

## 16A, 35V - 150V 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

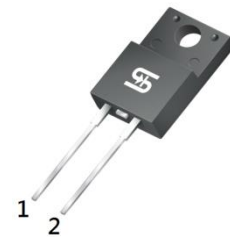
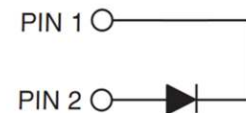
### APPLICATIONS

- 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
$I_F$	16	A
$V_{RRM}$	35 - 150	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 1635	MBRF 1645	MBRF 1650	MBRF 1660	MBRF 1690	MBRF 16100	MBRF 16150	UNIT
Marking code on the device		MBRF 1635	MBRF 1645	MBRF 1650	MBRF 1660	MBRF 1690	MBRF 16100	MBRF 16150	
Repetitive peak revers 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	$I_F$	16							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)	$I_{FRM}$	32							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 resistance	$R_{\theta JC}$	3	°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 <sup>(1)</sup>	MBRF1635 MBRF1645	$I_F = 16\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	0.63	V			
	MBRF1650 MBRF1660			-	0.75	V			
	MBRF1690 MBRF16100			-	0.85	V			
	MBRF16150			-	0.95	V			
	MBRF1635 MBRF1645	$I_F = 16\text{A}, T_J = 125^\circ\text{C}$		-	0.57	V			
	MBRF1650 MBRF1660			-	0.65	V			
	MBRF1690 MBRF16100			-	0.75	V			
	MBRF16150			-	0.92	V			
	Reverse current @ rated $V_R$ <sup>(2)</sup>			MBRF1635 MBRF1645 MBRF1650 MBRF1660	$T_J = 25^\circ\text{C}$	$I_R$	-	500	$\mu\text{A}$
				MBRF1690 MBRF16100				300	$\mu\text{A}$
MBRF16150			100	$\mu\text{A}$					
MBRF1635 MBRF1645		$T_J = 125^\circ\text{C}$	-	15			mA		
MBRF1650 MBRF1660			-	10	mA				
MBRF1690 MBRF16100			-	7.5	mA				
MBRF16150			-	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>
MBRF16x	ITO-220AC	50 / Tube
MBRF16xH	ITO-220AC	50 / Tube

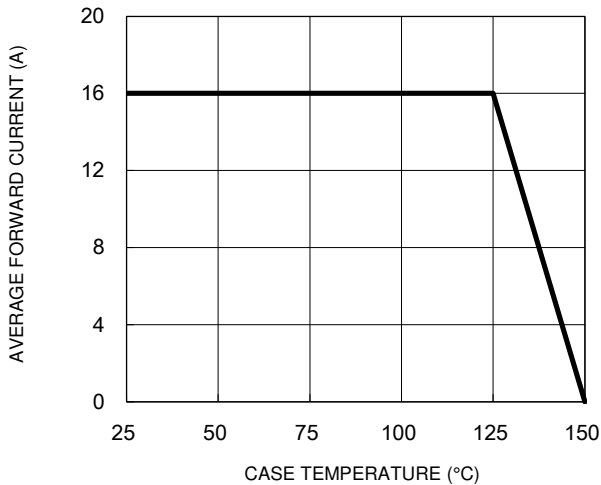
**Notes:**

1. "x" defines voltage from 35V(MBRF1635) to 150V(MBRF16150)
2. "H" means AEC-Q101 qualified

