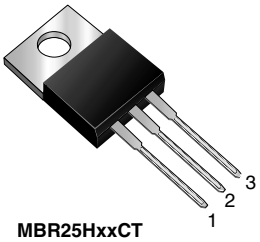
MBR(F,B)25H35CT thru MBR(F,B)25H60CT

Vishay General Semiconductor

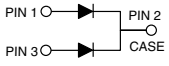
Dual Common-Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance

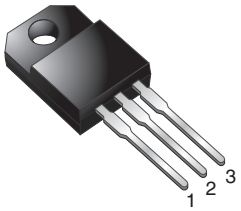
TO-220AB



MBR25HxxCT



ITO-220AB



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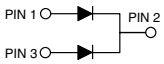
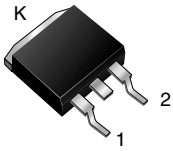


TO-263AB



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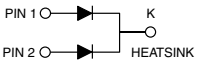

FEATURES

- Guardring for overvoltage protection
- Lower power losses, 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 dip 260 °C, 40 s (for TO-220AB and ITO-220AB package)
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb e3 RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage, 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 15 A
V_{RRM}	35 V to 60 V
I_{FSM}	150 A
V_F	0.54 V, 0.60 V
I_R	100 µA
T_J max.	175 °C

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, TO-263AB
Molding compound meets UL 94 V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC-Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

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

PARAMETER		SYMBOL	MBR25H35CT	MBR25H45CT	MBR25H50CT	MBR25H60CT	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	35	45	50	60	V
Working peak reverse voltage		V_{RWM}	35	45	50	60	V
Maximum DC blocking voltage		V_{DC}	35	45	50	60	V
Max. average forward rectified current (fig. 1)	total device	$I_{F(AV)}$	30				A
	per diode		15				
Non-repetitive avalanche energy per diode at 25 °C, I_{AS} = 4 A, L = 10 mH		E_{AS}	80				mJ
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	150				A
Peak repetitive reverse surge current per diode at t_p = 2.0 µs, 1 kHz		I_{RRM}	1.0		0.5		A
Peak non-repetitive reverse energy (8/20 µs waveform)		E_{RSM}	25		20		mJ

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MBR(F,B)25H35CT thru MBR(F,B)25H60CT

Vishay General Semiconductor

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	MBR25H35CT	MBR25H45CT	MBR25H50CT	MBR25H60CT	UNIT
Electrostatic discharge capacitor voltage Human body model: C = 100 pF, R = 1.5 kΩ	V_C	25				kV
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	TEST CONDITIONS		SYMBOL	MBR25H35CT MBR25H45CT		MBR25H50CT MBR25H60CT		UNIT
				TYP.	MAX.	TYP.	MAX.	
Maximum instantaneous forward voltage per diode	I_F = 15 A	T_J = 25 °C	V_F (1)	-	0.64	-	0.70	V
		T_J = 125 °C		0.50	0.54	0.56	0.60	
	I_F = 30 A	T_J = 25 °C		-	0.74	-	0.85	
		T_J = 125 °C		0.63	0.67	0.68	0.72	
Maximum reverse current at rated V_R per diode		T_J = 25 °C	I_R (2)	-	100	-	100	µA
		T_J = 125 °C		6.0	20	4.0	20	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
Thermal resistance, junction to case per diode	$R_{\theta JC}$	1.5	4.5	1.5	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR25H45CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MBRF25H45CT-E3/45	1.99	45	50/tube	Tube
TO-263AB	MBRB25H45CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MBRB25H45CT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AB	MBR25H45CTHE3/45 (1)	1.85	45	50/tube	Tube
ITO-220AB	MBRF25H45CTHE3/45 (1)	1.99	45	50/tube	Tube
TO-263AB	MBRB25H45CTHE3/45 (1)	1.35	45	50/tube	Tube
TO-263AB	MBRB25H45CTHE3/81 (1)	1.35	81	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified

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RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

