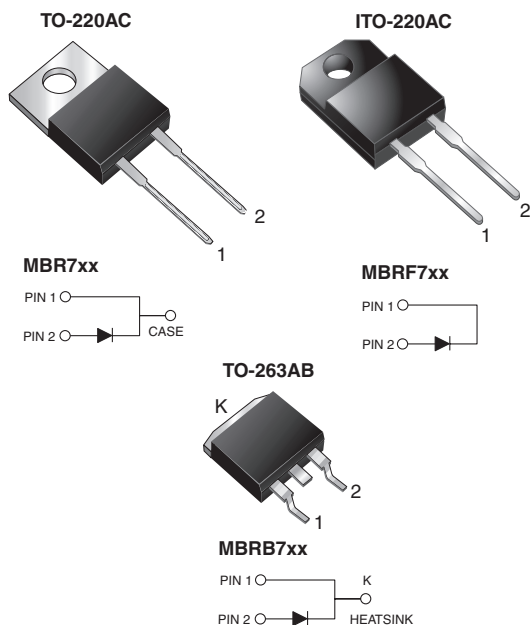


Schottky Barrier Rectifier



FEATURES

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



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.

MECHANICAL DATA

Case: TO-220AC, ITO-220AC, TO-263AB

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-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

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	7.5 A
V_{RRM}	35 V to 60 V
I_{FSM}	150 A
V_F	0.57 V, 0.65 V
$T_J \text{ max.}$	150 °C

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

MAXIMUM RATINGS (T _C = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	MBR735	MBR745	MBR750	MBR760	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
Maximum average forward rectified current (Fig. 1)	I _{F(AV)}	7.5				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 μs, 1 kHz	I _{RRM}	1.0		0.5		A
Voltage rate of change (rated V _R)	dV/dt	10 000				V/μs
Operating junction temperature range	T _J	- 65 to + 150				°C
Storage temperature range	T _{STG}	- 65 to + 175				°C
Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min	V _{AC}	1500				V

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	MBR735	MBR745	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	$I_F = 7.5\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$	V_F	-	0.75	V
	$I_F = 7.5\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$		0.57	0.65	
	$I_F = 15\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$		0.84	-	
	$I_F = 15\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$		0.72	-	
Maximum reverse current at DC blocking voltage		$T_C = 25\text{ }^{\circ}\text{C}$ $T_C = 125\text{ }^{\circ}\text{C}$	I_R	0.1 15	0.5 50	mA

Note:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Thermal resistance from junction to case	$R_{\theta JC}$	3.0	5.0	3.0	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	MBR745-E3/45	1.80	45	50/tube	Tube
ITO-220AC	MBRF745-E3/45	1.94	45	50/Tube	Tube
TO-263AB	MBRB745-E3/45	1.33	45	50/Tube	Tube
TO-263AB	MBRB745-E3/81	1.33	81	800/reel	Tape reel
TO-220AC	MBR745HE3/45 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AC	MBRF745HE3/45 ⁽¹⁾	1.94	45	50/Tube	Tube
TO-263AB	MBRB745HE3/45 ⁽¹⁾	1.33	45	50/Tube	Tube
TO-263AB	MBRB745HE3/81 ⁽¹⁾	1.33	81	800/reel	Tape reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

