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

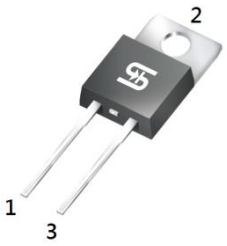
- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

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
$T_{J\,MAX}$	150	°C
Package	TO-220AC	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE



TO-220AC

ABSOLUTE MAXIMUM RATINGS (T_A = 25°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°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								°C
Storage temperature	T_{STG}	-55 to +175								°C

Notes:

1. tp = 2.0μs, 1.0KHz

THERMAL PERFORMANCE			
PARAMETER	**SYMBOL**	**TYP**	**UNIT**
Junction-to-case resistance	$R_{\Theta JC}$	3	°C/W

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)						
PARAMETER		**CONDITIONS**	**SYMBOL**	**TYP**	**MAX**	**UNIT**
Forward voltage[1]	MBR1035 MBR1045	I_F = 10A, T_J = 25°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 = 10A, T_J = 125°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°C	I_R	-	100	μA
	MBR1035 MBR1045	T_J = 125°C		-	15	mA
	MBR1050 MBR1060			-	10	mA
	MBR1090 MBR10100 MBR10150 MBR10200			-	6	mA

Notes:

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

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°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

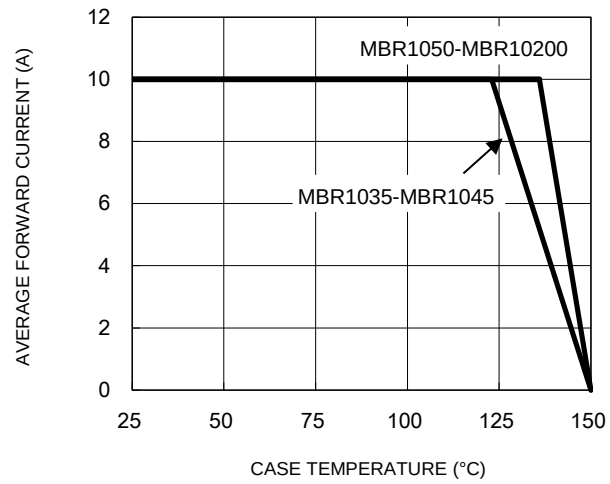


Fig.2 Typical Junction Capacitance

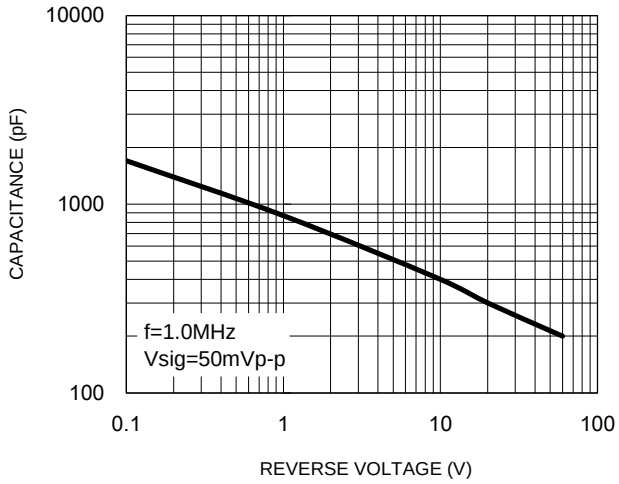


Fig.3 Typical Reverse Characteristics

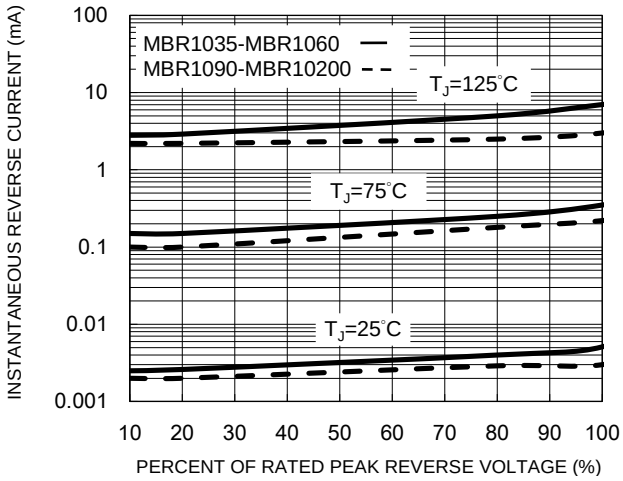


Fig.4 Typical Forward Characteristics

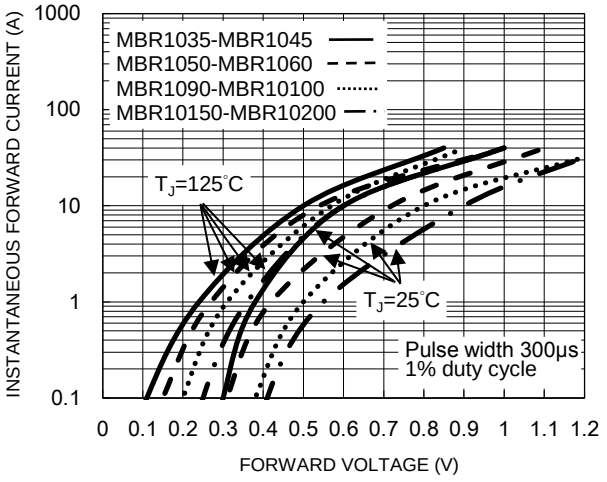
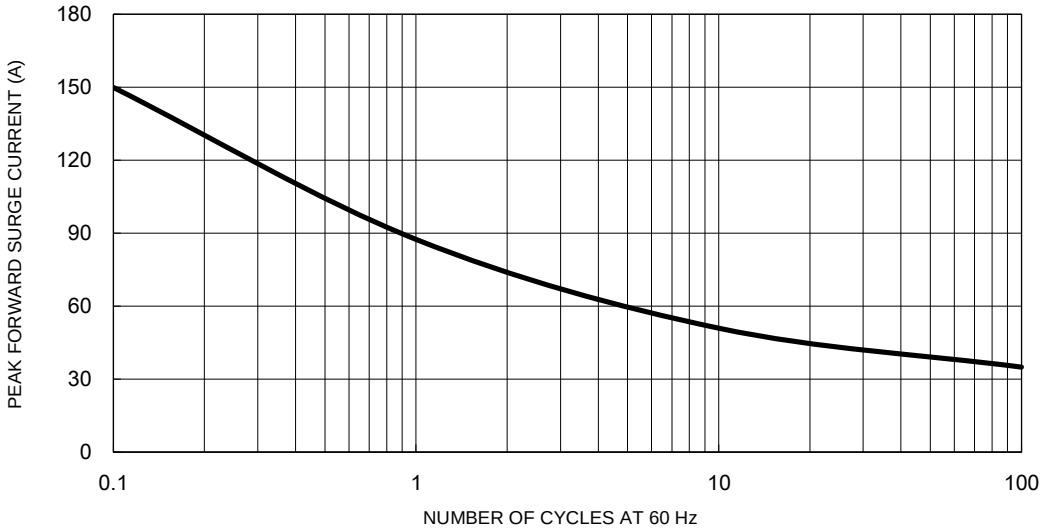


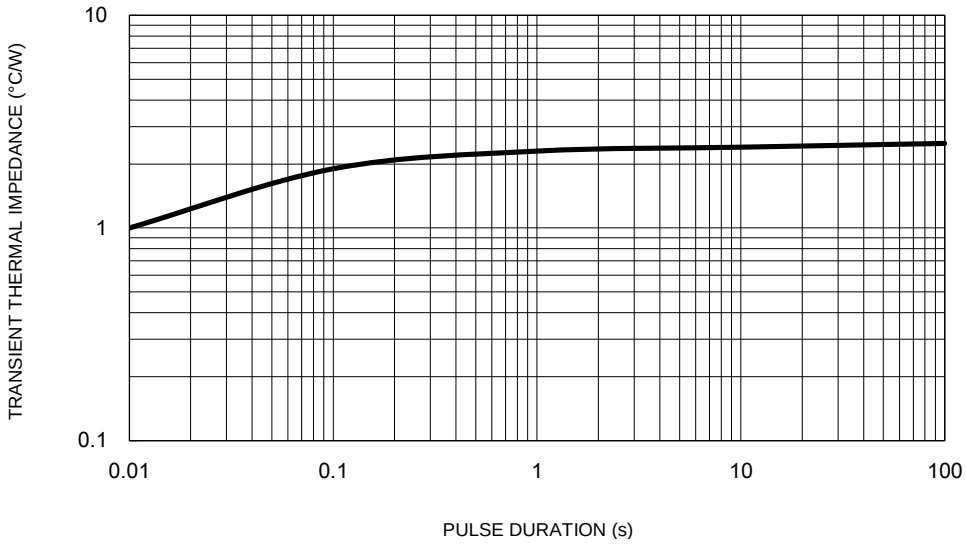
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

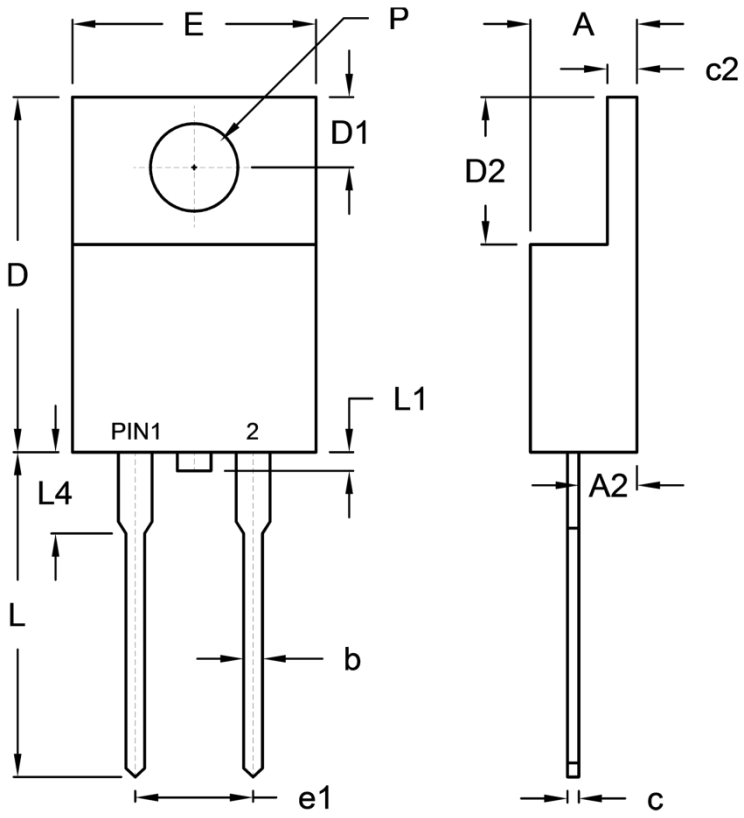
(T_A = 25°C unless otherwise noted)

Fig.6 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

TO-220AC



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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