

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
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

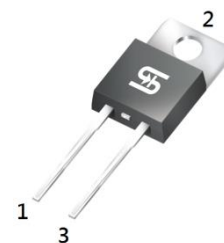
APPLICATIONS

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

MECHANICAL DATA

- Case: TO-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: 1.88g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	10	A
V_{RRM}	35 - 200	V
I_{FSM}	150	A
T_{JMAX}	150	°C
Package	TO-220AC	
Configuration	Single die	


TO-220AC


ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	MBR 1035	MBR 1045	MBR 1050	MBR 1060	MBR 1090	MBR 10100	MBR 10150	MBR 10200	UNIT
Marking code on the device		MBR 1035	MBR 1045	MBR 1050	MBR 1060	MBR 1090	MBR 10100	MBR 10150	MBR 10200	
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}	150								A
Peak repetitive forward current (Rated V_R , Square Wave, 20KHz)	I_{FRM}	20								A
Peak repetitive reverse surge current ⁽¹⁾	I_{RRM}	1			0.5					A
Voltage rate of change (Rated V_R)	dV/dt	10,000								V/ μs

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	MBR 1035	MBR 1045	MBR 1050	MBR 1060	MBR 1090	MBR 10100	MBR 10150	MBR 10200	UNIT
Junction temperature	T_J	-55 to +150								$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +175								$^\circ\text{C}$

Notes:

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

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-case resistance	$R_{\theta\text{JC}}$	3	$^\circ\text{C/W}$

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT	
Forward voltage ⁽¹⁾	MBR1035 MBR1045	$I_F = 10\text{A}$, $T_J = 25^\circ\text{C}$	V_F	-	0.70	V	
	MBR1050 MBR1060			-	0.80	V	
	MBR1090 MBR10100			-	0.85	V	
	MBR10150 MBR10200			-	1.05	V	
	MBR1035 MBR1045			$I_F = 10\text{A}$, $T_J = 125^\circ\text{C}$	-	0.57	V
	MBR1050 MBR1060	-			0.70	V	
	MBR1090 MBR10100	-			0.71	V	
	MBR10150 MBR10200	-			-	V	
	Reverse current @ rated V_R ⁽²⁾	MBR1035 MBR1045 MBR1050 MBR1060 MBR1090 MBR10100 MBR10150		$T_J = 25^\circ\text{C}$	I_R	-	100
MBR1035 MBR1045		$T_J = 125^\circ\text{C}$	-	15		mA	
MBR1050 MBR1060			-	10		mA	
MBR1090 MBR10100 MBR10150 MBR10200			-	6		mA	

Notes:

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

ORDERING INFORMATION

ORDERING CODE⁽¹⁾⁽²⁾	PACKAGE	PACKING
MBR10x	TO-220AC	50 / Tube
MBR10xH	TO-220AC	50 / Tube

Notes:

1. “x” defines voltage from 35V(MBR1035) to 200V(MBR10200)
2. “H” means AEC-Q101 qualified