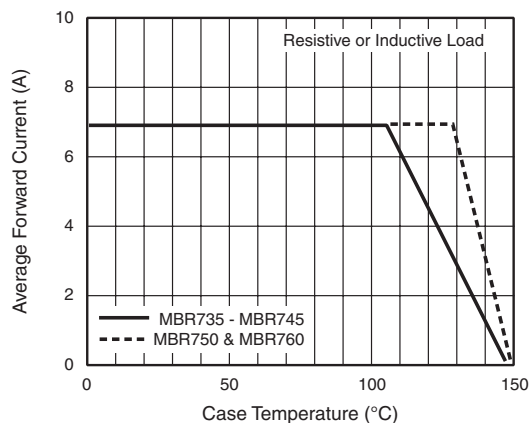


Figure 1. Forward Current Derating Curve

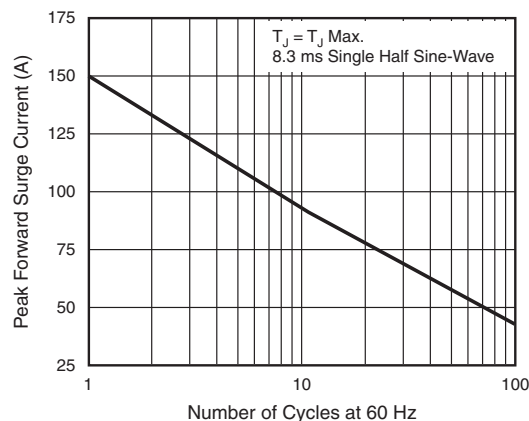


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

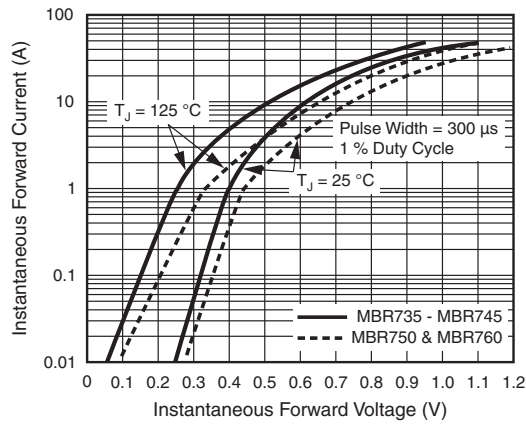


Figure 3. Typical Instantaneous Forward Characteristics

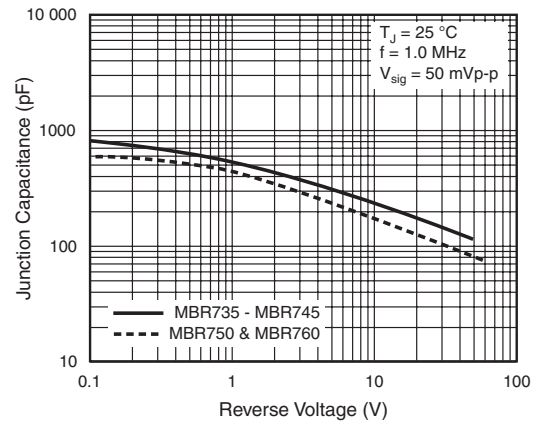


