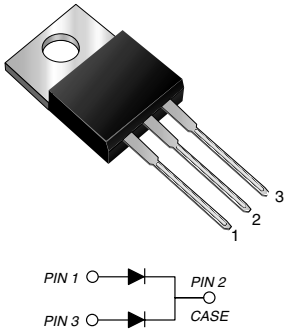
MBR1090CT, MBR10100CT

Vishay General Semiconductor

Dual Common-Cathode High Voltage Schottky Rectifier

TMBS®

TO-220AB



FEATURES

- Trench MOS Schottky technology
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106
- Compliant to RoHS directive 2002/95/EC and in accordance to 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	
$I_{F(AV)}$	2 x 5.0 A
V_{RRM}	90 V, 100 V
I_{FSM}	120 A
V_F	0.75 V
T_J max.	150 °C

MECHANICAL DATA

Case: TO-220AB

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 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	MBR1090CT	MBR10100CT	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 = 105 °C — total device per diode	$I_{F(AV)}$	10 5.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	120		A
Non-repetitive avalanche energy at T_J = 25 °C, L = 60 mH per diode	E_{AS}	60		mJ
Peak repetitive reverse current at t_p = 2 µs, 1 kHz, T_J = 38 °C ± 2 °C per diode	I_{RRM}	0.5		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 + 150		°C

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DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	MBR1090CT	MBR10100CT	UNIT
Maximum instantaneous forward voltage per diode (1)	I_F = 5.0 A I_F = 5.0 A	T_C = 125 °C T_C = 25 °C	V_F	0.75 0.85		V
Maximum reverse current per diode at working peak reverse voltage (2)		T_J = 25 °C T_J = 100 °C	I_R	100 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	MBR1090CT	MBR10100CT	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	4.4		°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR10100CT-E3/4W	1.87	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

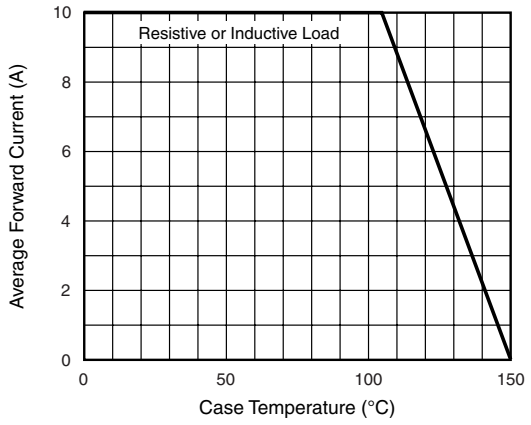

Figure 1. Forward Current Derating Curve

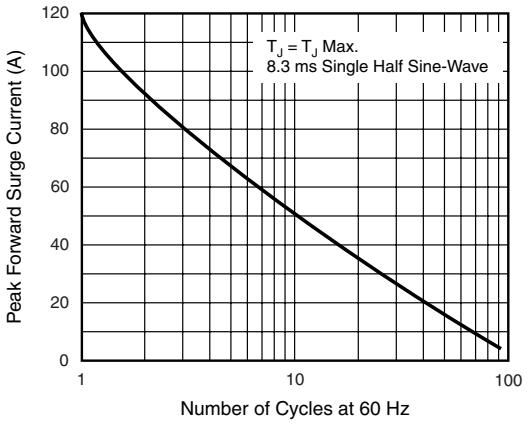

Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

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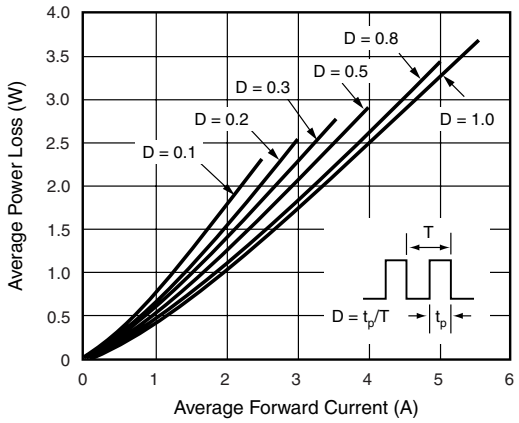


