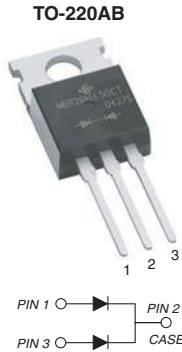




Dual Common Cathode Schottky Rectifiers

High Barrier Technology for Improved High Temperature Performance



FEATURES

- Power pack
- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- High frequency operation
- Solder dip 275 °C max., 10 s, per JESD 22-B106
- 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, or polarity protection application.

MECHANICAL DATA

Case: TO-220AB

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
V_{RRM}	35 V, 45 V, 50 V, 60 V
I_{FSM}	350 A, 320 A
V_F at $I_F = 20$ A	0.55 V, 0.60 V
I_R	100 μ A
T_J max.	175 °C
Package	TO-220AB
Diode variations	Common cathode

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)						
PARAMETER	SYMBOL	MBR40H35CT	MBR40H45CT	MBR40H50CT	MBR40H60CT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	35	45	50	60	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	total device		40		A
		per diode		20		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	350		320		A
Peak repetitive reverse surge current per diode at $t_p = 2$ μ s, 1 kHz	I_{RRM}	1.0				A
Peak non-repetitive reverse surge energy (8/20 μ s waveform) per diode	E_{RSM}	20				mJ
Non-repetitive avalanche energy at 25 °C, $I_{AS} = 3.0$ A, L = 5 mH per diode	E_{AS}	22.5				mJ
Voltage rate of change (rated V_R)	dV/dt	10 000				V/ μ s
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +175				°C



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	TEST CONDITIONS	MBR40H35CT	MBR40H45CT	MBR40H50CT	MBR40H60CT	UNIT
Maximum instantaneous forward voltage per diode	$V_F^{(1)}$	$I_F = 20\text{ A}$, $T_J = 25\text{ }^\circ\text{C}$	0.64		0.68		V
		$I_F = 20\text{ A}$, $T_J = 125\text{ }^\circ\text{C}$	0.55		0.60		
		$I_F = 40\text{ A}$, $T_J = 25\text{ }^\circ\text{C}$	0.76		0.83		
		$I_F = 40\text{ A}$, $T_J = 125\text{ }^\circ\text{C}$	0.70		0.73		
Maximum instantaneous reverse current per diode	$I_R^{(2)}$	rated V_R	$T_J = 25\text{ }^\circ\text{C}$			100	μA
			$T_J = 125\text{ }^\circ\text{C}$			15	mA
Typical junction capacitance	C_J	4.0 V, 1 MHz per diode	1200		920		pF

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	MBR40H35CT	MBR40H45CT	MBR40H50CT	MBR40H60CT	UNIT
Thermal resistance, junction to case per diode	$R_{\theta JC}$	1.8				$^\circ\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR40H45CT-E3/45	1.58	45	50/tube	Tube