Figure 5. Typical Junction Capacitance

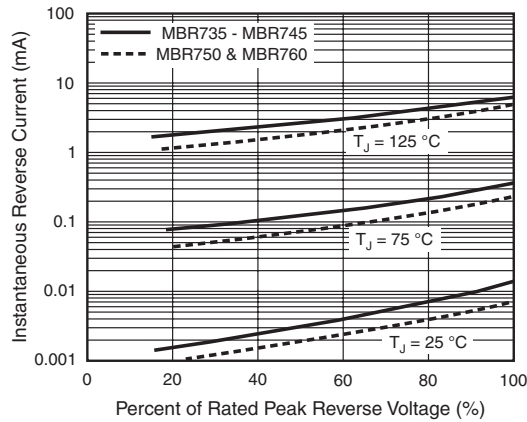


Figure 4. Typical Reverse Characteristics

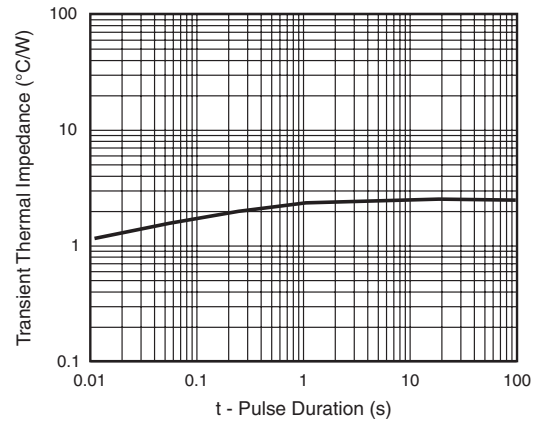
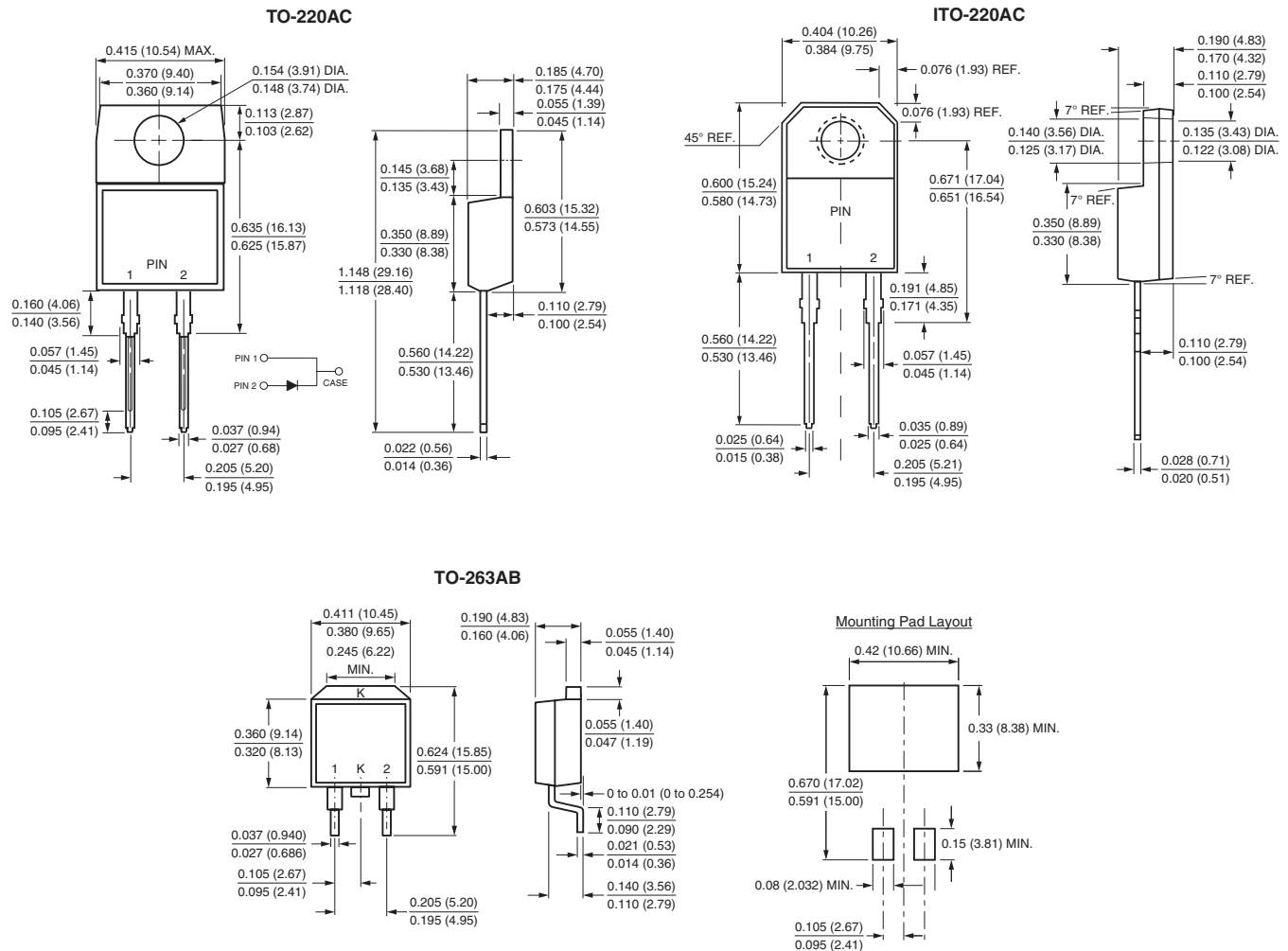


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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