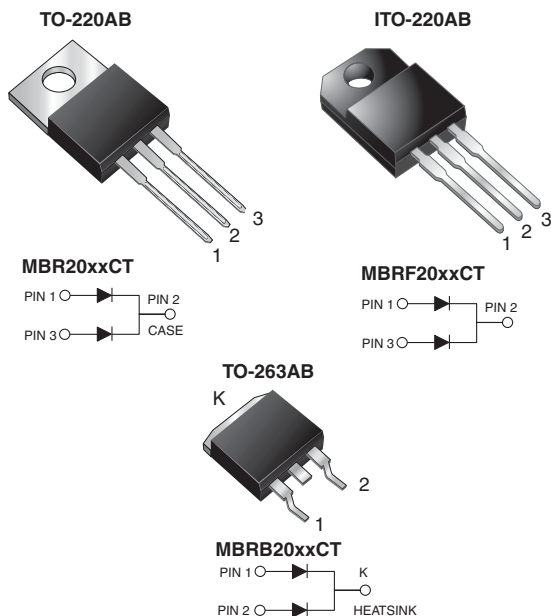


Dual Common Cathode Schottky Rectifier



FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Very 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-220AB and ITO-220AB 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-220AB, ITO-220AB, 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

$I_{F(AV)}$	2 x 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-220AB, ITO-220AB, TO-263AB
Diode variations	Dual Common Cathode

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

PARAMETER	SYMBOL	MBR2035CT	MBR2045CT	MBR2050CT	MBR2060CT	UNIT
Maximum repetitive peak reverse voltage	V _{RRM}	35	45	50	60	V
Working peak reverse voltage	V _{RWM}	35	45	50	60	
Maximum DC blocking voltage	V _{DC}	35	45	50	60	
Maximum average forward rectified current total device at T_C = 135 °C per diode	I _{F(AV)}	20				A
		10				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I _{FSM}	150				
Peak repetitive reverse surge current per diode at t _p = 2.0 μs, 1 kHz	I _{RRM}	1.0		0.5		
Voltage rate of change (rated V _R)	dV/dt	10 000				
Operating junction temperature range	T _J	- 65 to + 150				°C
Storage temperature range	T _{STG}	- 65 to + 175				
Isolation voltage (ITO-220AB 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	SYMBOL	TEST CONDITIONS	MBR2035CT	MBR2045CT	MBR2050CT	MBR2060CT	UNIT
Maximum instantaneous forward voltage per diode	$V_F^{(1)}$	$I_F = 10\text{ A}$ $T_C = 25\text{ }^{\circ}\text{C}$	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 at DC blocking voltage per diode	$I_R^{(2)}$	Rated V_R	$T_C = 25\text{ }^{\circ}\text{C}$	0.1	0.15		mA
			$T_C = 125\text{ }^{\circ}\text{C}$	15	150		

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 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 and reel
TO-220AB	MBR2045CTHE3/45 ⁽¹⁾	1.85	45	50/tube	Tube
ITO-220AB	MBRF2045CTHE3/45 ⁽¹⁾	1.99	45	50/tube	Tube
TO-263AB	MBRB2045CTHE3/45 ⁽¹⁾	1.35	45	50/tube	Tube
TO-263AB	MBRB2045CTHE3/81 ⁽¹⁾	1.35	81	800/reel	Tape and reel

Note

- (1) AEC-Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

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

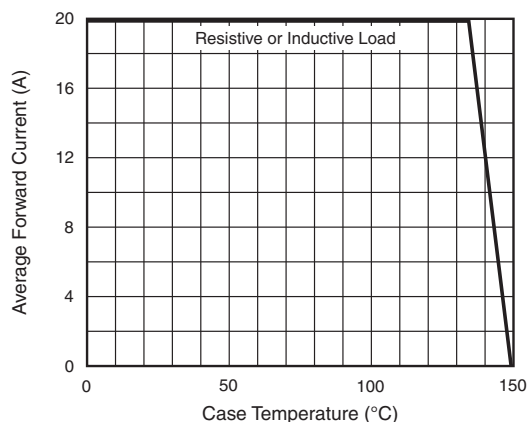


Fig. 1 - Forward Derating Curve (Total)