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

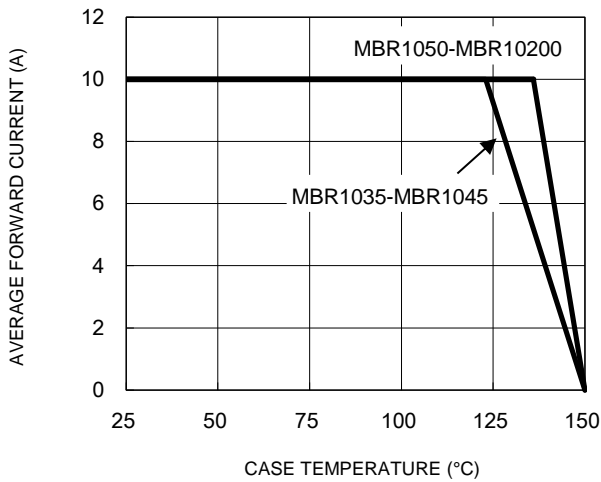


Fig.2 Typical Junction Capacitance

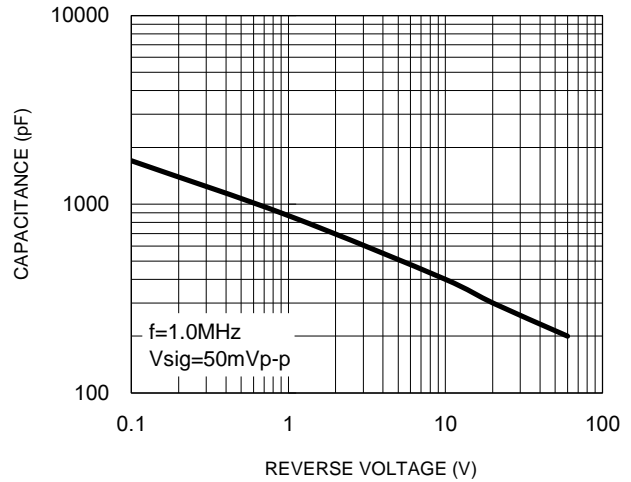


Fig.3 Typical Reverse Characteristics

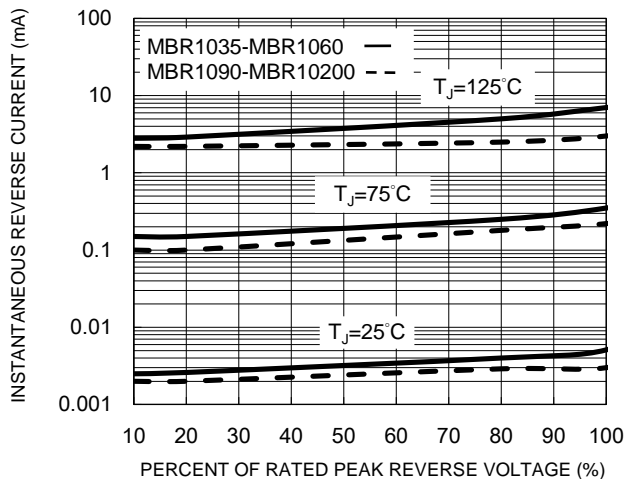


Fig.4 Typical Forward Characteristics

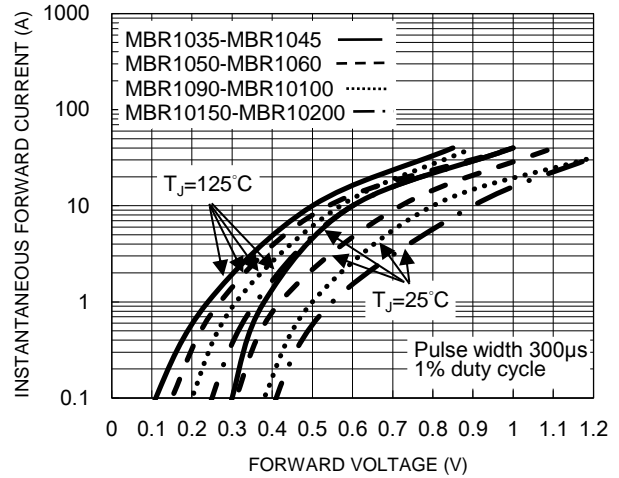
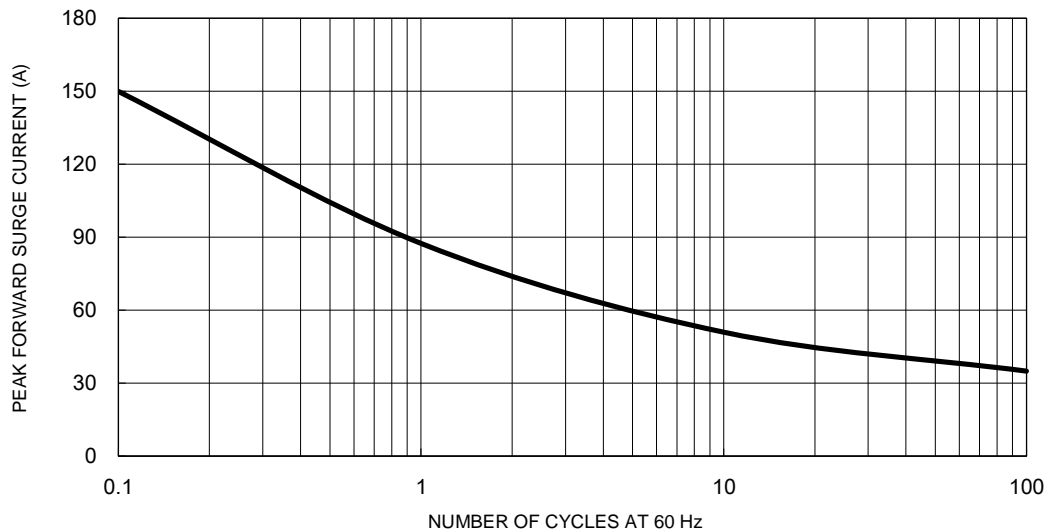


