

## 10A, 35V - 200V Schottky Barrier Rectifier

### FEATURES

- AEC-Q101 qualified available
- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- UL Recognized File # E-326243
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

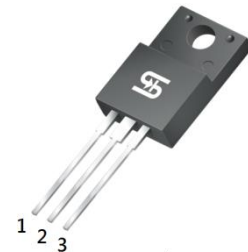
### APPLICATIONS

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

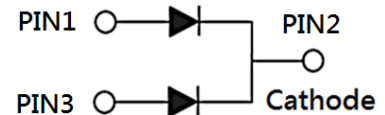
### MECHANICAL DATA

- Case: ITO-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: 1.70g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	10	A
$V_{RRM}$	35 - 200	V
$I_{FSM}$	120	A
$T_{JMAX}$	150	°C
Package	ITO-220AB	
Configuration	Dual dies	



ITO-220AB



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	MBRF	MBRF	MBRF	MBRF	MBRF	MBRF	MBRF	MBRF	UNIT
		1035 CT	1045 CT	1050 CT	1060 CT	1090 CT	10100 CT	10150 CT	10200 CT	
Marking code on the device		MBRF 1035 CT	MBRF 1045 CT	MBRF 1050 CT	MBRF 1060 CT	MBRF 1090 CT	MBRF 10100 CT	MBRF 10150 CT	MBRF 10200 CT	
Repetitive peak reverse voltage	$V_{RRM}$	35	45	50	60	90	100	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	24	31	35	42	63	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>	$I_{RRM}$	0.5								A
Peak repetitive forward current (Rated $V_R$ , Square wave, 20KHz)	$I_{FRM}$	10								A

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	MBRF 1035 CT	MBRF 1045 CT	MBRF 1050 CT	MBRF 1060 CT	MBRF 1090 CT	MBRF 10100 CT	MBRF 10150 CT	MBRF 10200 CT	UNIT
Critical rate of rise of off-state voltage	dv/dt	10,000								V/ $\mu\text{s}$
Junction temperature	$T_J$	-55 to +150								$^\circ\text{C}$
Storage temperature	$T_{\text{STG}}$	-55 to +150								$^\circ\text{C}$

**Notes:**

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

<b>THERMAL PERFORMANCE</b>			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-case thermal resistance	$R_{\theta\text{JC}}$	3.5	$^\circ\text{C/W}$

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode <sup>(1)</sup>	MBRF1035CT MBRF1045CT	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	0.70	V
	MBRF1050CT MBRF1060CT			-	0.80	V
	MBRF1090CT MBRF10100CT			-	0.85	V
	MBRF10150CT MBRF10200CT			-	0.88	V
	MBRF1035CT MBRF1045CT			$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	-	0.80
	MBRF1050CT MBRF1060CT	-			0.90	V
	MBRF1090CT MBRF10100CT	-			0.95	V
	MBRF10150CT MBRF10200CT	-			0.98	V
	MBRF1035CT MBRF1045CT	$I_F = 5\text{A}, T_J = 125^\circ\text{C}$			-	0.57
	MBRF1050CT MBRF1060CT			-	0.65	V
	MBRF1090CT MBRF10100CT			-	0.75	V
	MBRF10150CT MBRF10200CT			-	0.78	V

<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>	MBRF1035CT MBRF1045CT	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$	$V_F$	-	0.67	V
	MBRF1050CT MBRF1060CT			-	0.75	V
	MBRF1090CT MBRF10100CT			-	0.85	V
	MBRF10150CT MBRF10200CT			-	0.88	V
	MBRF1035CT MBRF1045CT MBRF1050CT MBRF1060CT MBRF1090CT MBRF10100CT MBRF10150CT MBRF10200CT			$T_J = 25^\circ\text{C}$	$I_R$	-
MBRF1035CT MBRF1045CT	$T_J = 125^\circ\text{C}$	-	15	mA		
MBRF1050CT MBRF1060CT		-	10	mA		
MBRF1090CT MBRF10100CT MBRF10150CT MBRF10200CT		-	5	mA		

**Notes:**

1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)(2)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
MBRF10xCT	ITO-220AB	50 / Tube
MBRF10xCTH	ITO-220AB	50 / Tube

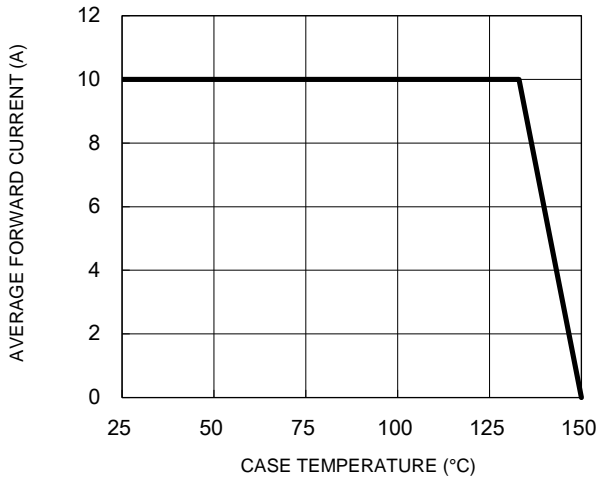
**Notes:**

1. "x" defines voltage from 35V(MBRF1035CT) to 200V(MBRF10200CT)
2. "H" means AEC-Q101 qualified

