

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

### FEATURES

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

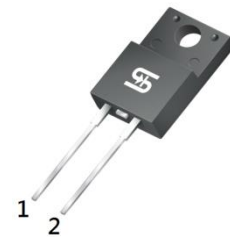
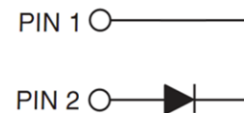
### APPLICATIONS

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

### MECHANICAL DATA

- Case: ITO-220AC
- 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
$I_{FSM}$	150	A
$T_{JMAX}$	150	°C
Package	ITO-220AC	
Configuration	Single die	


**ITO-220AC**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	MBRF 1035	MBRF 1045	MBRF 1050	MBRF 1060	MBRF 1090	MBRF 10100	MBRF 10150	MBRF 10200	UNIT
Marking code on the device		MBRF 1035	MBRF 1045	MBRF 1050	MBRF 1060	MBRF 1090	MBRF 10100	MBRF 10150	MBRF 10200	
Repetitive peak revers 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	$I_{FSM}$	150								A
Peak repetitive reverse surge current <sup>(1)</sup>	$I_{RRM}$	1.0			0.5					A
Peak repetitive forward current (Rated $V_R$ , Square wave, 20KHz)	$I_{FRM}$	20								A

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	MBRF 1035	MBRF 1045	MBRF 1050	MBRF 1060	MBRF 1090	MBRF 10100	MBRF 10150	MBRF 10200	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 +175								$^\circ\text{C}$

**Notes:**

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

<b>THERMAL PERFORMANCE</b>				
PARAMETER		SYMBOL	TYP	UNIT
Junction-to-case resistance	MBRF1035-10150	$R_{\theta\text{JC}}$	3	$^\circ\text{C/W}$
	MBRF10200		4	$^\circ\text{C/W}$

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)								
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT		
Forward voltage <sup>(1)</sup>	MBRF1035 MBRF1045	$I_F = 10\text{A}$ , $T_J = 25^\circ\text{C}$	$V_F$	-	0.70	V		
	MBRF1050 MBRF1060			-	0.80	V		
	MBRF1090 MBRF10100			-	0.85	V		
	MBRF10150 MBRF10200			-	1.05	V		
	MBRF1035 MBRF1045			$I_F = 10\text{A}$ , $T_J = 125^\circ\text{C}$	-	0.57	V	
	MBRF1050 MBRF1060	-			0.70	V		
	MBRF1090 MBRF10100	-			0.71	V		
	MBRF10150 MBRF10200	-			-	V		
	Reverse current @ rated $V_R$ <sup>(2)</sup>	MBRF1035 MBRF1045 MBRF1050 MBRF1060 MBRF1090 MBRF10100 MBRF10150 MBRF10200			$T_J = 25^\circ\text{C}$	$I_R$	-	100
		MBRF1035 MBRF1045		$T_J = 125^\circ\text{C}$	-		15	mA
MBRF1050 MBRF1060		-	10		mA			
MBRF1090 MBRF10100		-	6		mA			
MBRF10150 MBRF10200		-	2		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<sup>(1)(2)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
MBRF10x	ITO-220AC	50 / Tube
MBRF10xH	ITO-220AC	50 / Tube

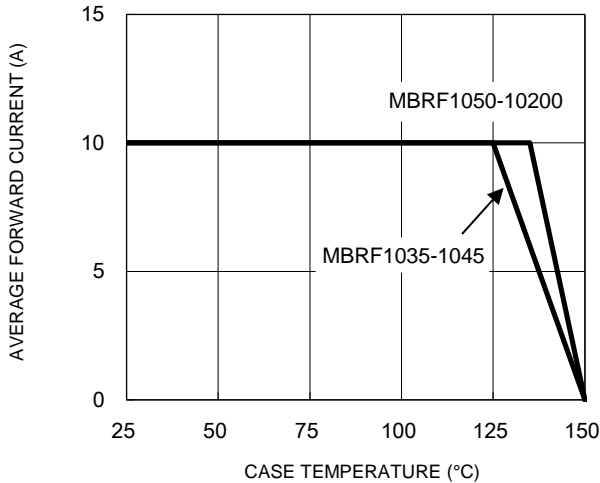
**Notes:**

1. "x" defines voltage from 35V(MBRF1035) to 200V(MBRF10200)
2. "H" means AEC-Q101 qualified

