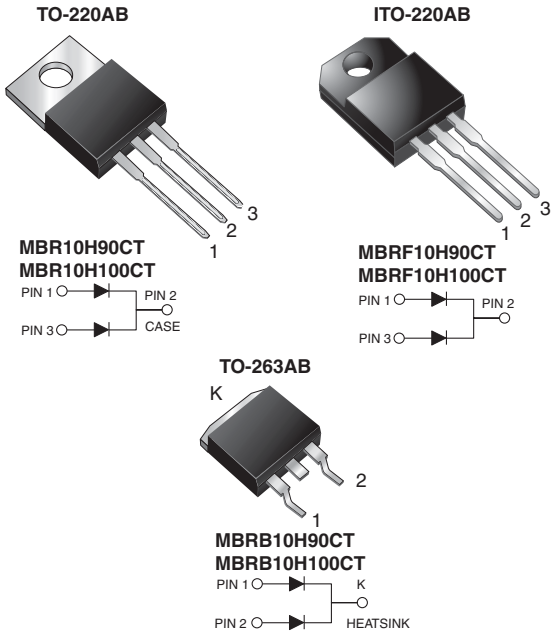
Dual Common Cathode High Voltage Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



FEATURES

- Power pack
- 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 available
  - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in 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	
$I_{F(AV)}$	2 x 5 A
V_{RRM}	90 V to 100 V
I_{FSM}	150 A
V_F	0.61 V
I_R	3.5 µA
T_J max.	175 °C
Package	TO-220AB, ITO-220AB, TO-263AB
Diode variations	Dual common cathode

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

PARAMETER		SYMBOL	MBR10H90CT	MBR10H100CT	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	90	100	V
Working peak reverse voltage		V_{RWM}	90	100	
Maximum DC blocking voltage		V_{DC}	90	100	
Maximum average forward rectified current at T_C = 105 °C	total device	$I_{F(AV)}$	10		A
	per diode		5.0		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	150		
Peak repetitive reverse current per diode at t_p = 2.0 µs, 1 kHz		I_{RRM}	0.5		
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	**SYMBOL**	**TEST CONDITIONS**		**VALUE**	**UNIT**
Maximum instantaneous forward voltage per diode	V_F (1)	I_F = 5 A	T_J = 25 °C	0.76	V
		I_F = 5 A	T_J = 125 °C	0.61	
		I_F = 10 A	T_J = 25 °C	0.85	
		I_F = 10 A	T_J = 125 °C	0.71	
Maximum reverse current per diode	I_R (1)	Rated V_R	T_J = 25 °C	3.5	μA
			T_J = 100 °C	4.5	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	$R_{\theta JC}$	2.2	5.2	2.2	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	MBR10H100CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MBRF10H100CT-E3/45	1.79	45	50/tube	Tube
TO-263AB	MBRB10H100CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MBRB10H100CT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AB	MBR10H100CTHE3/45 (1)	1.85	45	50/tube	Tube
ITO-220AB	MBRF10H100CTHE3/45 (1)	1.79	45	50/tube	Tube
TO-263AB	MBRB10H100CTHE3/45 (1)	1.35	45	50/tube	Tube
TO-263AB	MBRB10H100CTHE3/81 (1)	1.35	81	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_C = 25 °C unless otherwise noted)

