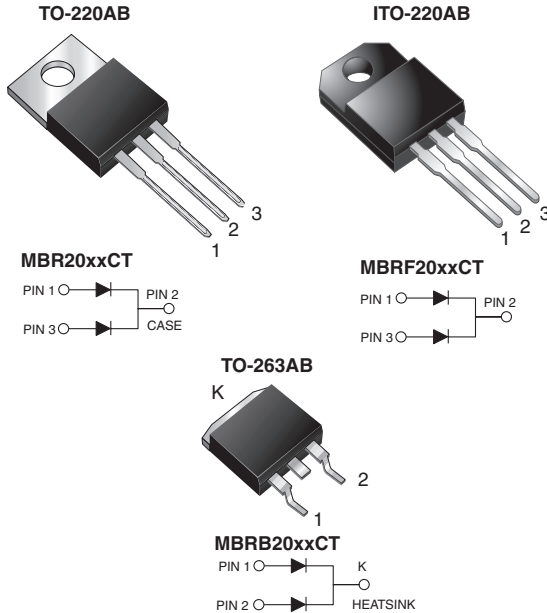


## Dual Common-Cathode Schottky Rectifier



### 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-220AB and ITO-220AB 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-220AB, ITO-220AB, 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

$I_{F(AV)}$	10 A x 2
$V_{RRM}$	35 V to 60 V
$I_{FSM}$	150 A
$V_F$	0.57 V, 0.70 V
$T_J$ max.	150 °C

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

PARAMETER	SYMBOL	MBR2035CT	MBR2045CT	MBR2050CT	MBR2060CT	UNIT
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	35	45	50	60	V
Working peak reverse voltage	V <sub>RWM</sub>	35	45	50	60	V
Maximum DC blocking voltage	V <sub>DC</sub>	35	45	50	60	V
Maximum average forward rectified total device current at T <sub>C</sub> = 135 °C per diode	I <sub>F(AV)</sub>	20 10				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I <sub>FSM</sub>	150				A
Peak repetitive reverse surge current per diode at t <sub>p</sub> = 2 μs, 1 kHz	I <sub>RRM</sub>	1.0		0.5		A
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000				V/μs
Operating junction temperature range	T <sub>J</sub>	- 65 to + 150				°C
Storage temperature range	T <sub>STG</sub>	- 65 to + 175				°C
Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min	V <sub>AC</sub>	1500				V

ELECTRICAL CHARACTERISTICS ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	MBR2035CT	MBR2045CT	UNIT
Maximum instantaneous forward voltage per diode <sup>(1)</sup>	$I_F = 10\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$	$V_F$	0.65	0.80	V
	$I_F = 10\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$		0.57	0.70	
	$I_F = 20\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$		0.84	0.95	
	$I_F = 20\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$		0.72	0.85	
Maximum reverse current per diode at rated DC blocking voltage per diode <sup>(1)</sup>		$T_C = 25\text{ }^{\circ}\text{C}$ $T_C = 125\text{ }^{\circ}\text{C}$	$I_R$	0.1 15	0.15 15	mA

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Typical resistance from junction to case per diode	$R_{\theta JC}$	2.0	5.0	2.0	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR2045CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MBRF2045CT-E3/45	1.99	45	50/tube	Tube
TO-263AB	MBRB2045CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MBRB2045CT-E3/81	1.35	81	800/reel	Tape reel
TO-220AB	MBR2045CTHE3/45 <sup>(1)</sup>	1.85	45	50/tube	Tube
ITO-220AB	MBRF2045CTHE3/45 <sup>(1)</sup>	1.99	45	50/tube	Tube
TO-263AB	MBRB2045CTHE3/45 <sup>(1)</sup>	1.35	45	50/tube	Tube
TO-263AB	MBRB2045CTHE3/81 <sup>(1)</sup>	1.35	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)

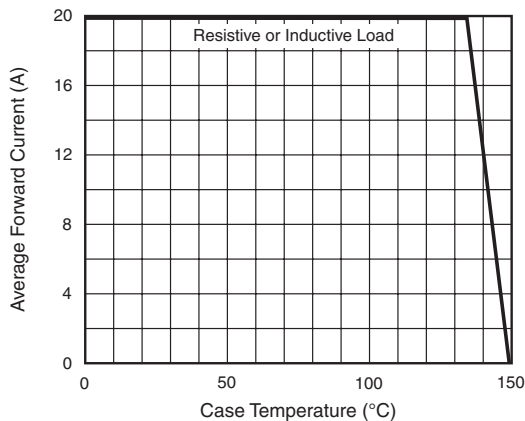


Figure 1. Forward Derating Curve (Total)

