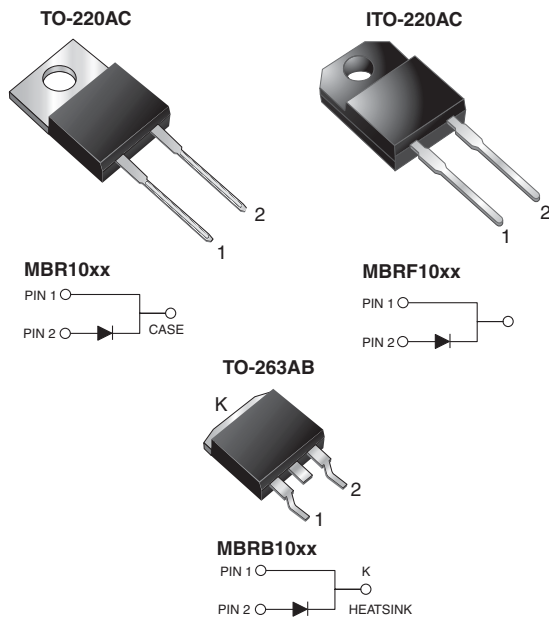


Schottky Barrier Rectifier



FEATURES

- Power pack
- Low power loss, high efficiency
- Low forward voltage drop
- 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 low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, and 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}	35 V to 60 V
I_{FSM}	150 A
V_F	0.57 V, 0.70 V
$T_J \text{ max.}$	150 °C
Package	TO-220AC, ITO-220AC, TO-263AB
Diode variations	Single die

MAXIMUM RATINGS ($T_C = 25\text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	MBR1035	MBR1045	MBR1050	MBR1060	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	35	45	50	60	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	10				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150				A
Peak repetitive reverse current at $t_p = 2.0\ \mu\text{s}$, 1 kHz	I_{RRM}	1.0		0.5		
Voltage rate of change (rated V_R)	dV/dt	10 000				V/ μs
Operating junction and storage temperature range	T_J	- 65 to + 150				°C
	T_{STG}	- 65 to + 175				
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1\ \text{min}$	V_{AC}	1500				V



ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	TEST CONDITIONS		MBR1535	MBR1545	MBR1550	MBR1560	UNIT
Maximum instantaneous forward voltage	V_F ⁽¹⁾	$I_F = 10\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	-		0.80		V
		$I_F = 10\text{ A}$	$T_J = 125\text{ }^\circ\text{C}$	0.57		0.70		
		$I_F = 20\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	0.84		0.95		
		$I_F = 20\text{ A}$	$T_J = 125\text{ }^\circ\text{C}$	0.72		0.85		
Maximum instantaneous reverse current at DC blocking voltage	I_R ⁽²⁾	Rated V_R	$T_J = 25\text{ }^\circ\text{C}$	0.10			mA	
			$T_J = 125\text{ }^\circ\text{C}$	15				

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	MBR	MBRF	MBRB	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	2.0	4.0	2.0	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	MBR1045-E3/45	1.80	45	50/tube	Tube
ITO-220AC	MBRF1045-E3/45	1.94	45	50/tube	Tube
TO-263AB	MBRB1045-E3/45	1.33	45	50/tube	Tube
TO-263AB	MBRB1045-E3/81	1.33	81	800/reel	Tape and reel
TO-220AC	MBR1045HE3/45 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AC	MBRF1045HE3/45 ⁽¹⁾	1.94	45	50/tube	Tube
TO-263AB	MBRB1045HE3/45 ⁽¹⁾	1.33	45	50/tube	Tube
TO-263AB	MBRB1045HE3/81 ⁽¹⁾	1.33	81	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified