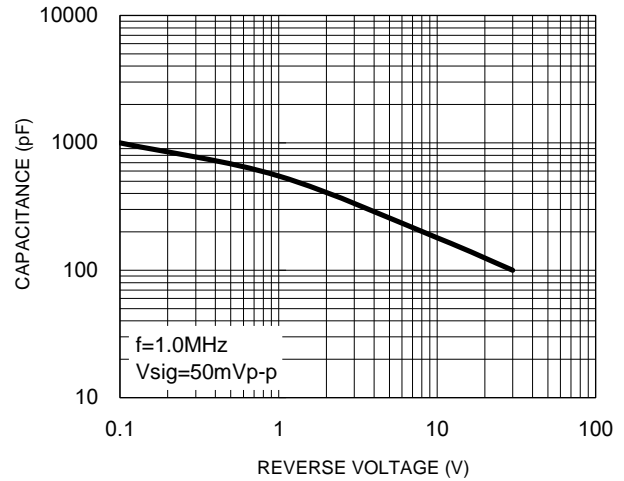
**CHARACTERISTICS CURVES**

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

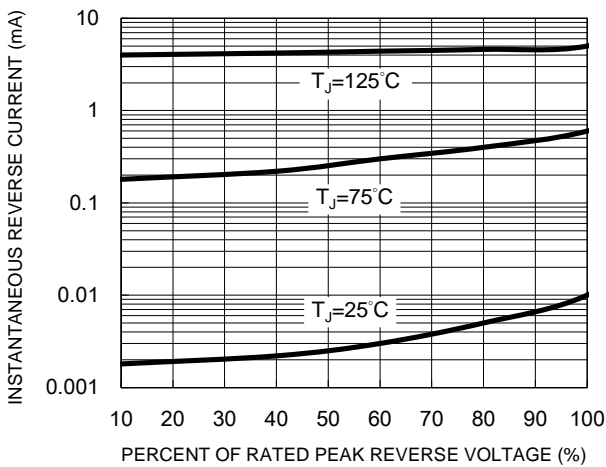
**Fig.1 Forward Current Derating Curve**



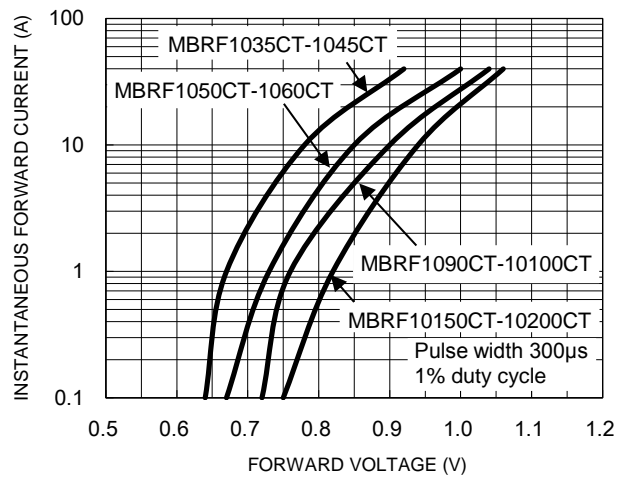
**Fig.2 Typical Junction Capacitance**



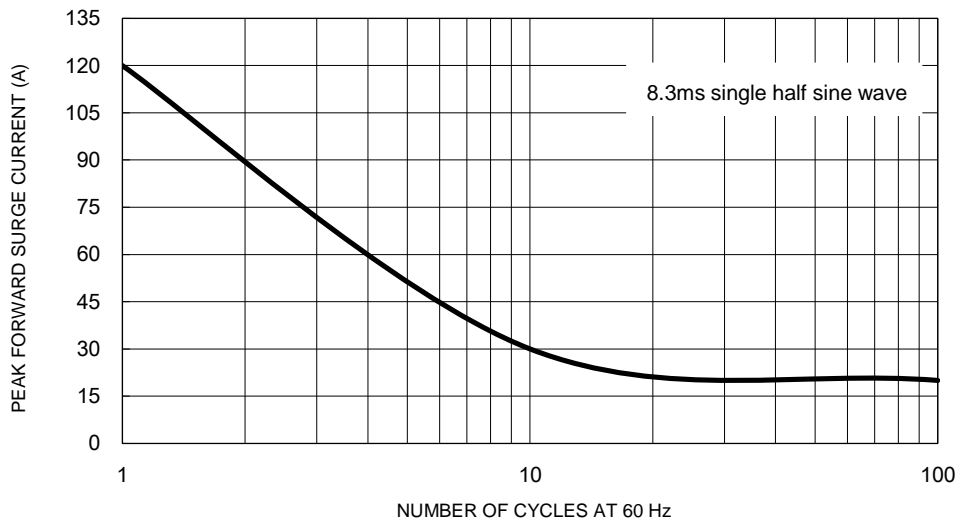
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



