

## 30A, 35V - 150V Schottky Barrier Rectifier

### FEATURES

- AEC-Q101 qualified available
- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

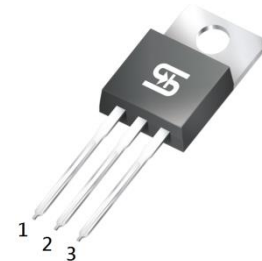
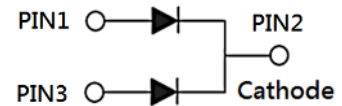
### APPLICATIONS

- 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 2 whisker test
- Polarity: As marked
- Weight: 1.90g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	30	A
$V_{RRM}$	35 - 150	V
$I_{FSM}$	200	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 3035 CT	MBR 3045 CT	MBR 3050 CT	MBR 3060 CT	MBR 3090 CT	MBR 30100 CT	MBR 30150 CT	UNIT
Marking code on the device		MBR 3035 CT	MBR 3045 CT	MBR 3050 CT	MBR 3060 CT	MBR 3090 CT	MBR 30100 CT	MBR 30150 CT	
Repetitive peak reverse voltage	$V_{RRM}$	35	45	50	60	90	100	150	V
Reverse voltage, total rms value	$V_{R(RMS)}$	24	31	35	42	63	70	105	V
Forward current	$I_F$	30							A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	$I_{FSM}$	200							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)	$I_{FRM}$	30							A
Critical rate of rise of off-state voltage	dv/dt	10,000							V/ $\mu$ 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	MBR3035CT MBR3045CT MBR3050CT MBR3060CT	$R_{\theta JC}$	1.0	$^{\circ}\text{C/W}$
Junction-to-case thermal resistance	MBR3090CT MBR30100CT MBR30150CT	$R_{\theta JC}$	1.5	$^{\circ}\text{C/W}$

<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>	MBR3035CT MBR3045CT	$I_F = 15\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	-	0.70	V
	MBR3050CT MBR3060CT			-	0.77	V
	MBR3090CT MBR30100CT			-	0.84	V
	MBR30150CT			-	0.95	V
	MBR3035CT MBR3045CT	$I_F = 30\text{A}, T_J = 25^{\circ}\text{C}$		-	0.82	V
	MBR3050CT MBR3060CT			-	-	V
	MBR3090CT MBR30100CT			-	0.94	V
	MBR30150CT			-	1.02	V
	MBR3035CT MBR3045CT	$I_F = 15\text{A}, T_J = 125^{\circ}\text{C}$		-	0.60	V
	MBR3050CT MBR3060CT			-	0.67	V
	MBR3090CT MBR30100CT			-	0.70	V
	MBR30150CT			-	0.92	V
	MBR3035CT MBR3045CT	$I_F = 30\text{A}, T_J = 125^{\circ}\text{C}$		-	0.73	V
	MBR3050CT MBR3060CT			-	-	V
	MBR3090CT MBR30100CT			-	0.82	V
	MBR30150CT			-	0.98	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	MBR3035CT MBR3045CT MBR3050CT MBR3060CT MBR3090CT MBR30100CT	$T_J = 25^{\circ}\text{C}$	$I_R$	-	200	$\mu\text{A}$
	MBR30150CT	-		100	$\mu\text{A}$	
	MBR3035CT MBR3045CT	$T_J = 125^{\circ}\text{C}$		-	15	mA
	MBR3050CT MBR3060CT			-	10	mA
	MBR3090CT MBR30100CT			-	7.5	mA
	MBR30150CT			-	5	mA

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)(2)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
MBR30xCT	TO-220AB	50 / Tube
MBR30xCTH	TO-220AB	50 / Tube