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

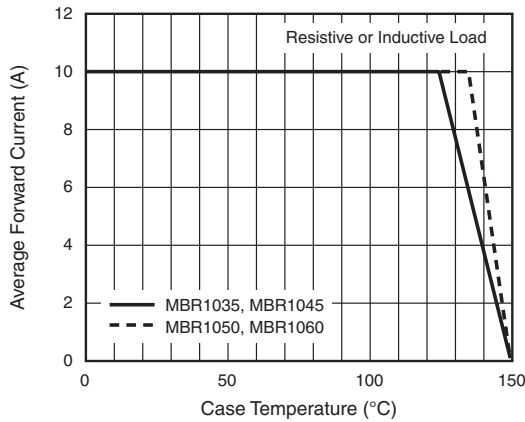


Fig. 1 - Forward Current Derating Curve

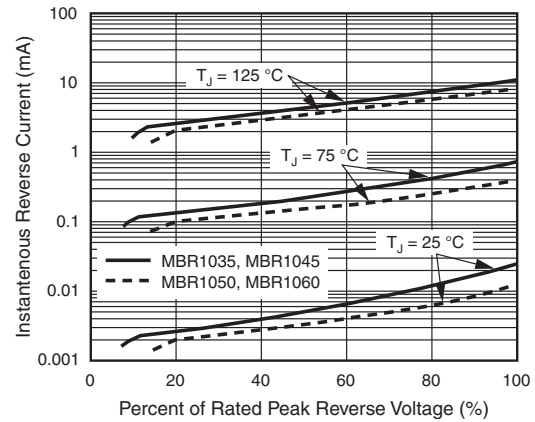


Fig. 4 - Typical Reverse Characteristics

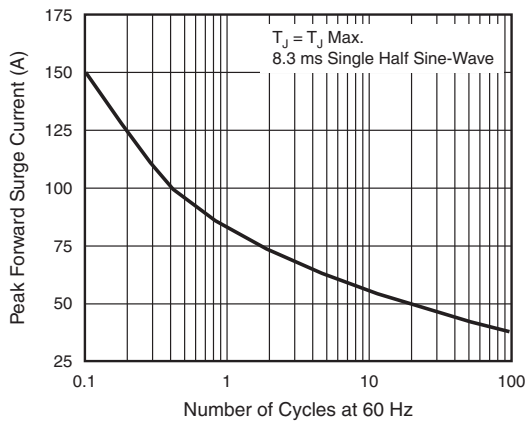


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

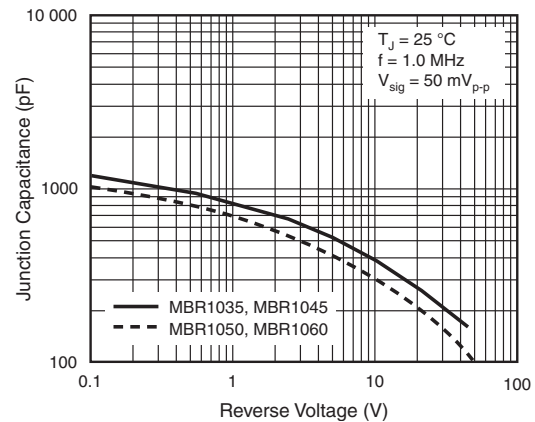


Fig. 5 - Typical Junction Capacitance

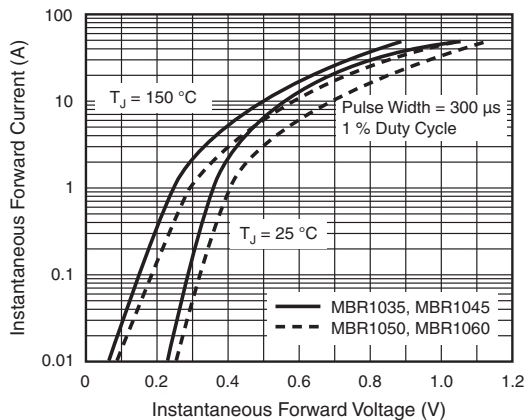


