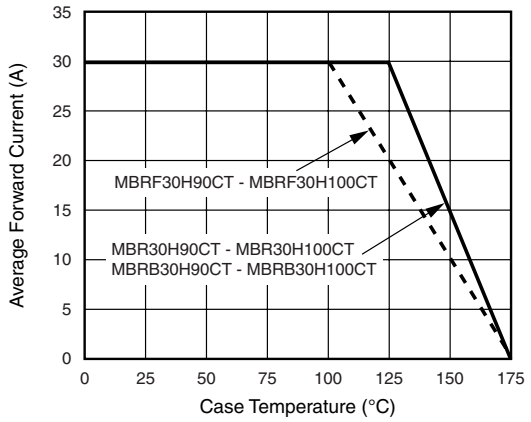


Figure 1. Forward Derating Curve Per Diode

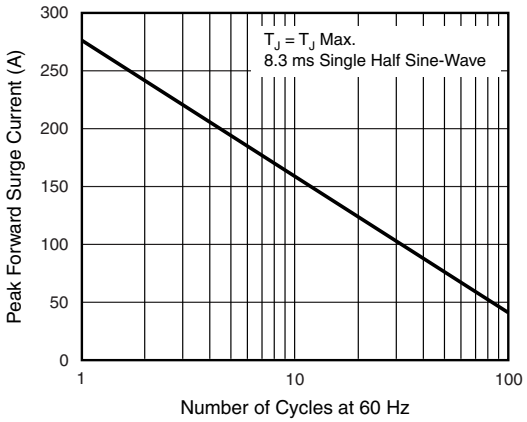


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

For technical questions within your region, please contact one of the following:
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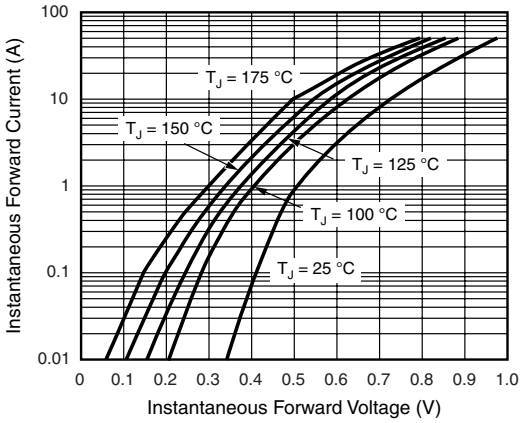