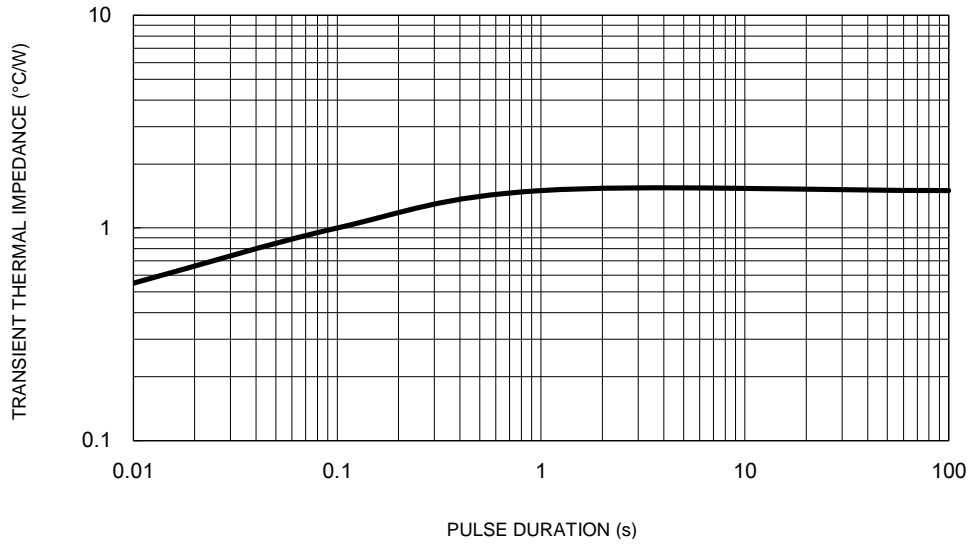
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



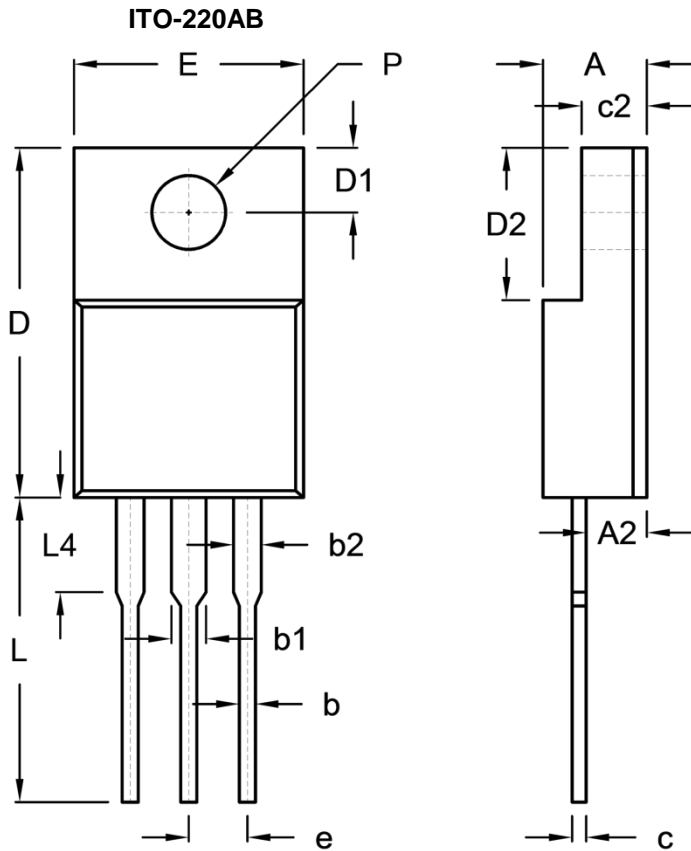
**CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.6 Typical Transient Thermal Impedance**



**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A2	2.30	2.96	0.091	0.117
b	0.50	0.90	0.020	0.035
b1	-	1.80	-	0.071
b2	0.95	1.45	0.037	0.057
c	0.46	0.76	0.018	0.030
c2	2.50	3.16	0.098	0.124
D	14.80	15.50	0.583	0.610
D1	2.40	3.20	0.094	0.126
D2	6.30	6.90	0.248	0.272
E	9.60	10.30	0.378	0.406
e	2.41	2.67	0.095	0.105
L	12.60	13.80	0.496	0.543
L4	-	4.10	-	0.161
P	3.00	3.40	0.118	0.134

**MARKING DIAGRAM**



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

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