Figure 3. Forward Power Loss Characteristics Per Diode

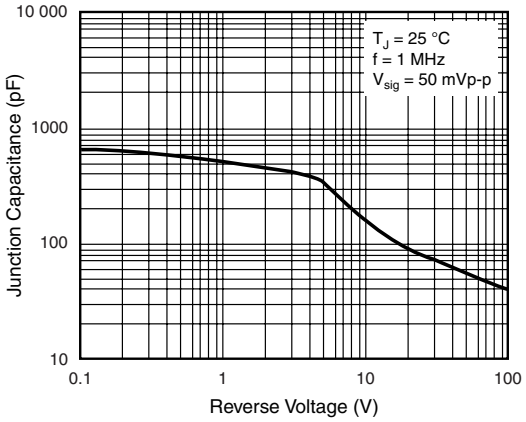


Figure 6. Typical Junction Capacitance Per Diode

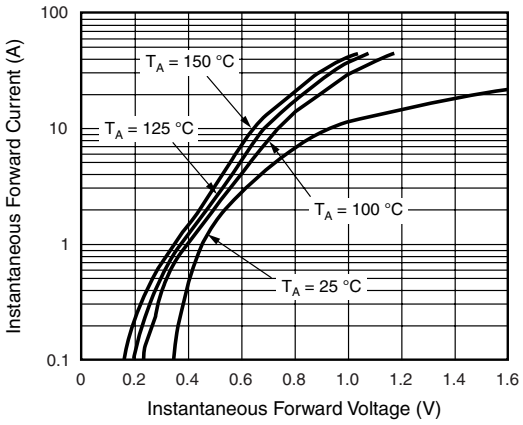


Figure 4. Typical Instantaneous Forward Characteristics Per Diode

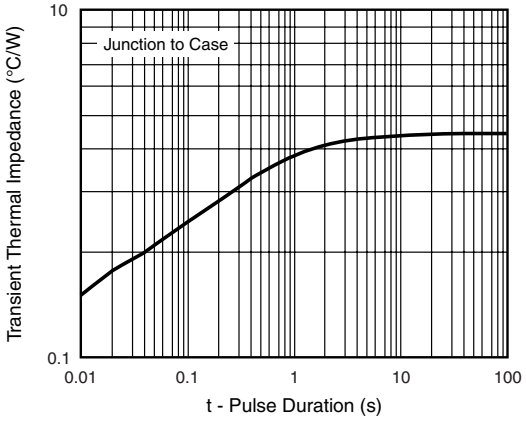


Figure 7. Typical Transient Thermal Impedance Per Diode

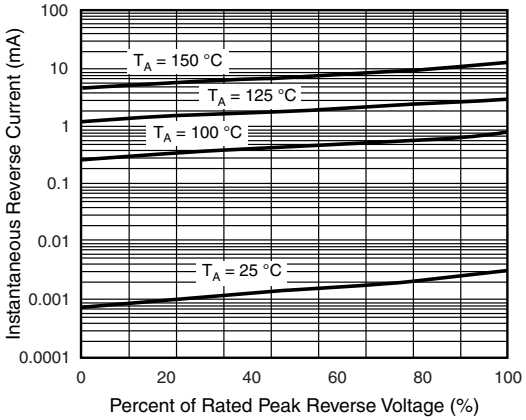
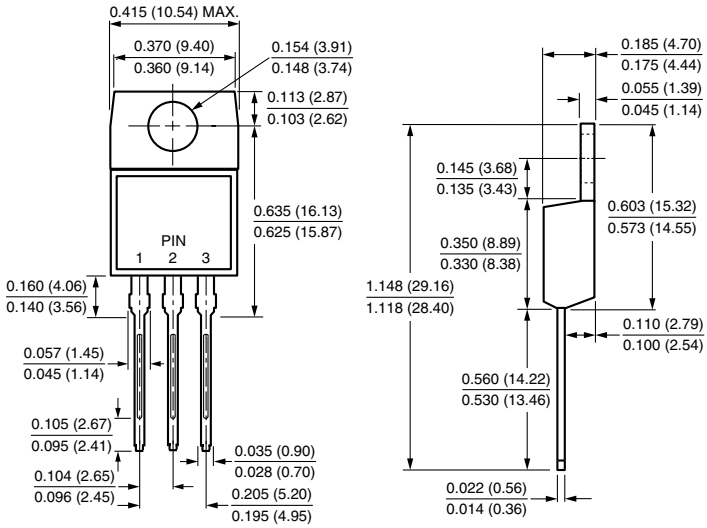


Figure 5. Typical Reverse Characteristics Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



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