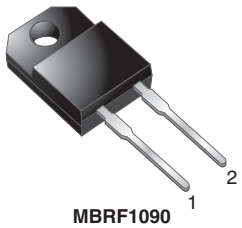
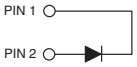
High-Voltage Trench MOS Barrier Schottky Rectifier

TMBS®

ITO-220AC



MBRF1090
MBRF10100



FEATURES

- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder bath temperature 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
V_{RRM}	90 V, 100 V
I_{FSM}	150 A
V_F at I_F = 10 A	0.65 V
T_J max.	150 °C
Package	ITO-220AC
Circuit configuration	Single

MECHANICAL DATA

Case: ITO-220AC
Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

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

PARAMETER	SYMBOL	MBRF1090	MBRF10100	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 at T_C = 133 °C	$I_{F(AV)}$	10		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150		A
Voltage rating of change (rated V_R)	dV/dt	10 000		V/µs
Isolation voltage from termal to heatsink t = 1 min	V_{AC}	1500		V
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +150		°C

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ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)					
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**VALUE**	**UNIT**
Maximum instantaneous forward voltage	I_F = 10 A	T_C = 25 °C	V_F (1)	0.80	V
		T_C = 125 °C		0.65	
	I_F = 20 A			0.75	
Maximum reverse current at working peak reverse voltage		T_J = 25 °C	I_R (2)	100	µA
		T_J = 100 °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**	**MBRF**	**UNIT**
Typical thermal resistance per diode	$R_{\theta JC}$	3.5	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
ITO-220AC	MBRF10100-M3/4W	1.384	4W	50/tube	Tube

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

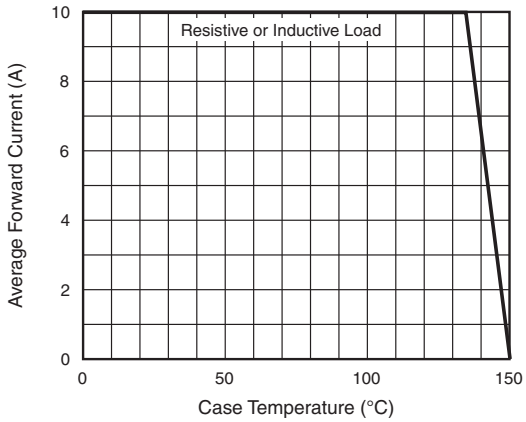

Fig. 1 - Forward Current Derating Curve

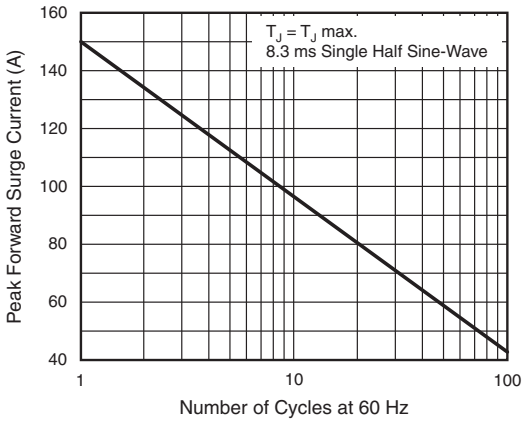

Fig. 2 - Maximum Non-Repetititve Peak Forward Surge Current

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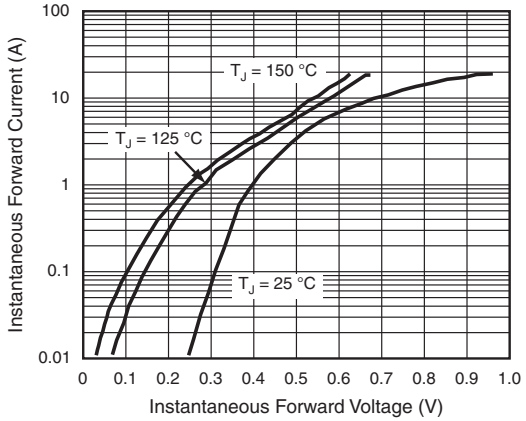