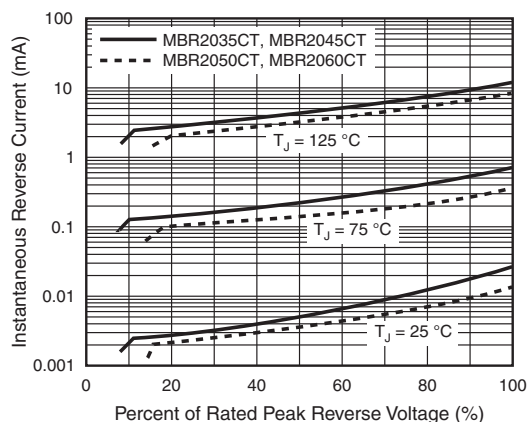


Fig. 4 - Typical Reverse Characteristics Per Diode

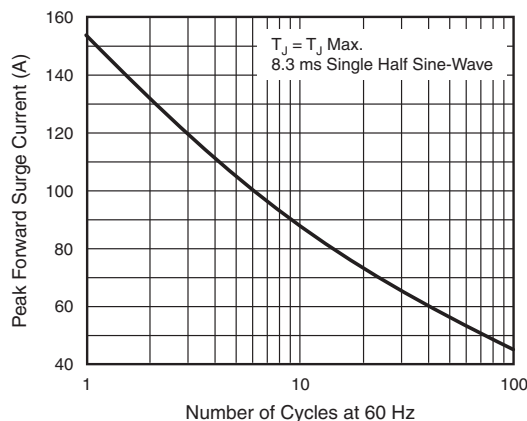


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

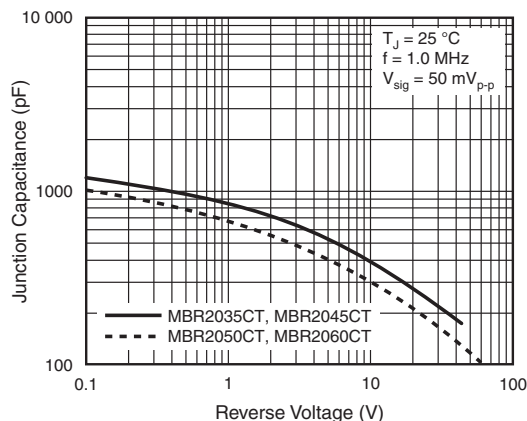


Fig. 5 - Typical Junction Capacitance Per Diode

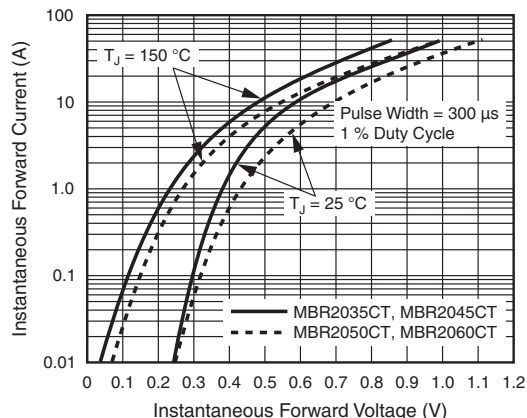


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

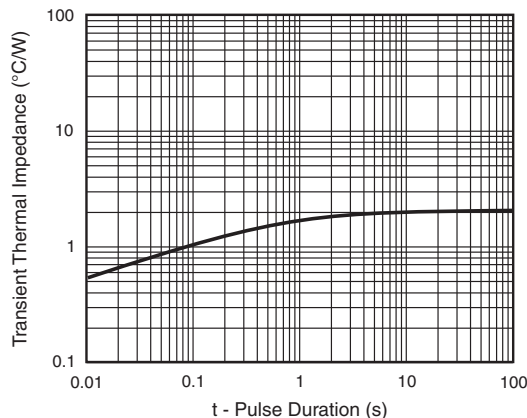
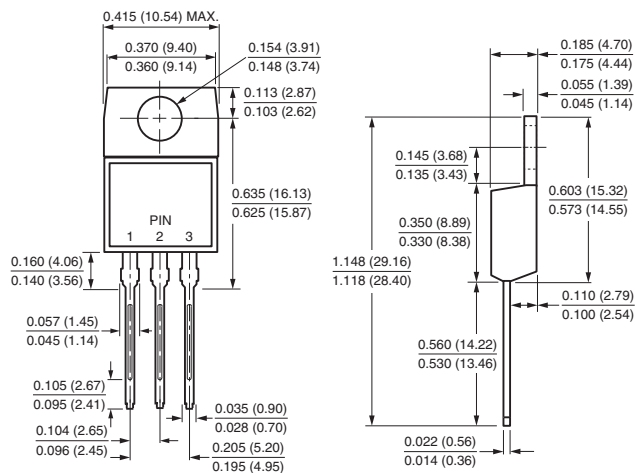


Fig. 6 - Typical Transient Thermal Impedance Per Diode

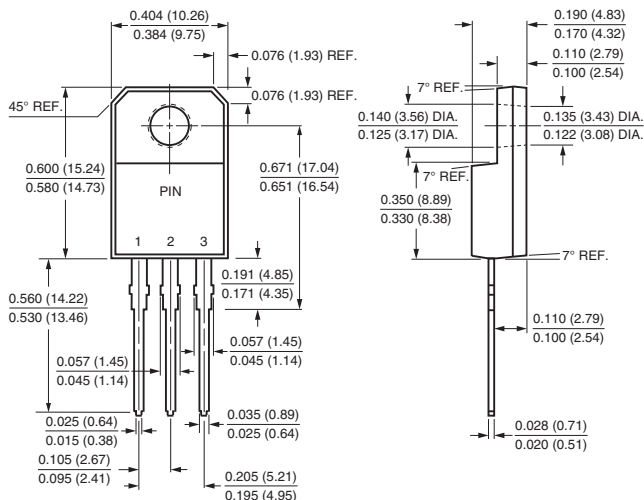


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

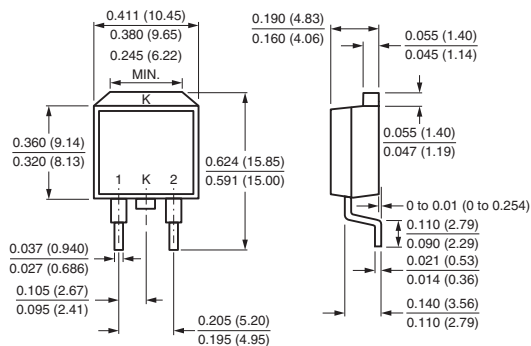
TO-220AB



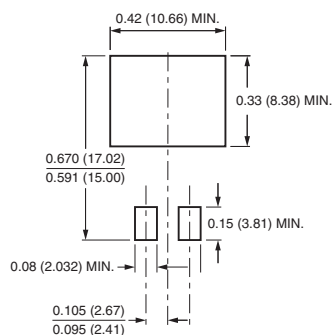
ITO-220AB



TO-263AB



Mounting Pad Layout





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