

## 10A, 45V - 200V Schottky Barrier Rectifier

### FEATURES

- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

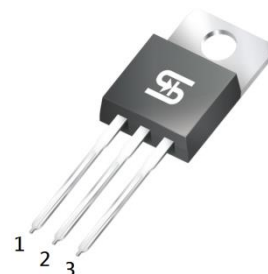
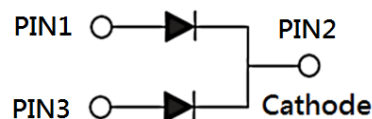
### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

### MECHANICAL DATA

- Case: TO-220AB
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 1.88g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	10	A
$V_{RRM}$	45 - 200	V
$I_{FSM}$	120	A
$T_{J\ MAX}$	150	°C
Package	TO-220AB	
Configuration	Dual dies	


**TO-220AB**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	MBR 1045 CT-Y	MBR 1060 CT-Y	MBR 10100 CT-Y	MBR 10150 CT-Y	MBR 10200 CT-Y	UNIT
Marking code on the device		MBR 1045CT	MBR 1060CT	MBR 10100CT	MBR 10150CT	MBR 10200CT	
Repetitive peak reverse voltage	$V_{RRM}$	45	60	100	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	31	42	70	105	140	V
Forward current	$I_F$	10					A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	$I_{FSM}$	120					A
Peak repetitive reverse surge current <sup>(1)</sup>	$I_{RRM}$	1	0.5				A
Peak repetitive forward current (Rated $V_R$ , Square wave, 20KHz)	$I_{FRM}$	10					A
Critical rate of rise of off-state voltage	dv/dt	10,000					V/ $\mu\text{s}$
Junction temperature	$T_J$	-55 to +150					°C
Storage temperature	$T_{STG}$	-55 to +150					°C

#### Notes:

1.  $t_p = 2.0\mu\text{s}$ , 1.0KHz

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-case thermal resistance	$R_{\theta JC}$	1.5	°C/W

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage per diode <sup>(1)</sup>	MBR1045CT-Y	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	0.70	V
	MBR1060CT-Y			-	0.80	V
	MBR10100CT-Y			-	0.85	V
	MBR10150CT-Y MBR10200CT-Y			-	0.88	V
	MBR1045CT-Y	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		-	0.80	V
	MBR1060CT-Y			-	0.90	V
	MBR10100CT-Y			-	0.95	V
	MBR10150CT-Y MBR10200CT-Y			-	0.98	V
	MBR1045CT-Y	$I_F = 5\text{A}, T_J = 125^\circ\text{C}$		-	0.57	V
	MBR1060CT-Y			-	0.65	V
	MBR10100CT-Y			-	0.75	V
	MBR10150CT-Y MBR10200CT-Y			-	0.78	V
	MBR1045CT-Y	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		-	0.67	V
	MBR1060CT-Y			-	0.75	V
	MBR10100CT-Y			-	0.85	V
	MBR10150CT-Y MBR10200CT-Y			-	0.88	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	MBR1045CT-Y MBR1060CT-Y MBR10100CT-Y MBR10150CT-Y MBR10200CT-Y	$T_J = 25^\circ\text{C}$	$I_R$	-	100	$\mu\text{A}$
	MBR1045CT-Y	$T_J = 125^\circ\text{C}$		-	15	mA
	MBR1060CT-Y			-	10	mA
	MBR10100CT-Y			-	2	mA
	MBR10150CT-Y MBR10200CT-Y			-	5	mA

**Notes:**

- Pulse test with  $PW = 0.3\text{ms}$
- Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
MBR10xCT-Y	TO-220AB	50 / Tube

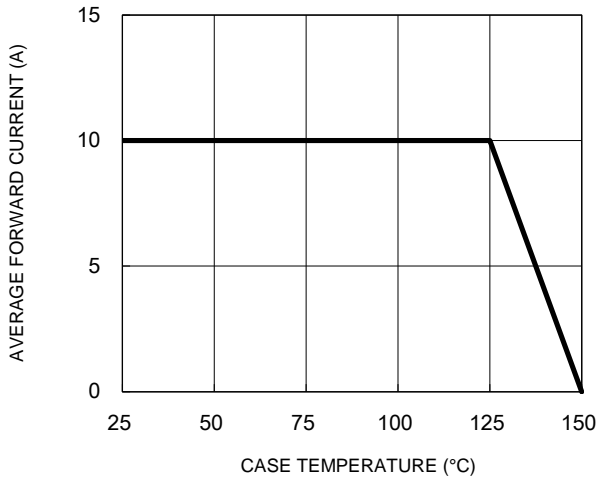
**Notes:**

- "x" defines voltage from 45V(MBR1045CT-Y) to 200V(MBR10200CT-Y)