Fig. 3 - Typical Instantaneous Forward Characteristics

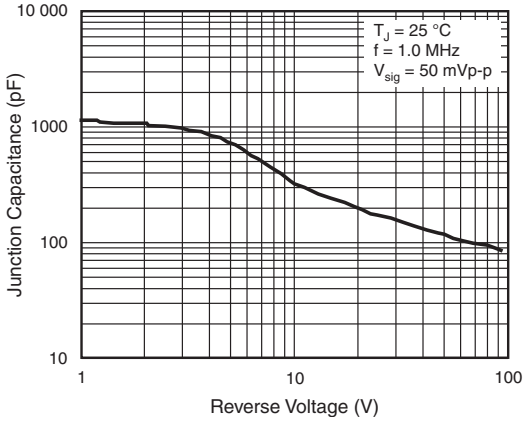


Fig. 5 - Typical Junction Capacitance

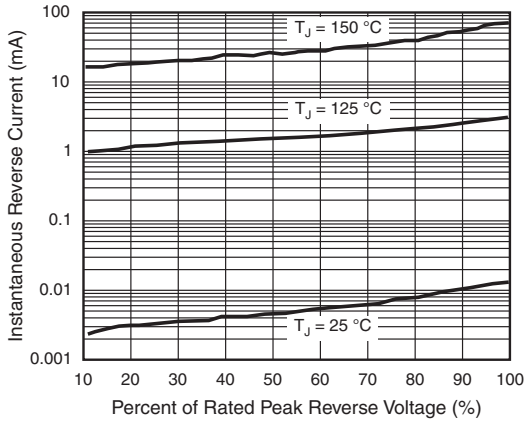


Fig. 4 - Typical Reverse Characteristics

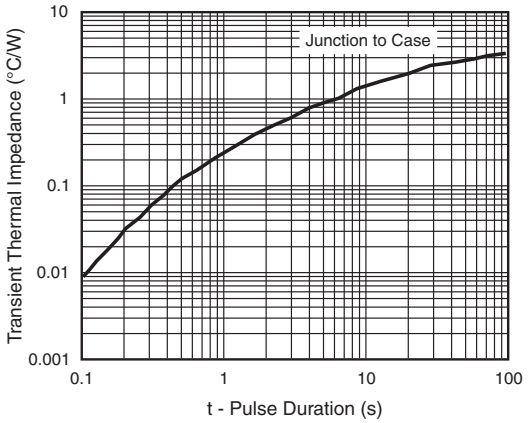
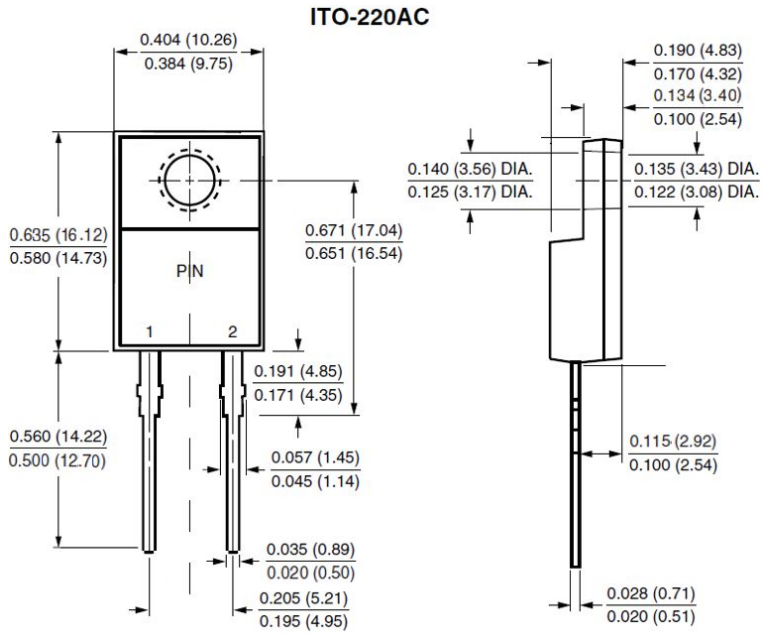


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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