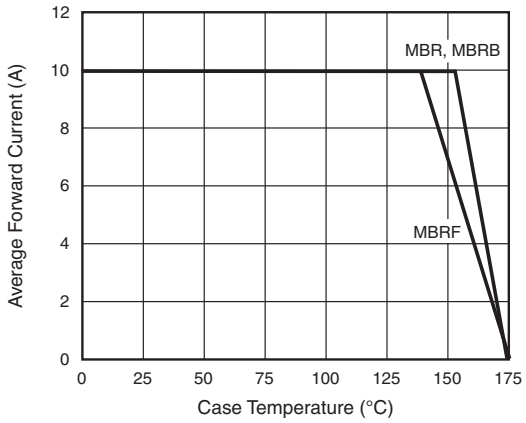


Fig. 1 - Forward Current Derating Curve Per Diode

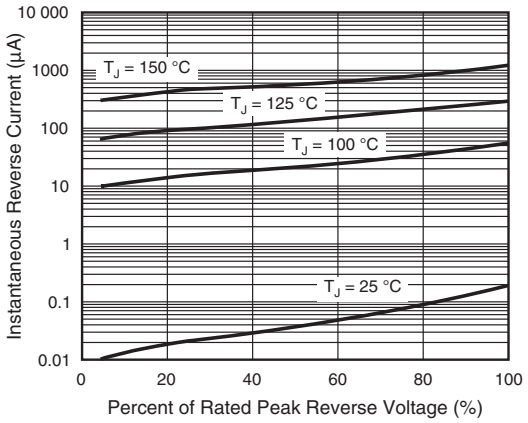


Fig. 4 - Typical Reverse Characteristics Per Diode

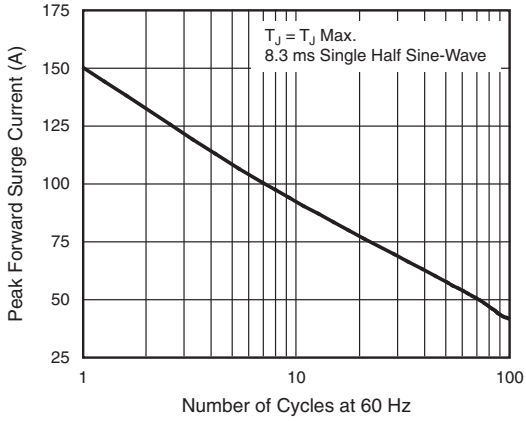


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

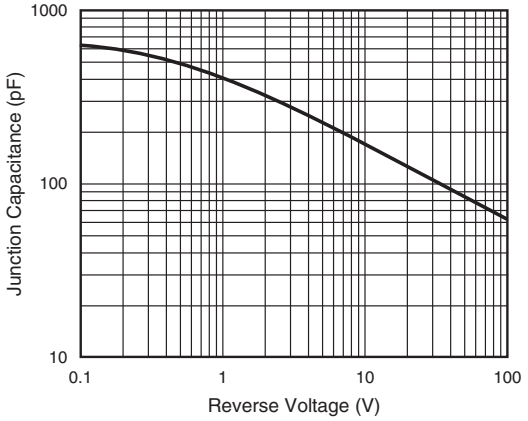


Fig. 5 - Typical Junction Capacitance Per Diode