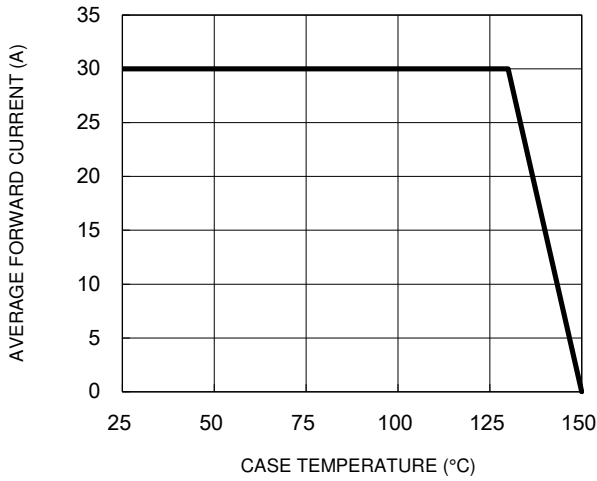
**Notes:**

1. “x” defines voltage from 35V(MBR3035CT) to 150V(MBR30150CT)
2. “H” means AEC-Q101 qualified

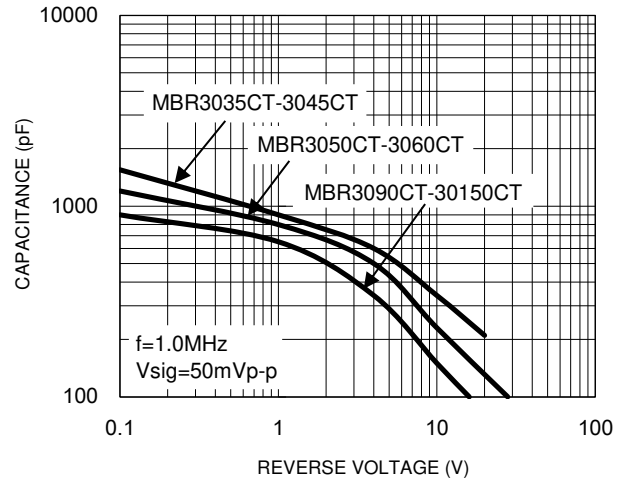
**CHARACTERISTICS CURVES**

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

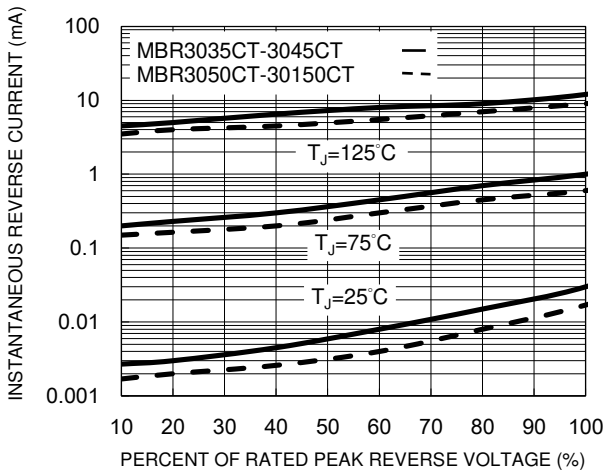
**Fig.1 Forward Current Derating Curve**



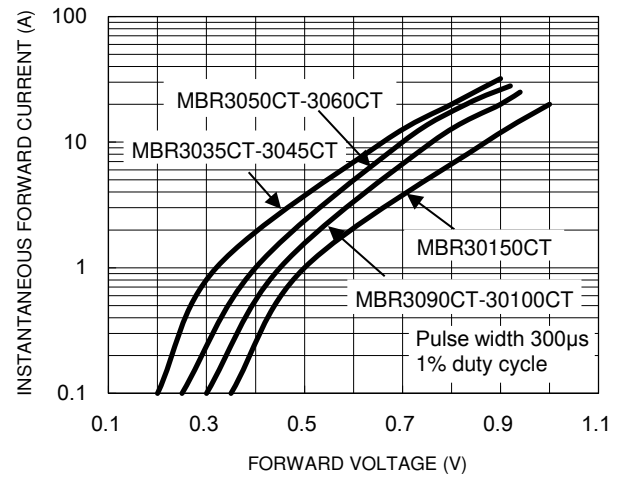
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