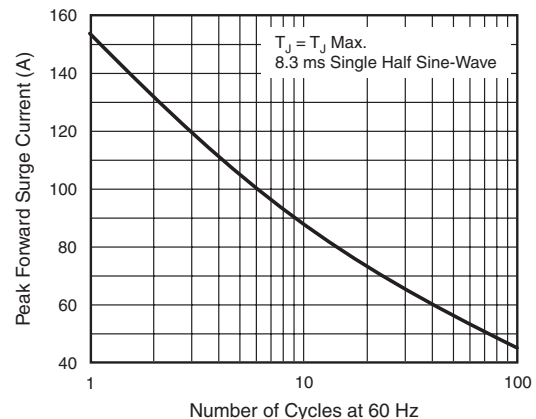


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

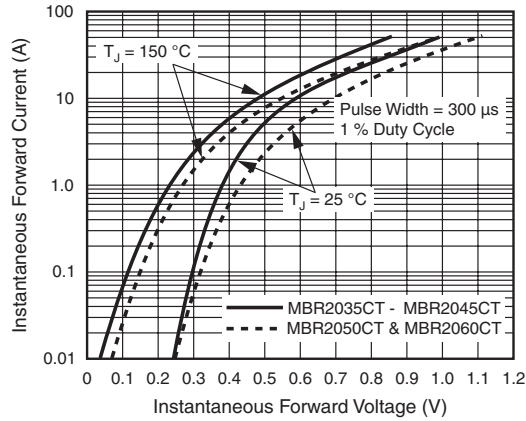


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

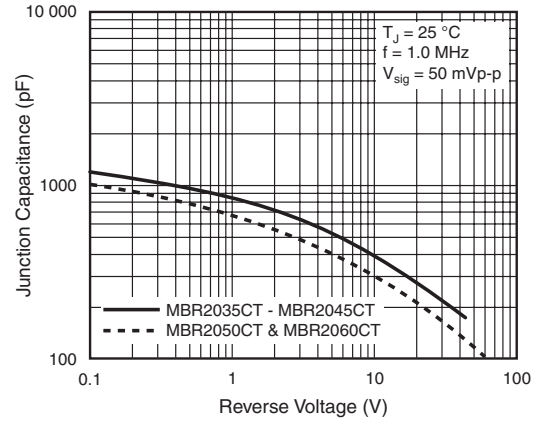


Figure 5. Typical Junction Capacitance Per Diode

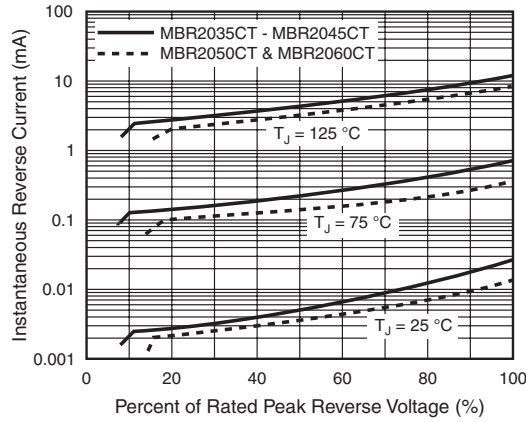


