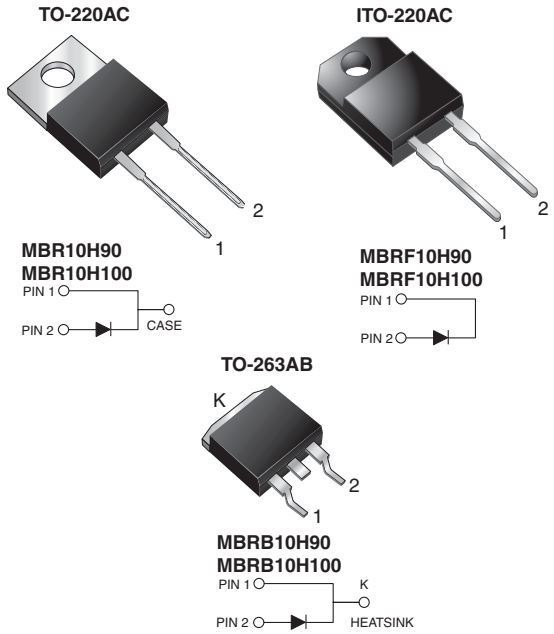
High Voltage Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



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-220AC and ITO-220AC package)
- AEC-Q101 qualified
- 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 or polarity protection application.

MECHANICAL DATA

Case: TO-220AC, ITO-220AC, 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	
$I_{F(AV)}$	10 A
V_{RRM}	90 V, 100 V
I_{FSM}	250 A
V_F	0.64 V
I_R	4.5 µA
T_J max.	175 °C

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

PARAMETER	SYMBOL	MBR10H90	MBR10H100	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	$I_{F(AV)}$	10		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	250		
Peak repetitive reverse current 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-220AC 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	V_F (1)	I_F = 10 A	T_C = 25 °C	0.77	V
		I_F = 10 A	T_C = 125 °C	0.64	
		I_F = 20 A	T_C = 25 °C	0.88	
		I_F = 20 A	T_C = 125 °C	0.73	
Maximum reverse current	I_R (2)	Rated V_R	T_J = 25 °C	4.5	μA
			T_J = 125 °C	6.0	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	$R_{\theta JC}$	2.7	5.8	2.7	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AC	MBR10H100-E3/45	1.80	45	50/tube	Tube
ITO-220AC	MBRF10H100-E3/45	1.94	45	50/tube	Tube
TO-263AB	MBRB10H100-E3/45	1.33	45	50/tube	Tube
TO-263AB	MBRB10H100-E3/81	1.33	81	800/reel	Tape and reel
TO-220AC	MBR10H100HE3/45 (1)	1.80	45	50/tube	Tube
ITO-220AC	MBRF10H100HE3/45 (1)	1.94	45	50/tube	Tube
TO-263AB	MBRB10H100HE3/45 (1)	1.33	45	50/tube	Tube
TO-263AB	MBRB10H100HE3/81 (1)	1.33	81	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