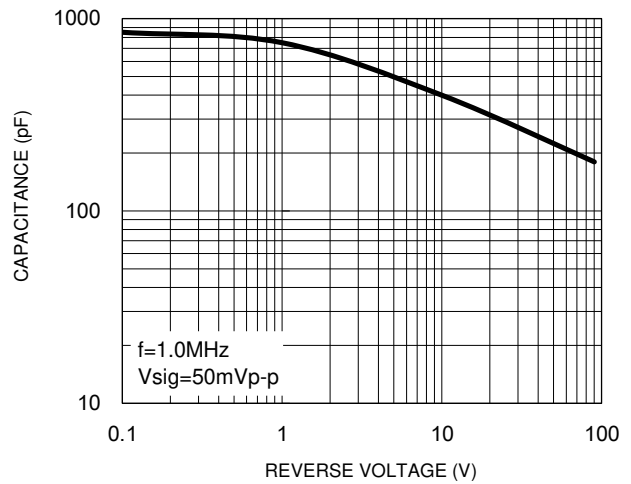
**CHARACTERISTICS CURVES**

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

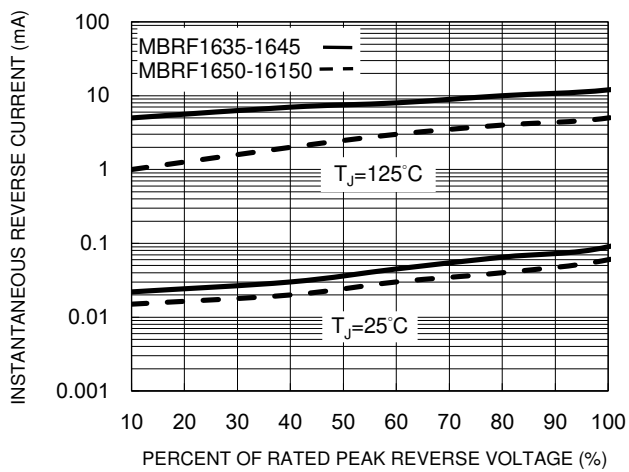
**Fig.1 Forward Current Derating Curve**



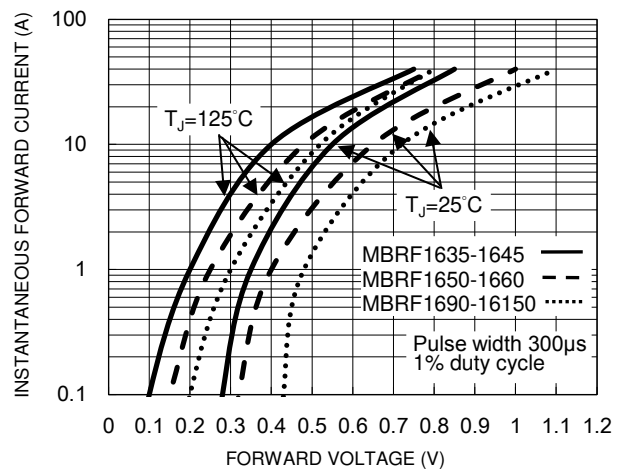
**Fig.2 Typical Junction Capacitance**



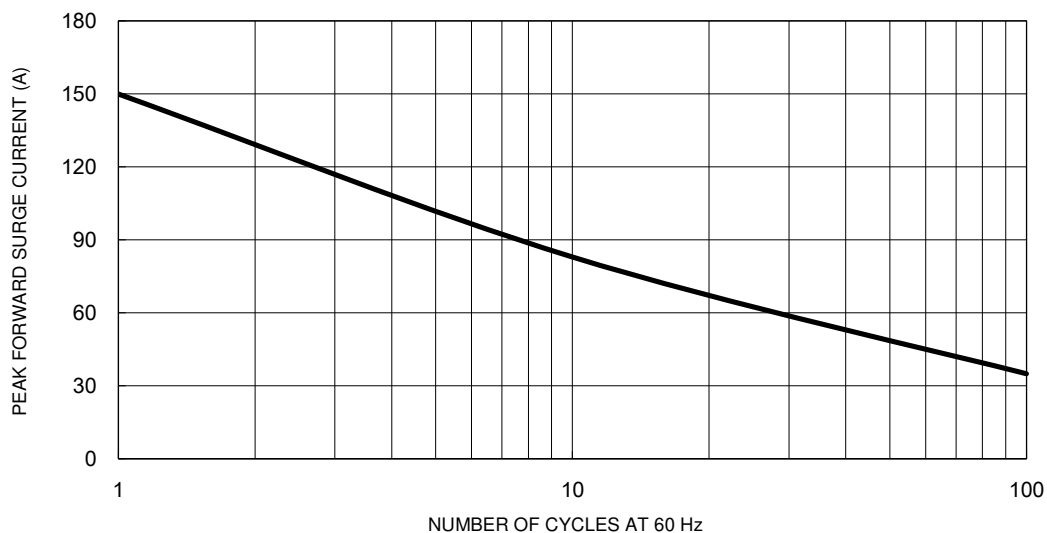
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