Figure 4. Typical Reverse Characteristics Per Diode

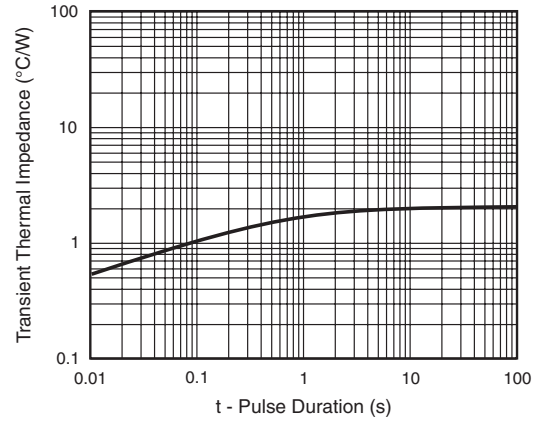
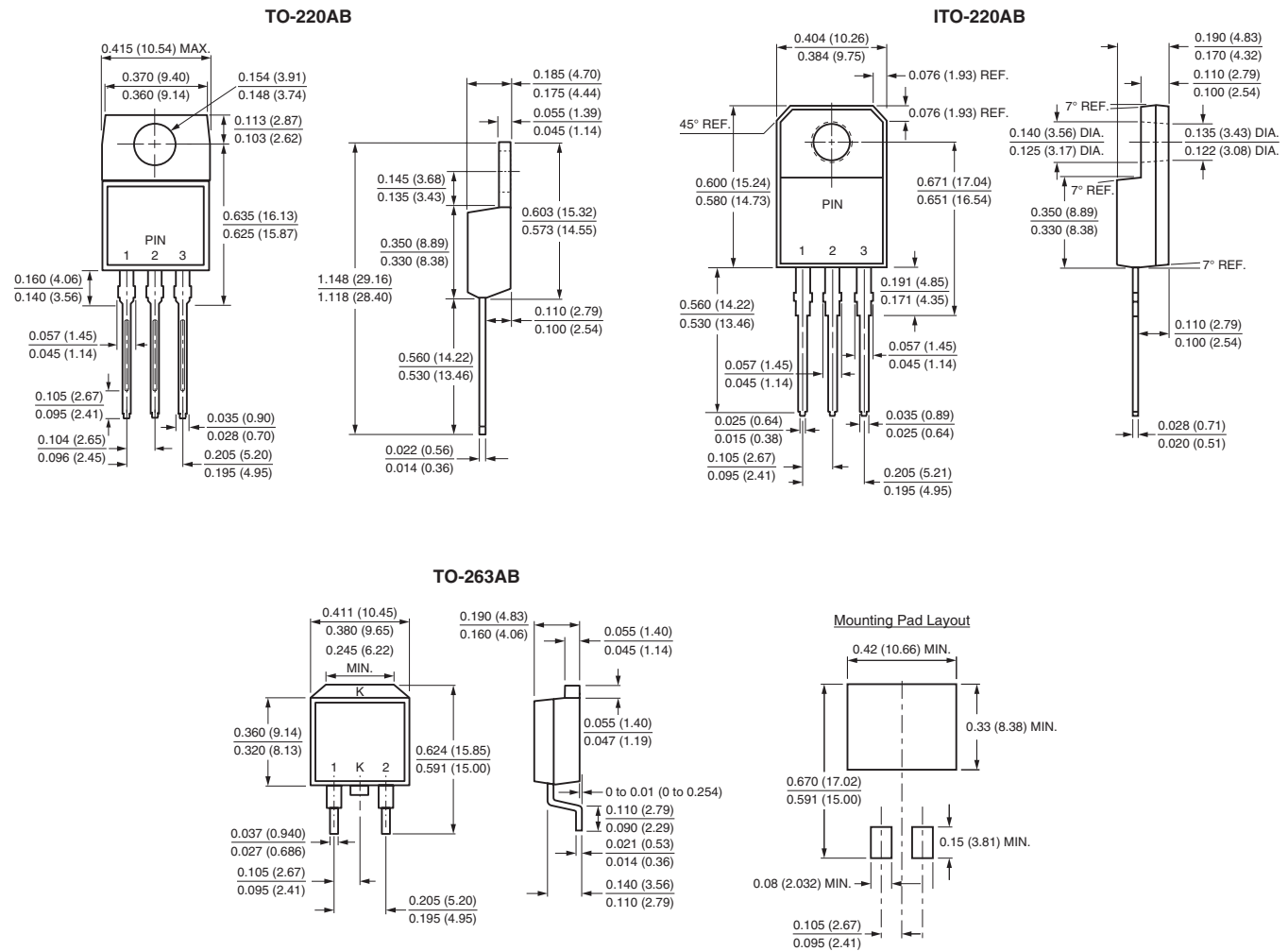


Figure 6. Typical Transient Thermal Impedance Per Diode

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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