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

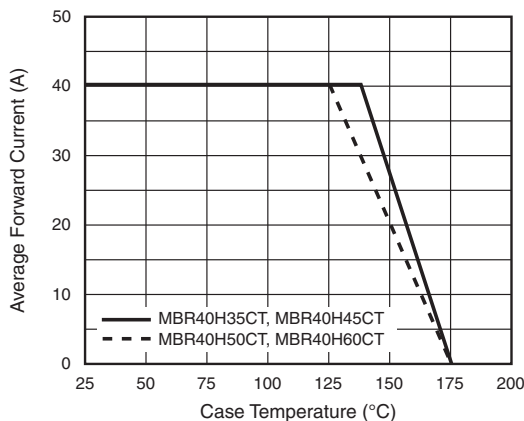


Fig. 1 - Forward Derating Curve Per Diode

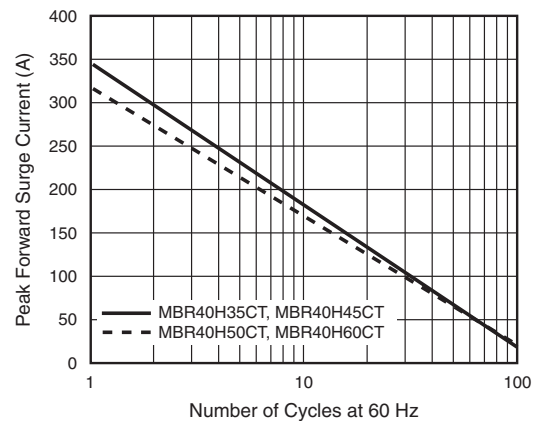


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

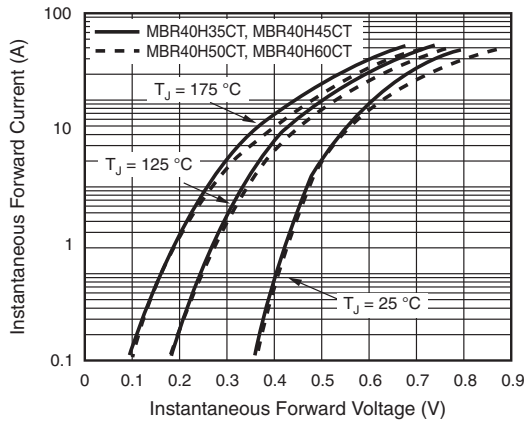


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

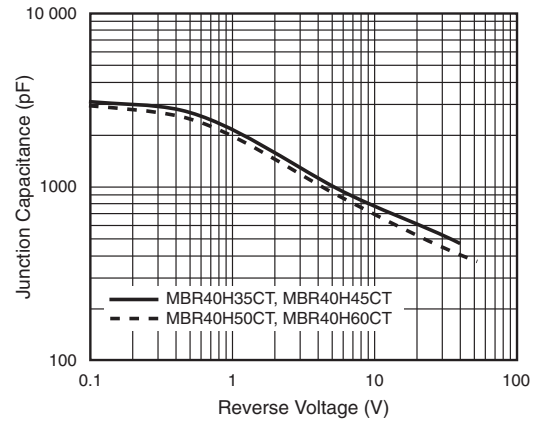


Fig. 5 - Typical Junction Capacitance Per Diode

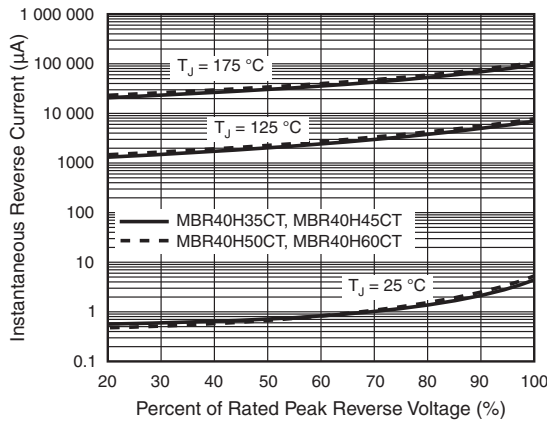


Fig. 4 - Typical Reverse Characteristics Per Diode

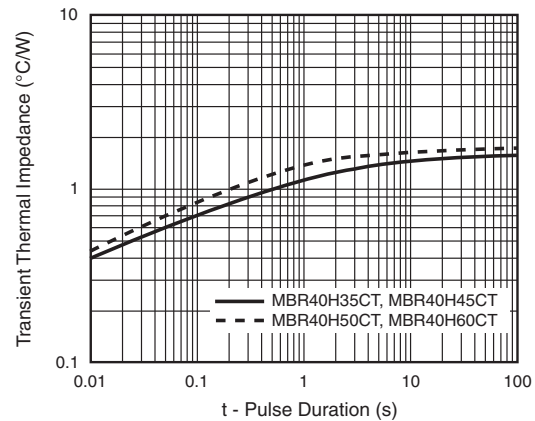
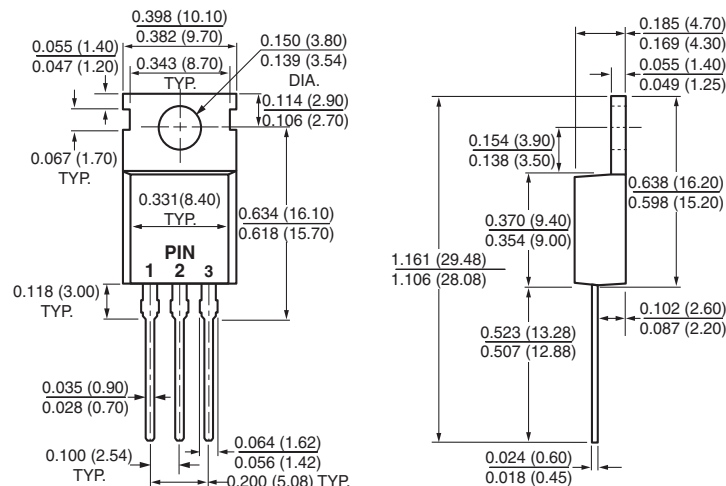


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB





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