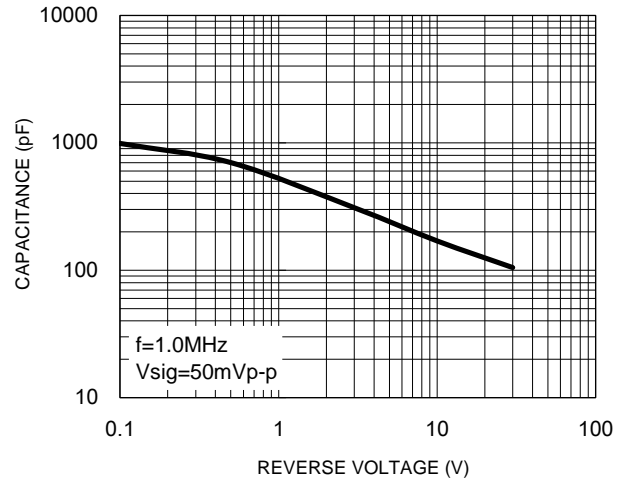
**CHARACTERISTICS CURVES**

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

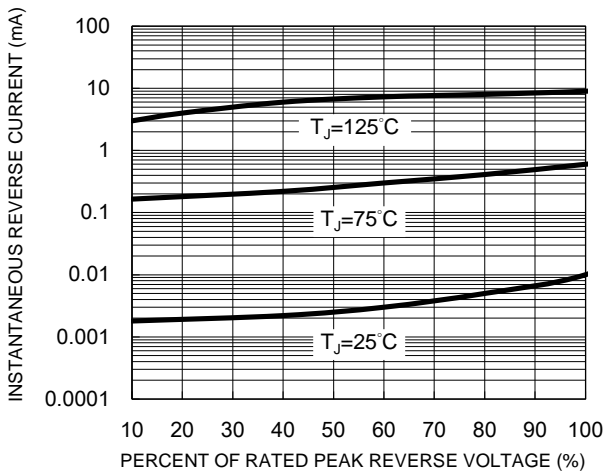
**Fig.1 Forward Current Derating Curve**



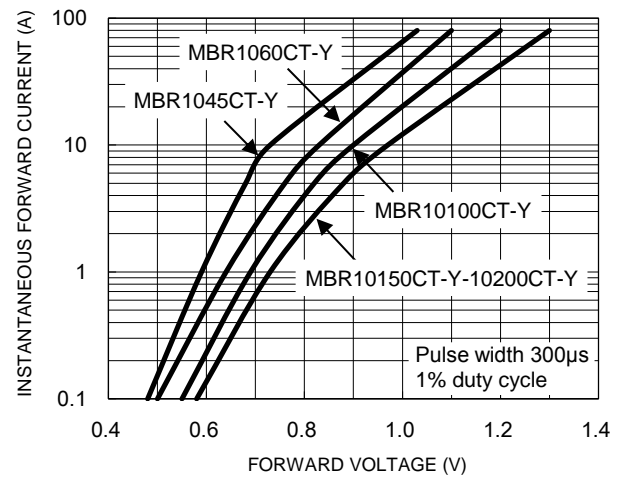
**Fig.2 Typical Junction Capacitance**



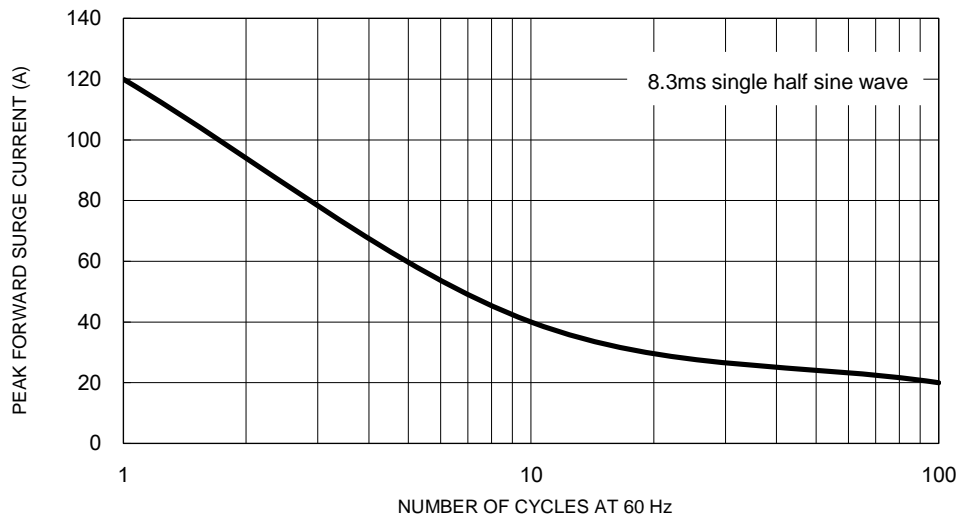
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



