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

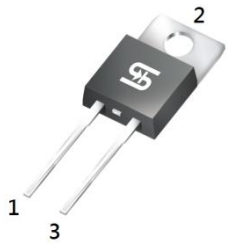
- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

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

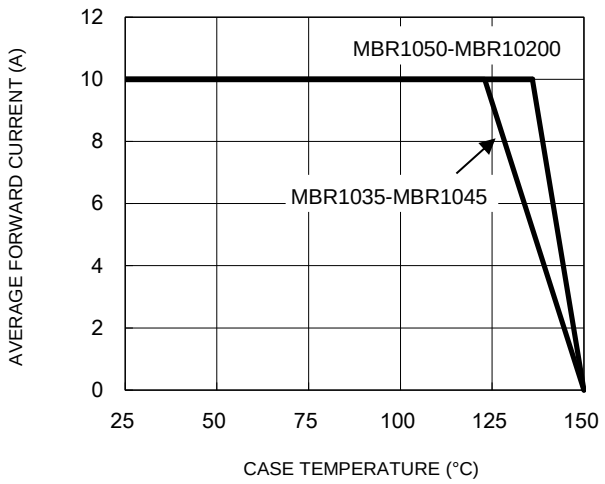


Fig.2 Typical Junction Capacitance

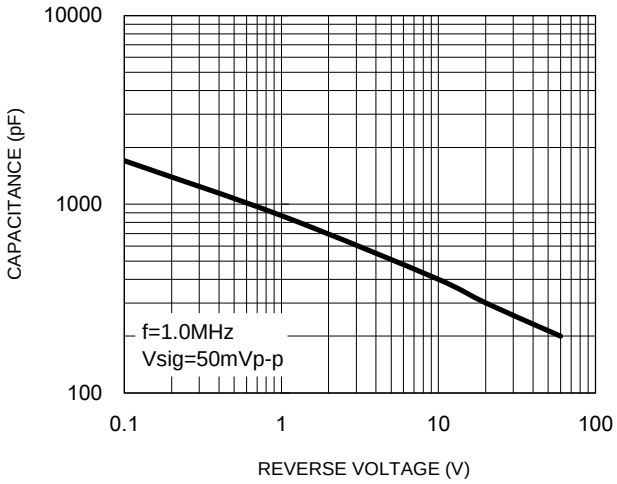


Fig.3 Typical Reverse Characteristics

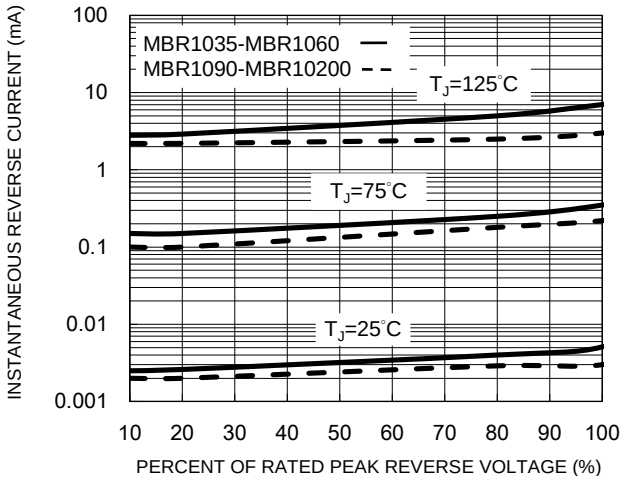


Fig.4 Typical Forward Characteristics

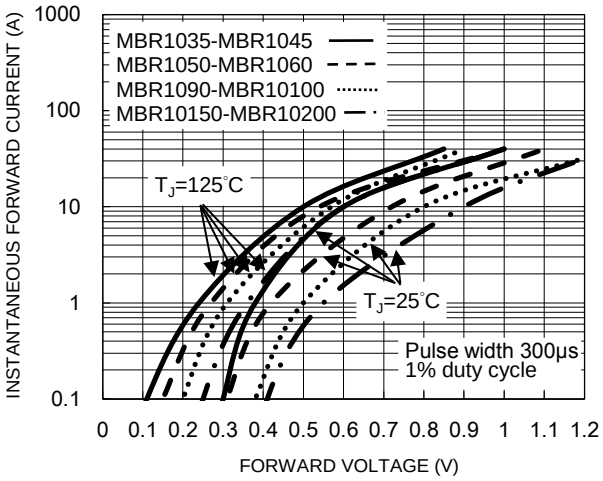
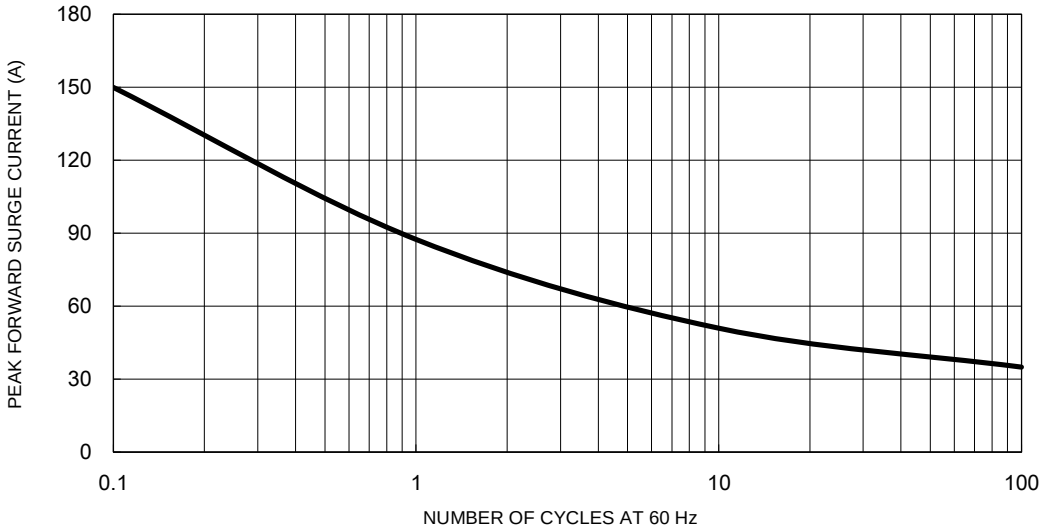