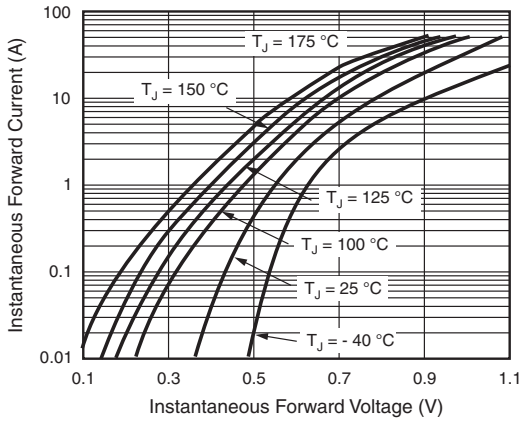


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

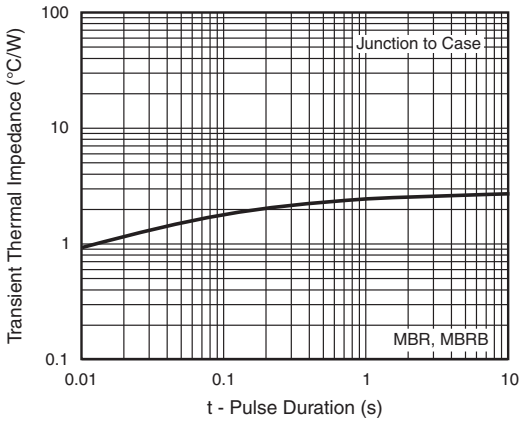


Fig. 6 - Typical Transient Thermal Impedance Per Diode

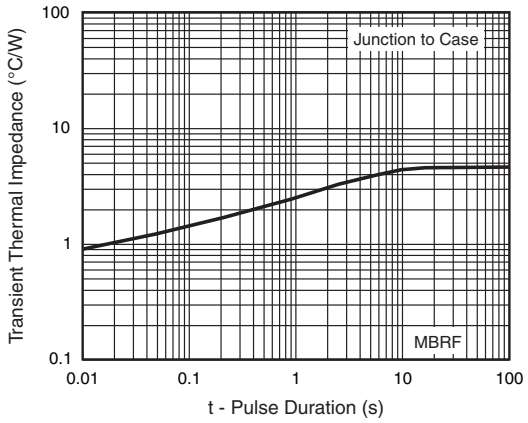
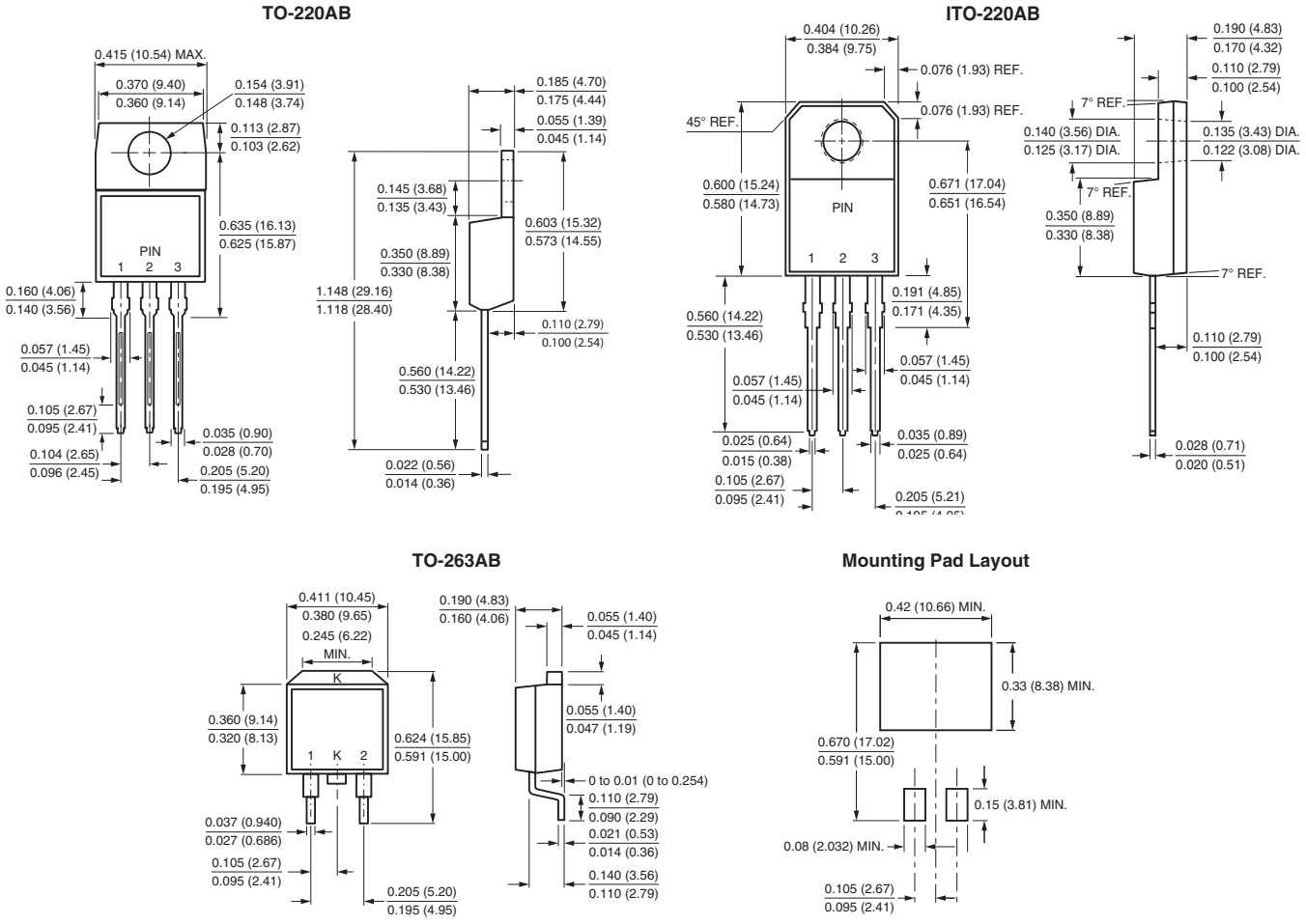


Fig. 7 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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