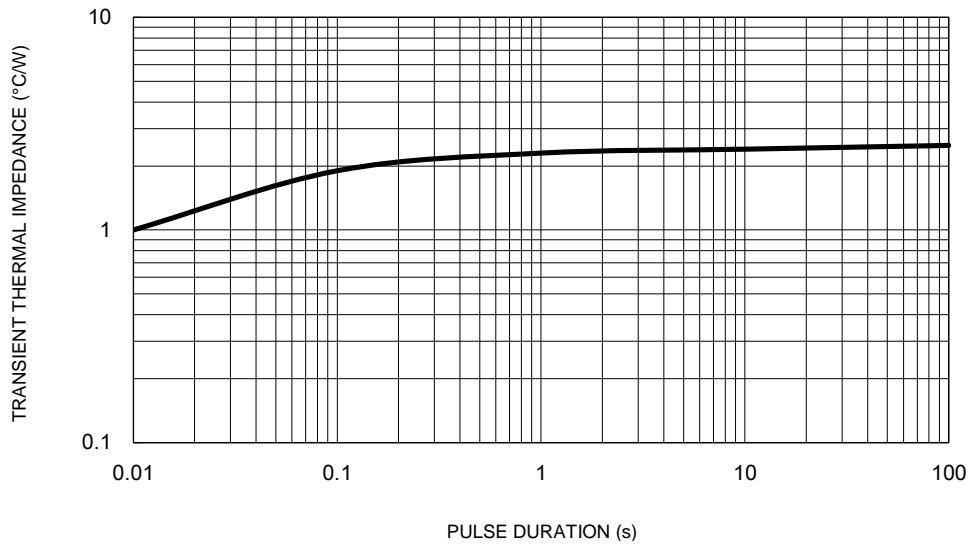
Fig.5 Maximum Non-Repetitive Forward Surge Current



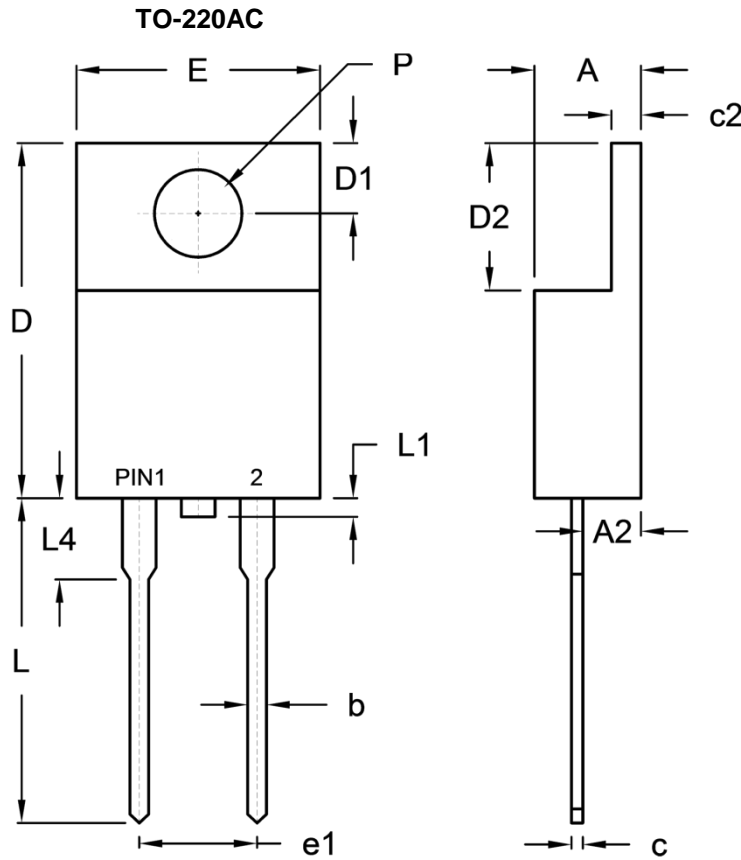
CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ 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
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
e1	4.95	5.20	0.195	0.205
L	13.19	14.79	0.519	0.582
L1	0.00	1.60	0.000	0.063
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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