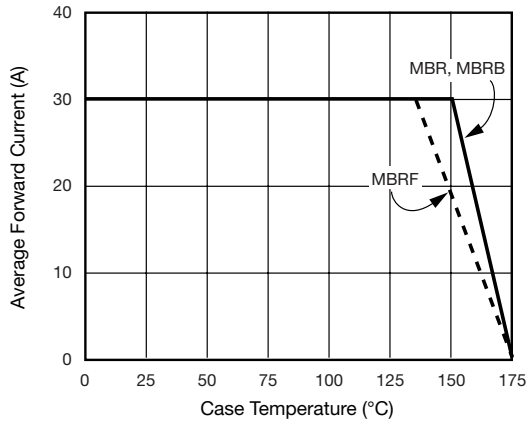


Fig. 1 - Forward Derating Curve (Total)

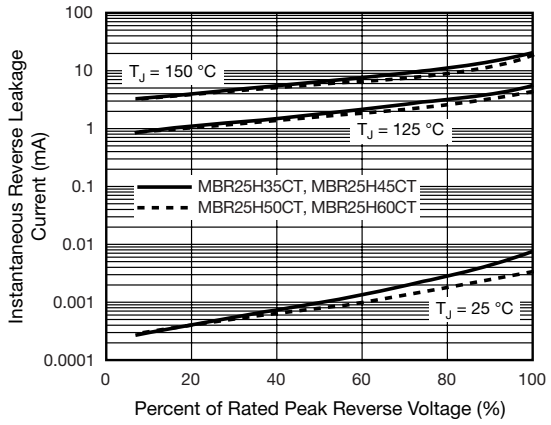


Fig. 4 - Typical Reverse Characteristics Per Diode

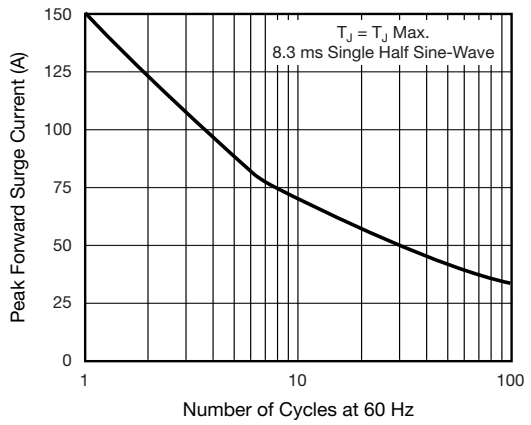


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

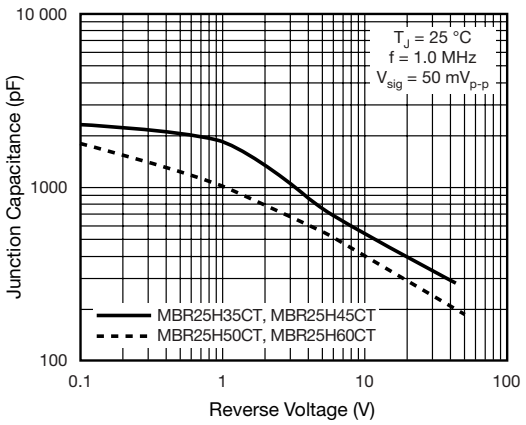


Fig. 5 - Typical Junction Capacitance Per Diode

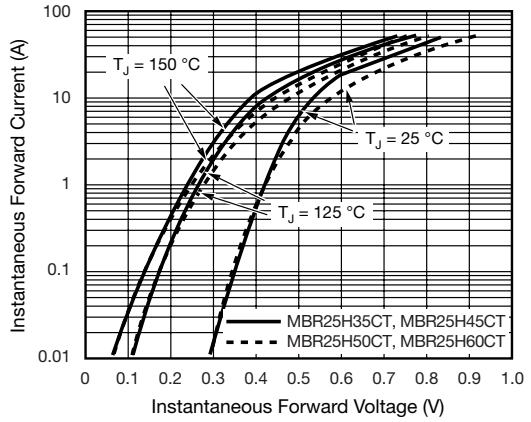