Fig. 3 - Typical Instantaneous Forward Characteristics

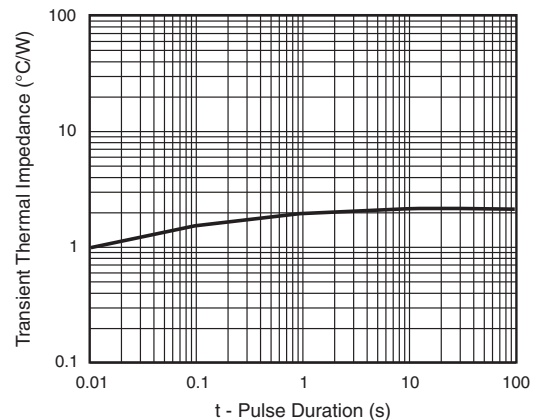
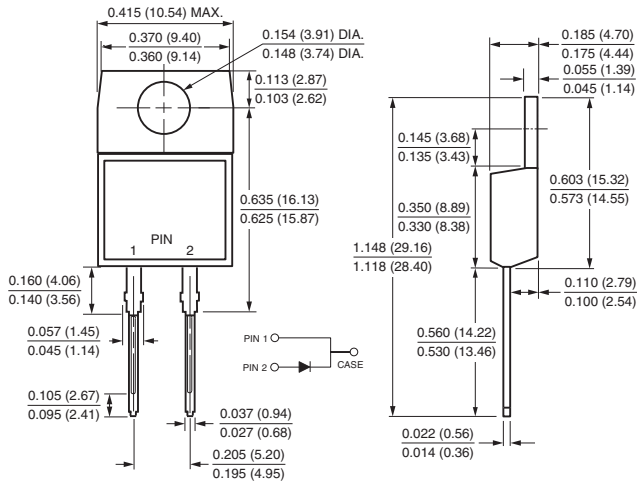


Fig. 6 - Typical Transient Thermal Impedance

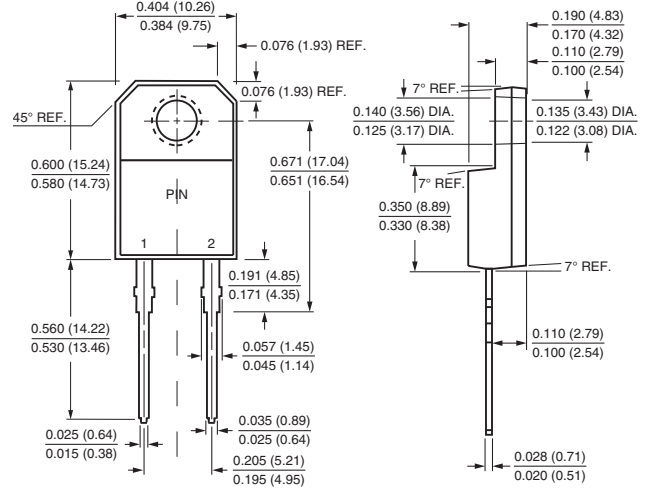
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



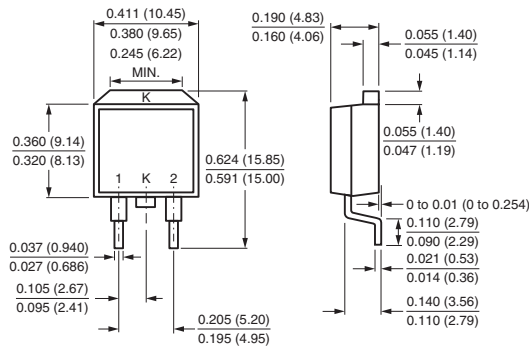
TO-220AC



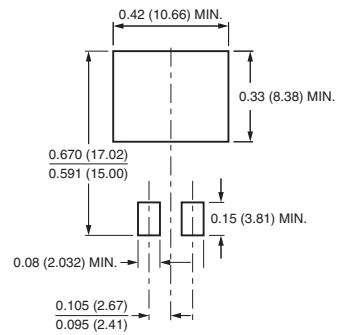
ITO-220AC



TO-263AB



Mounting Pad Layout





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