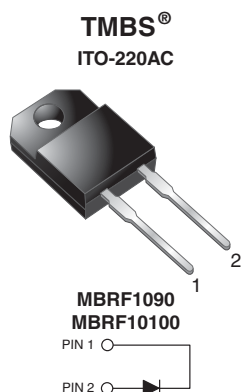


High-Voltage Trench MOS Barrier Schottky Rectifier



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/ μ s
Isolation voltage from terminal to heatsink $t = 1$ min	V_{AC}	1500		V
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +150		°C

**ELECTRICAL CHARACTERISTICS** ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage	$I_F = 10\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$	$V_F^{(1)}$	0.80	V
		$T_C = 125\text{ }^{\circ}\text{C}$		0.65	
	$I_F = 20\text{ A}$			0.75	
Maximum reverse current at working peak reverse voltage		$T_J = 25\text{ }^{\circ}\text{C}$	$I_R^{(2)}$	100	μA
		$T_J = 100\text{ }^{\circ}\text{C}$		6.0	mA

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	MBRF	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	3.5	$^{\circ}\text{C/W}$

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

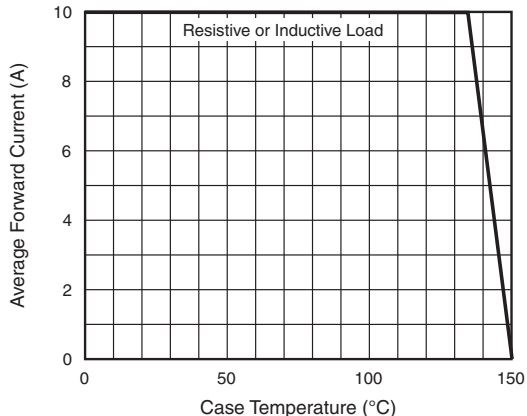
RATINGS AND CHARACTERISTICS CURVES ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

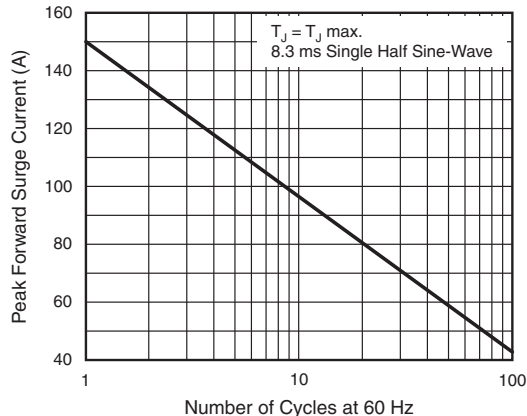


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

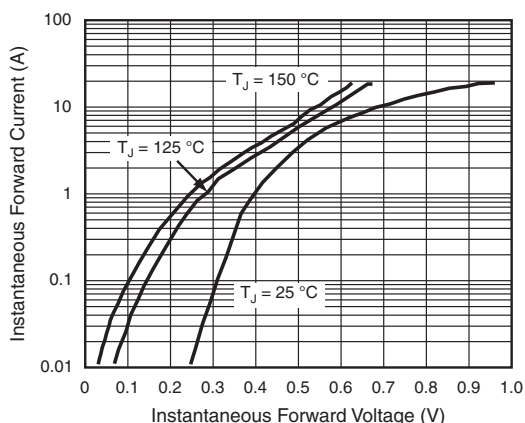


Fig. 3 - Typical Instantaneous Forward Characteristics

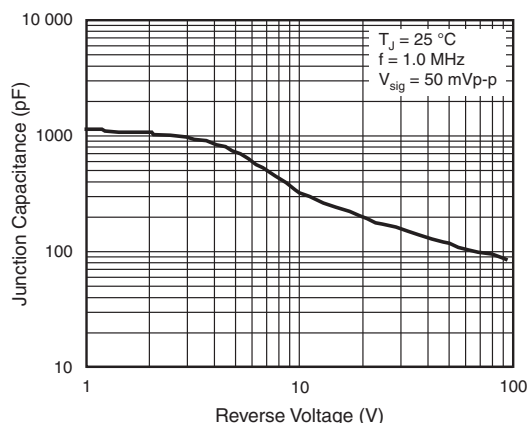


Fig. 5 - Typical Junction Capacitance

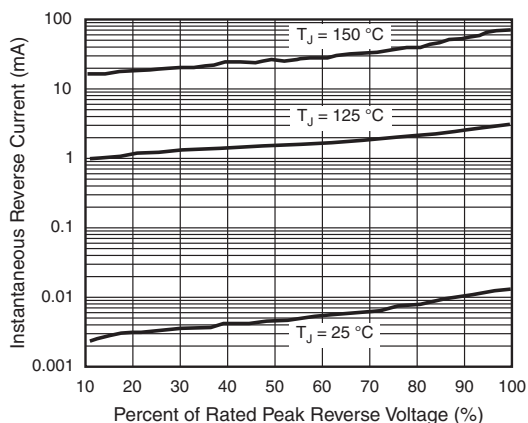


Fig. 4 - Typical Reverse Characteristics

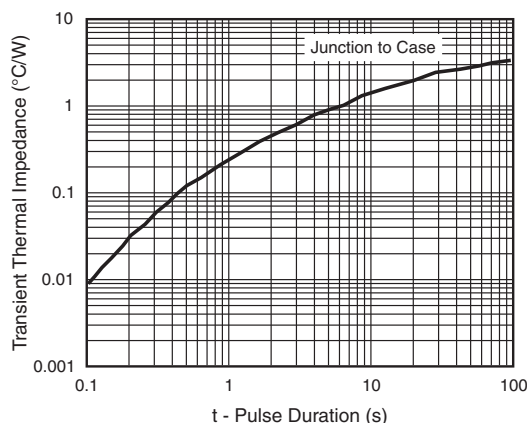
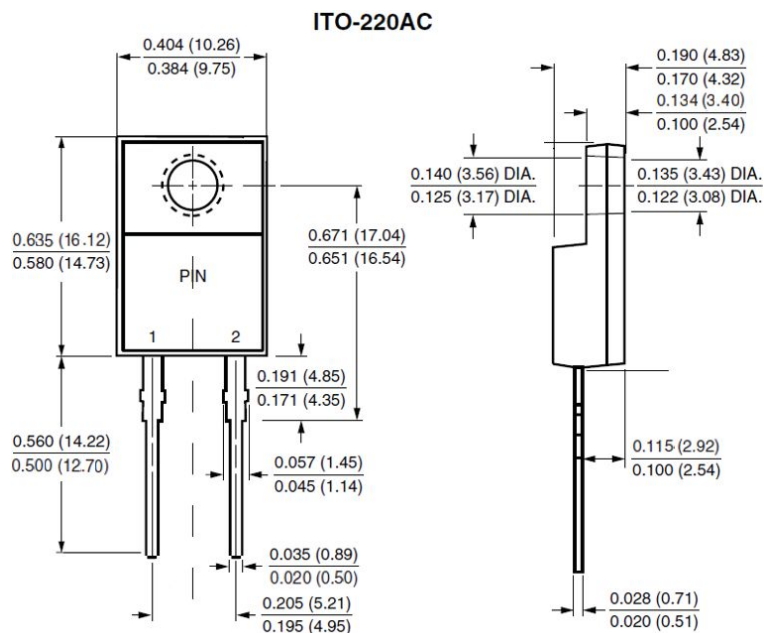


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)




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