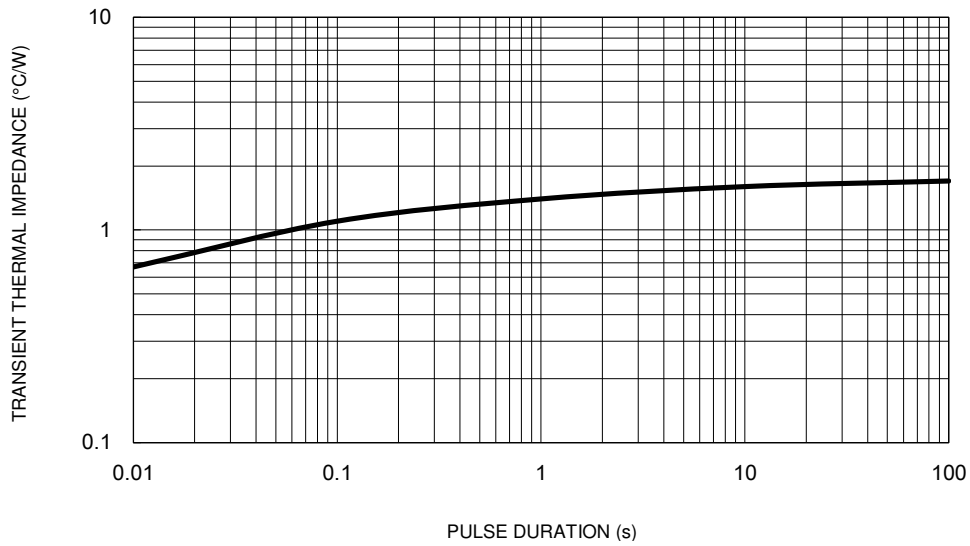
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



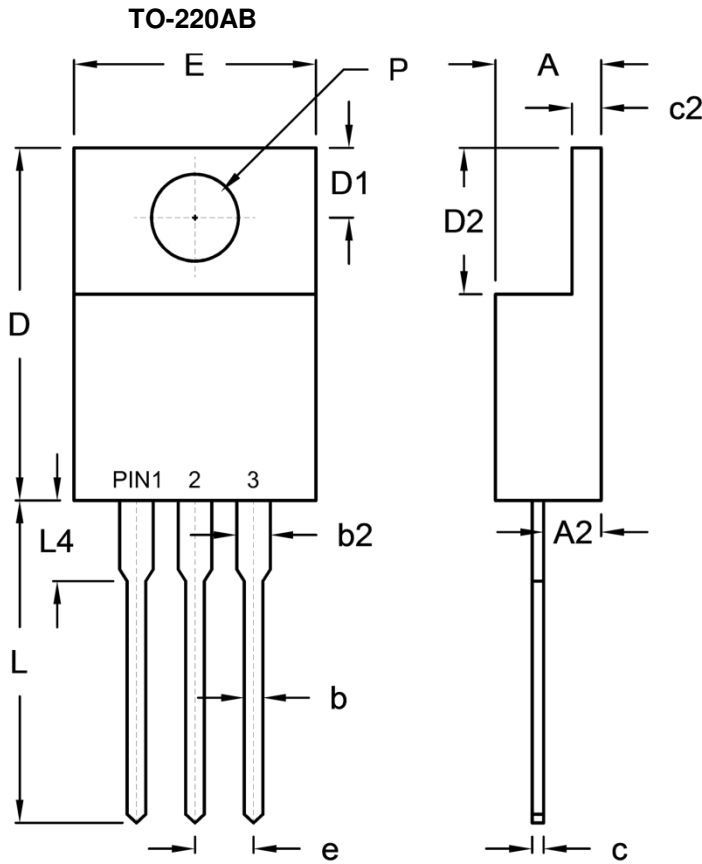
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  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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