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

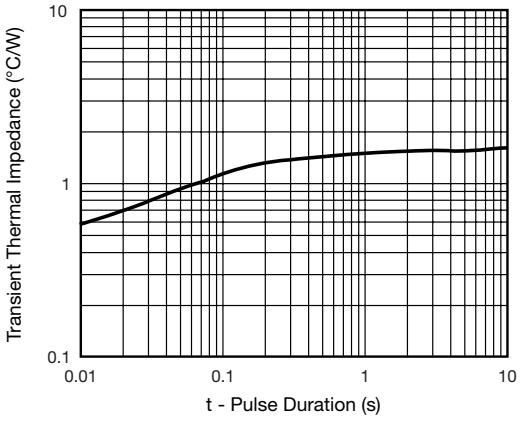
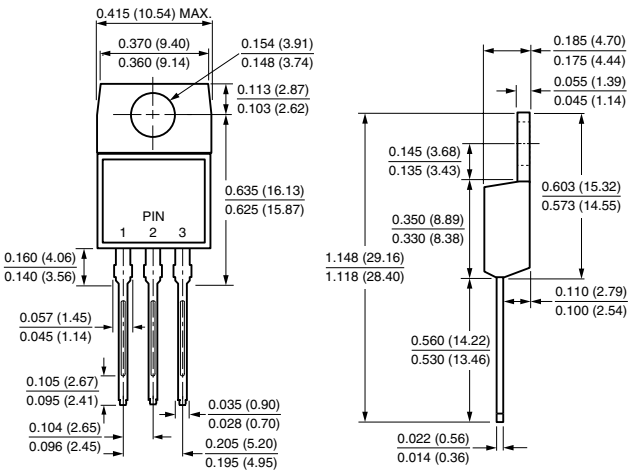


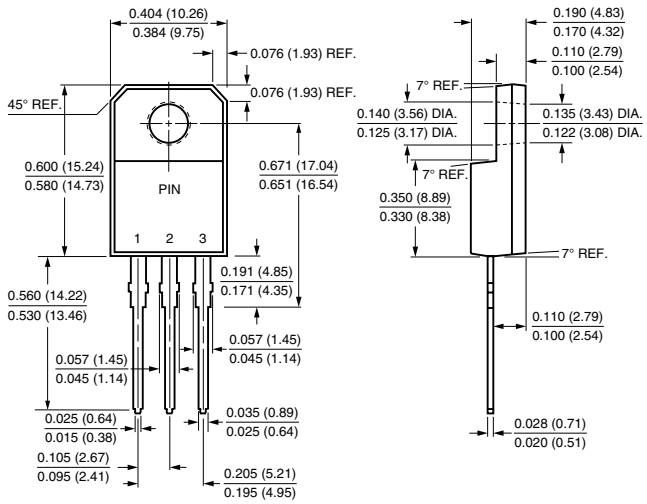
Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

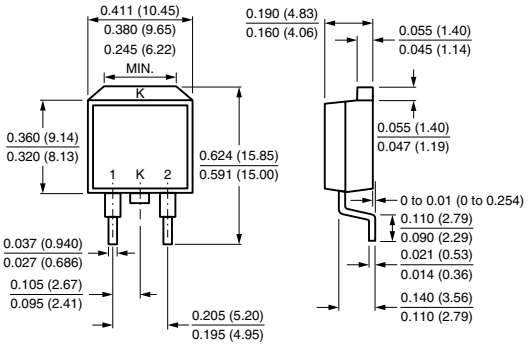
TO-220AB



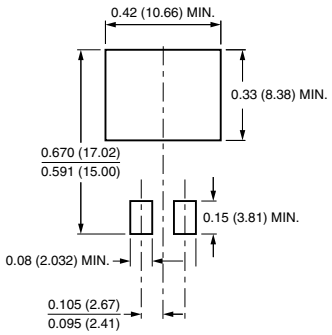
ITO-220AB



TO-263AB



Mounting Pad Layout



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