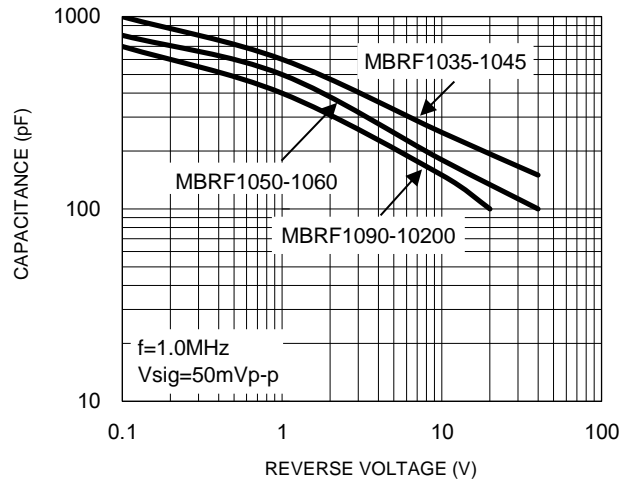
**CHARACTERISTICS CURVES**

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

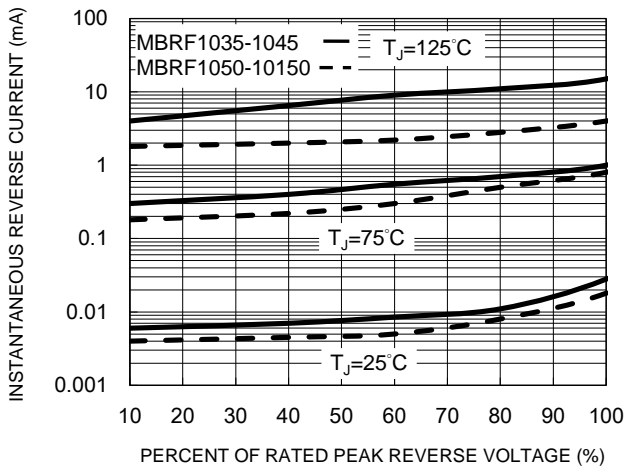
**Fig.1 Forward Current Derating Curve**



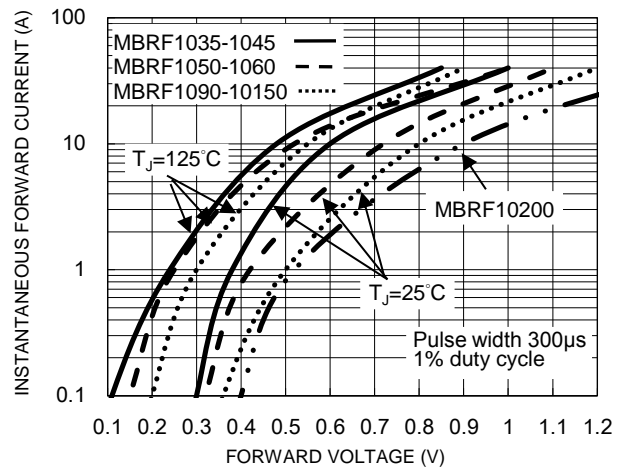
**Fig.2 Typical Junction Capacitance**



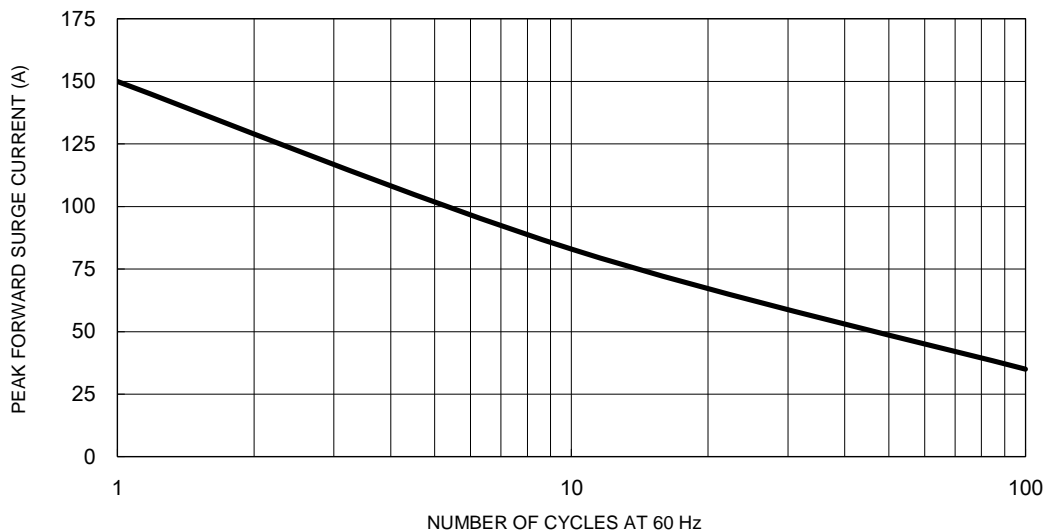
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