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

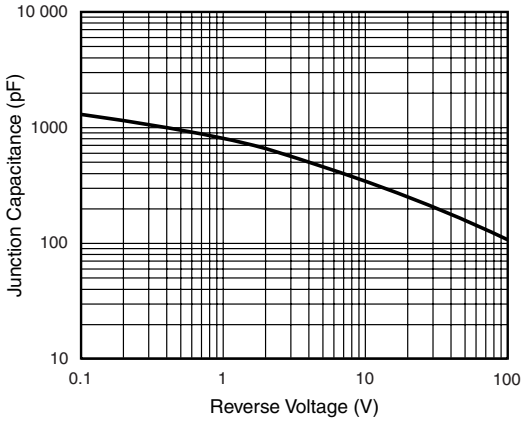


Figure 5. Typical Junction Capacitance Per Diode

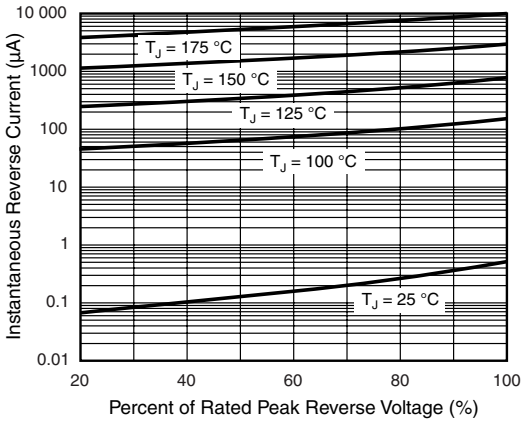


Figure 4. Typical Reverse Characteristics Per Diode

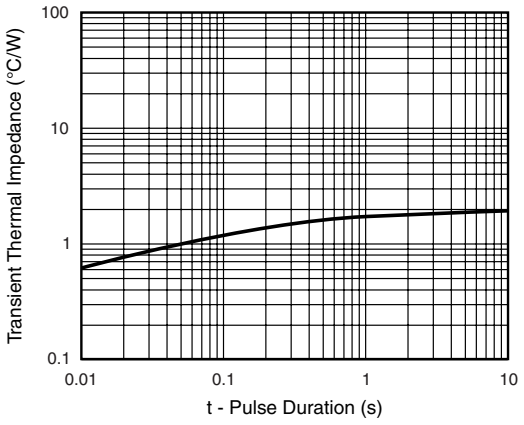
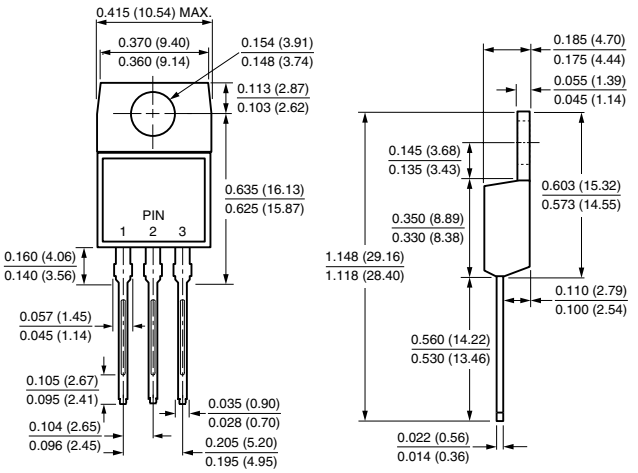


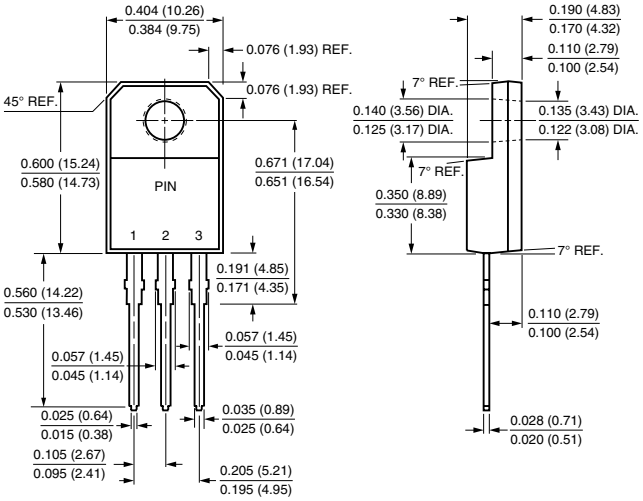
Figure 6. Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

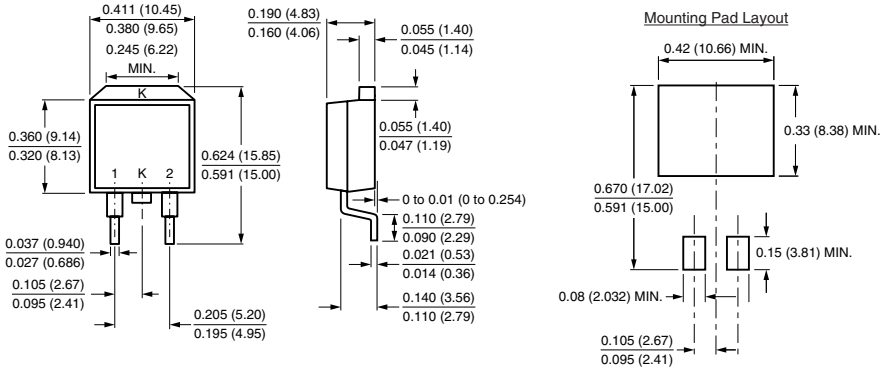
TO-220AB



ITO-220AB



TO-263AB



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