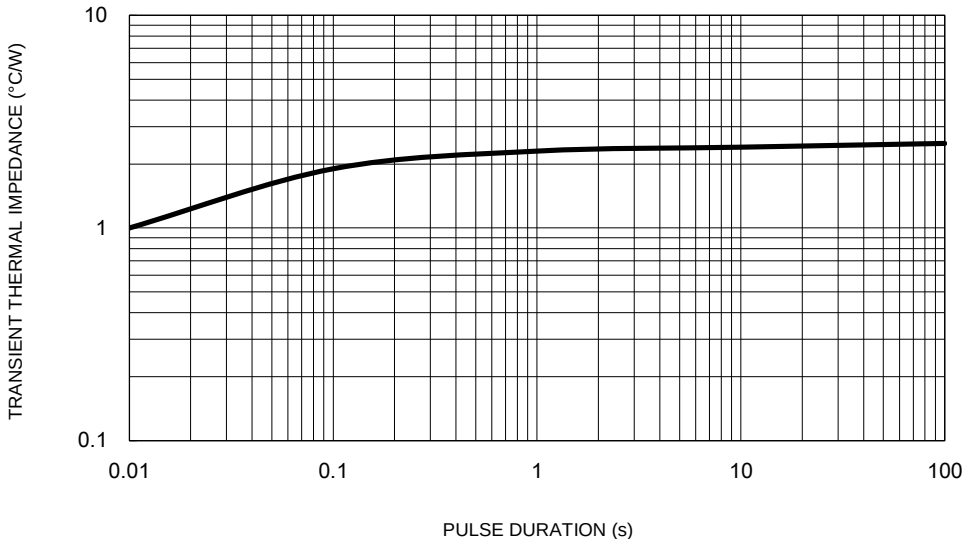
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

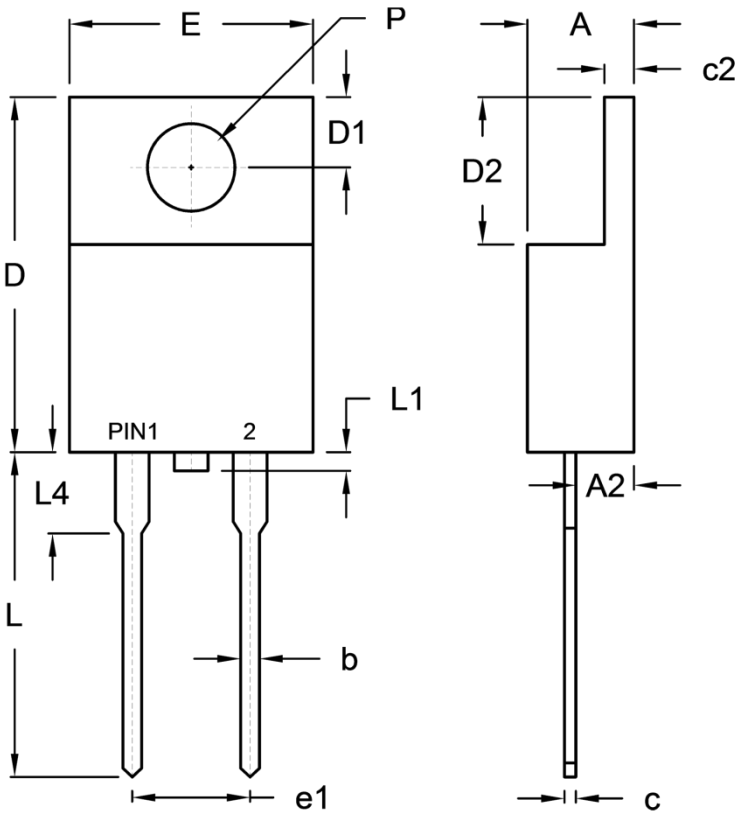
(T_A = 25°C unless otherwise noted)

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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