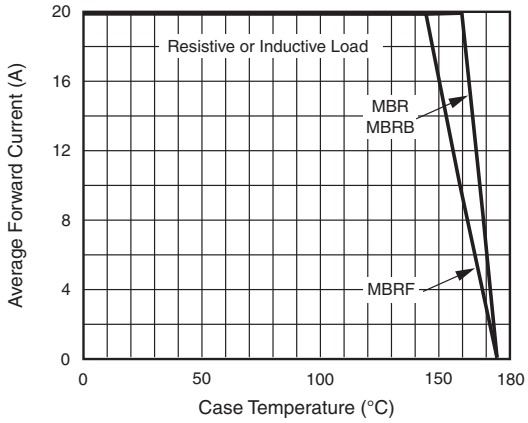


Fig. 1 - Forward Current Derating Curve

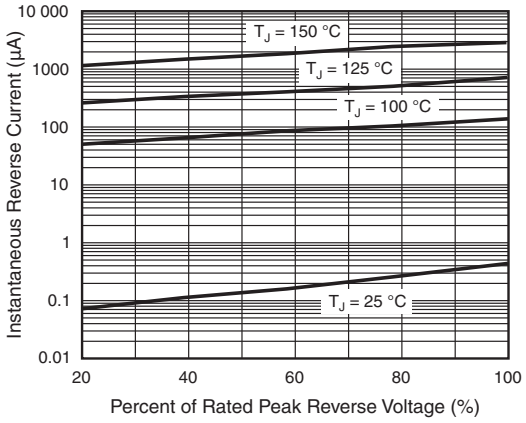


Fig. 4 - Typical Reverse Characteristics

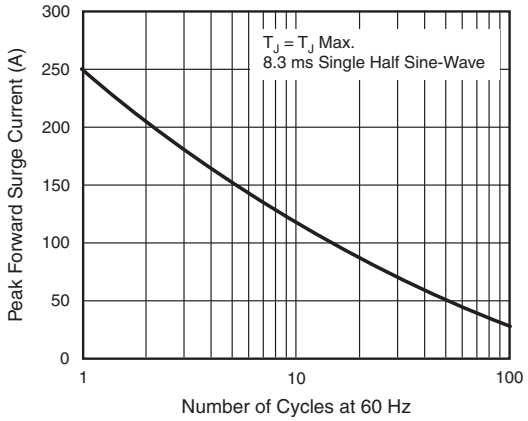


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

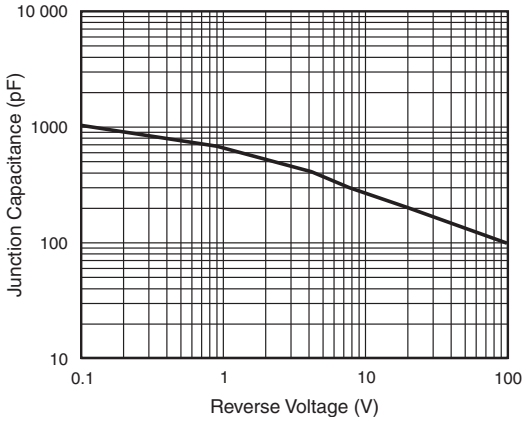


Fig. 5 - Typical Junction Capacitance

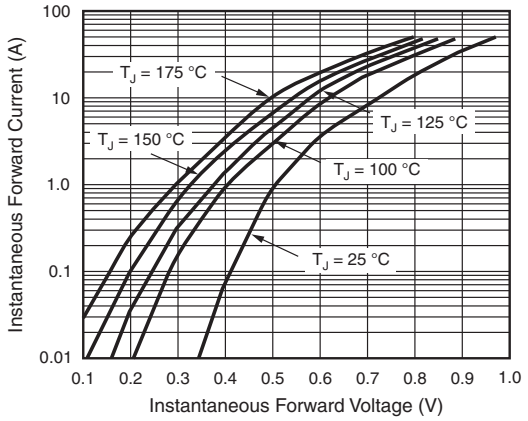


Fig. 3 - Typical Instantaneous Forward Characteristics

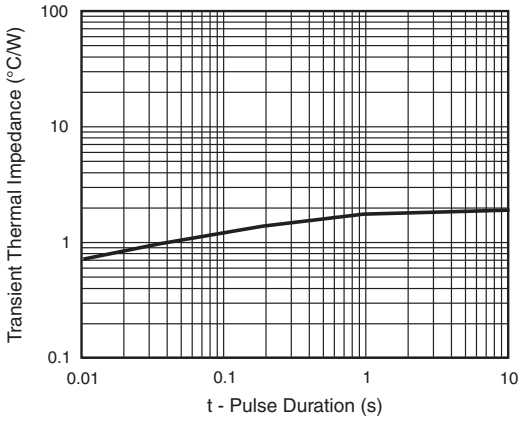
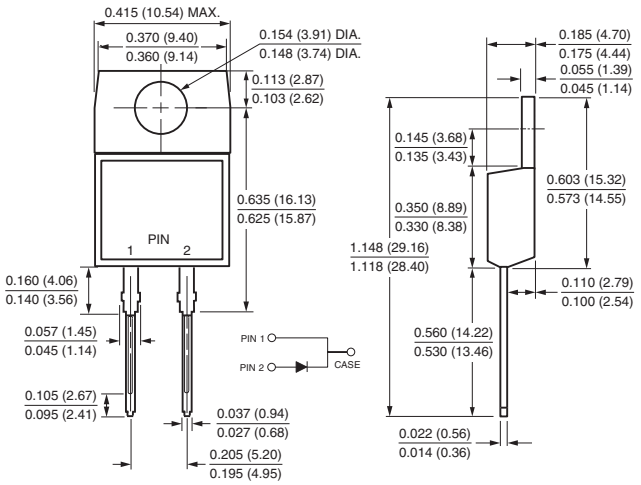


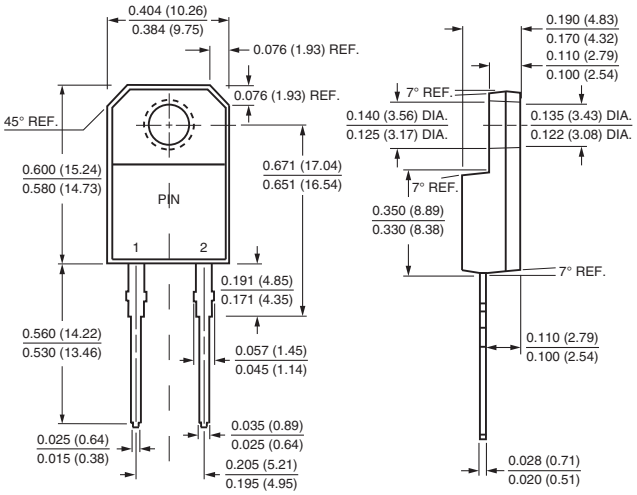
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

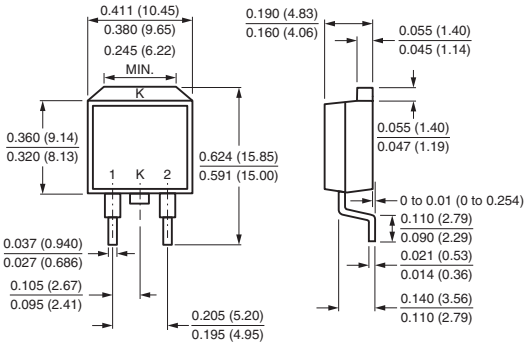
TO-220AC



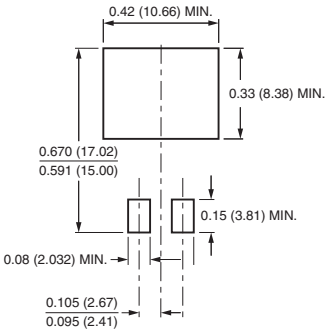
ITO-220AC



TO-263AB



Mounting Pad Layout



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