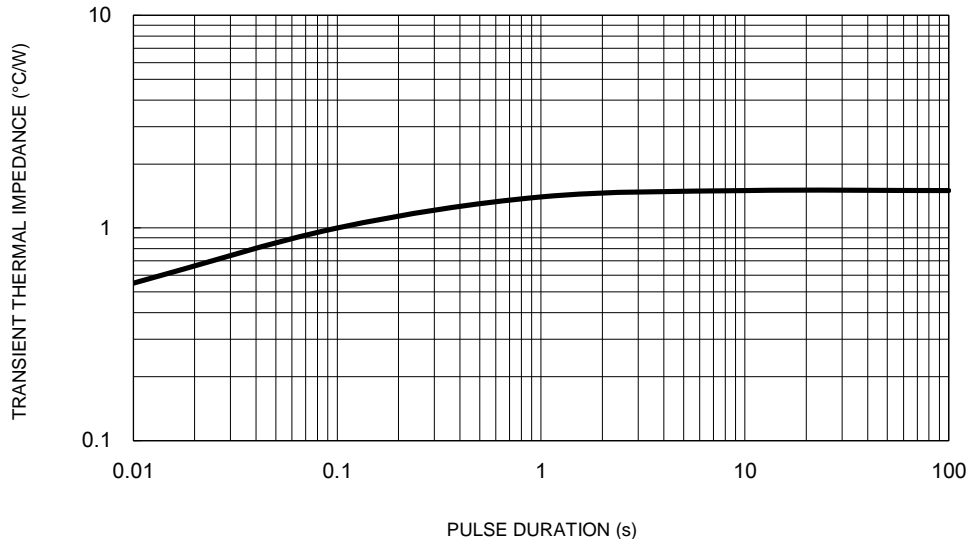
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



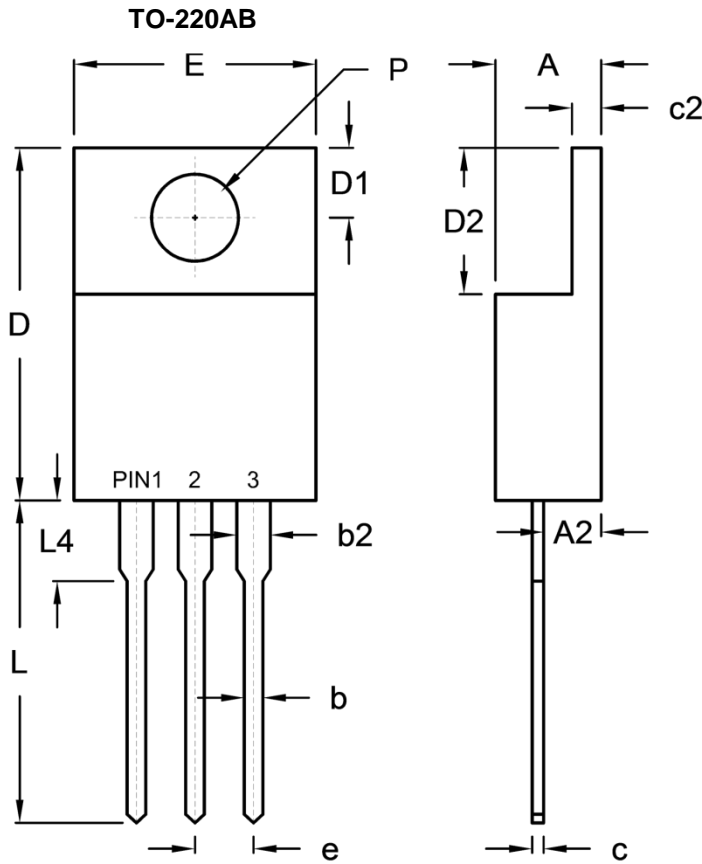
**CHARACTERISTICS CURVES**

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

**Fig.6 Typical Transient Thermal Impedance**



**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.42	4.76	0.174	0.187
A2	2.20	2.80	0.087	0.110
b	0.68	0.94	0.027	0.037
b2	1.14	1.77	0.045	0.070
c	0.35	0.64	0.014	0.025
c2	1.14	1.40	0.045	0.055
D	14.60	16.00	0.575	0.630
D1	2.62	3.44	0.103	0.135
D2	5.84	6.86	0.230	0.270
E	-	10.50	-	0.413
e	2.41	2.67	0.095	0.105
L	13.19	14.79	0.519	0.582
L4	2.80	4.20	0.110	0.165
P	3.54	4.00	0.139	0.157

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

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