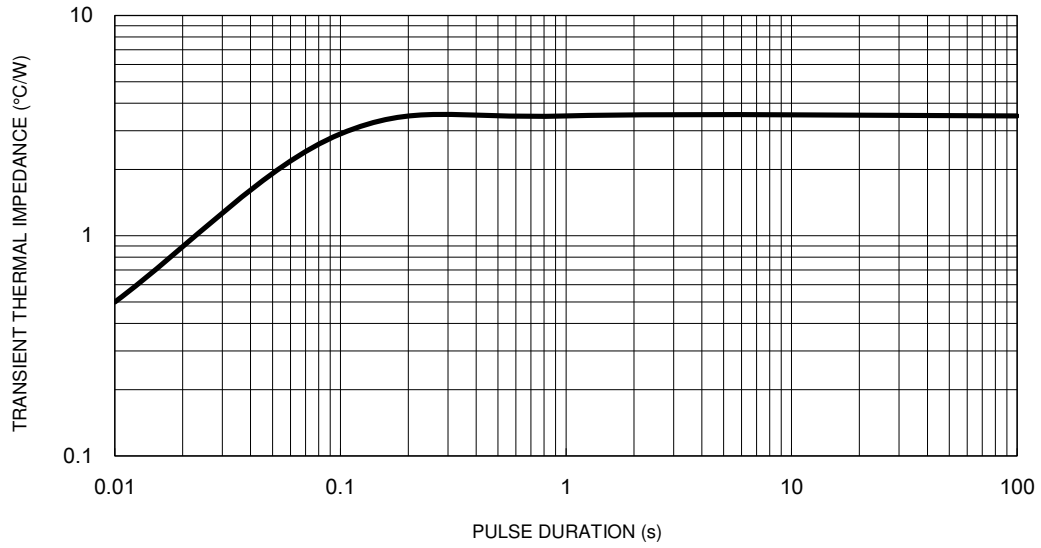
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



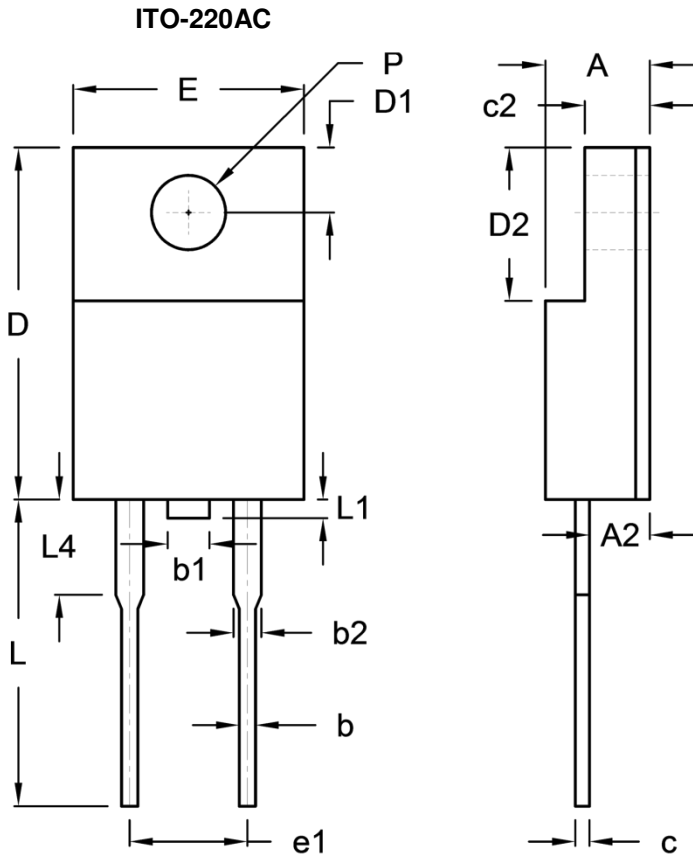
**CHARACTERISTICS CURVES**

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