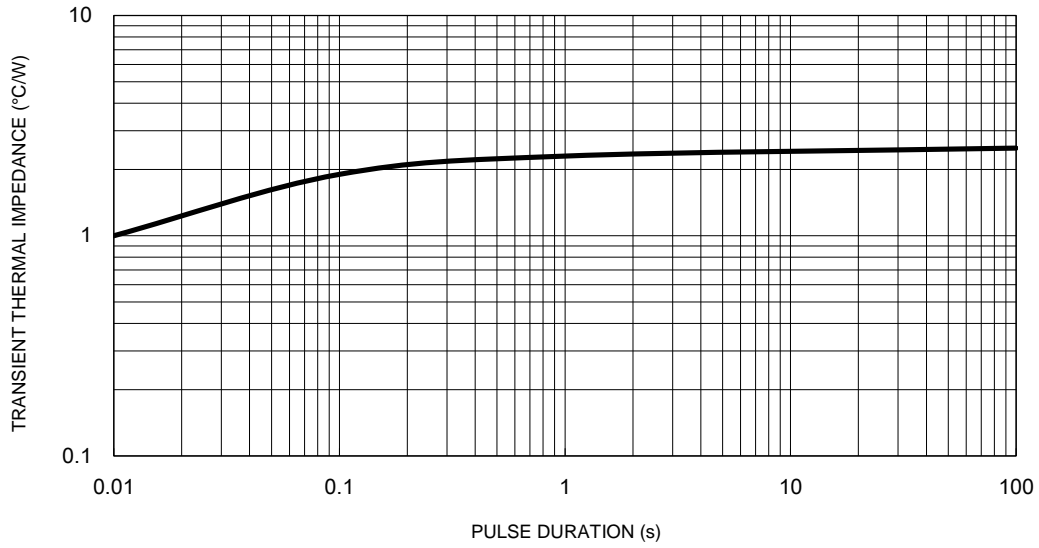
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



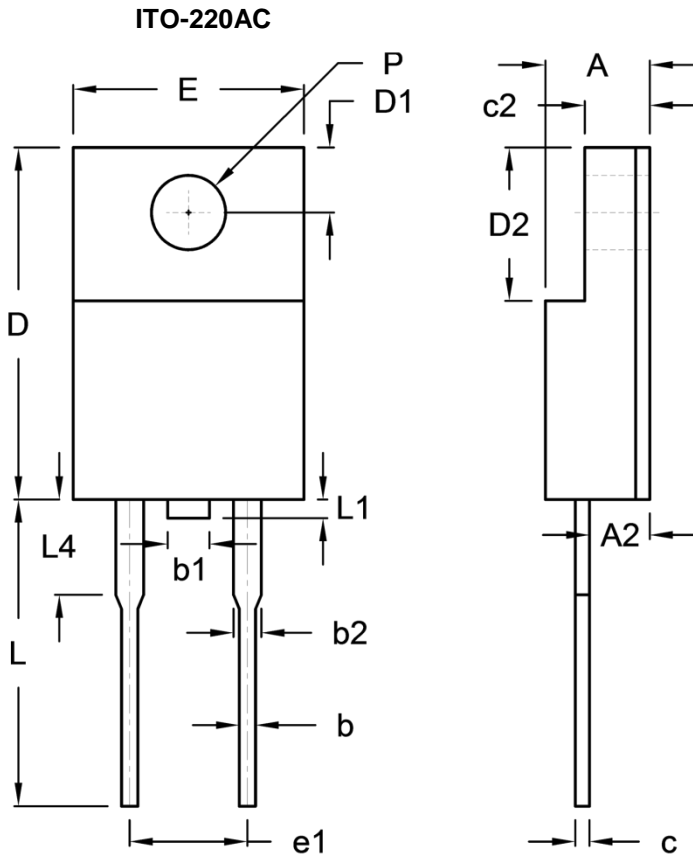
**CHARACTERISTICS CURVES**

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

**Fig.6 Typical Transient Thermal Characteristics**



**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A2	2.30	2.90	0.091	0.114
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	3.10	0.098	0.114
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
e1	4.95	5.20	0.195	0.205
L	12.60	13.80	0.496	0.543
L1	0.00	1.60	0.000	0.063
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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