16A, 35V - 150V 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

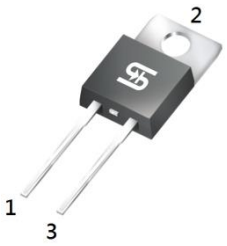
- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

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: 1.86g (approximately)

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
I_F	16	A
V_{RRM}	35 - 150	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 1635	MBR 1645	MBR 1650	MBR 1660	MBR 1690	MBR 16100	MBR 16150	UNIT
Marking code on the device		MBR 1635	MBR 1645	MBR 1650	MBR 1660	MBR 1690	MBR 16100	MBR 16150	
Repetitive peak reverse 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 forward current (Rated V_R, Square Wave, 20KHz)	I_{FRM}	32							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
Junction temperature	T_J	-55 to +150							°C
Storage temperature	T_{STG}	-55 to +150							°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]	MBR1635 MBR1645	I_F = 16A, T_J = 25°C	V_F	-	0.63	V
	MBR1650 MBR1660			-	0.75	V
	MBR1690 MBR16100			-	0.85	V
	MBR16150			-	0.95	V
	MBR1635 MBR1645	I_F = 16A, T_J = 125°C		-	0.57	V
	MBR1650 MBR1660			-	0.65	V
	MBR1690 MBR16100			-	0.75	V
	MBR16150			-	0.92	V
Reverse current @ rated V_R[2]	MBR1635 MBR1645 MBR1650 MBR1660	T_J = 25°C	I_R	-	500	μA
	MBR1690 MBR16100			-	300	μA
	MBR16150			-	100	μA
	MBR1635 MBR1645	T_J = 125°C		-	15	mA
	MBR1650 MBR1660			-	10	mA
	MBR1690 MBR16100			-	7.5	mA
	MBR16150			-	5	mA

Notes:

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

ORDERING INFORMATION

ORDERING CODE[1][2]	PACKAGE	PACKING
MBR16x	TO-220AC	50 / Tube
MBR16xH	TO-220AC	50 / Tube

Notes:

1. "x" defines voltage from 35V(MBR1635) to 150V(MBR16150)
2. "H" means AEC-Q101 qualified

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

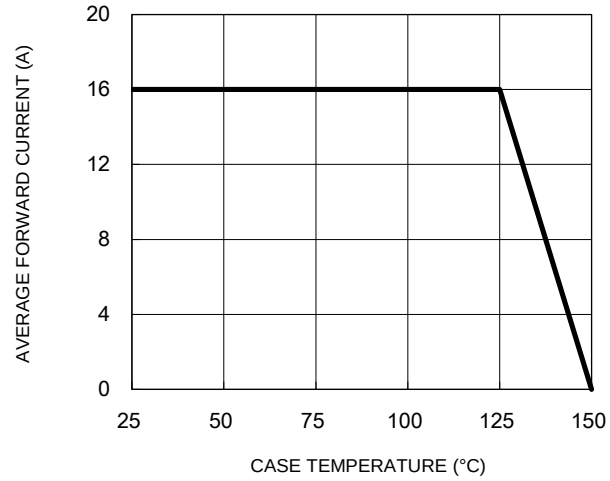


Fig.2 Typical Junction Capacitance

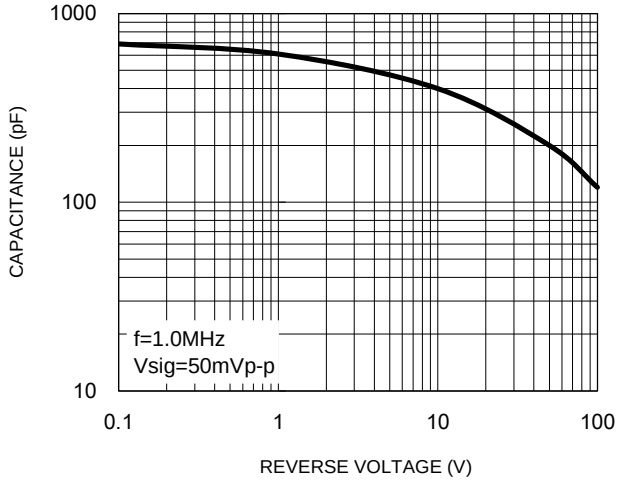


Fig.3 Typical Reverse Characteristics

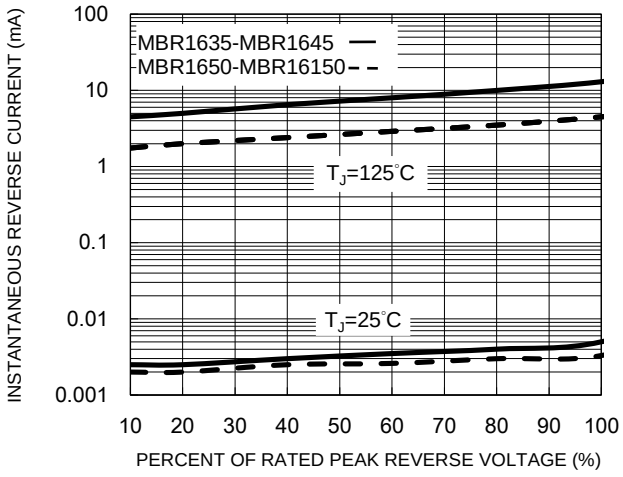


Fig.4 Typical Forward Characteristics

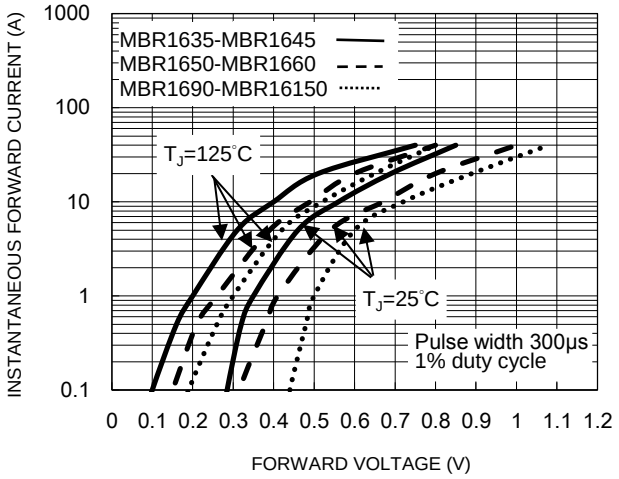
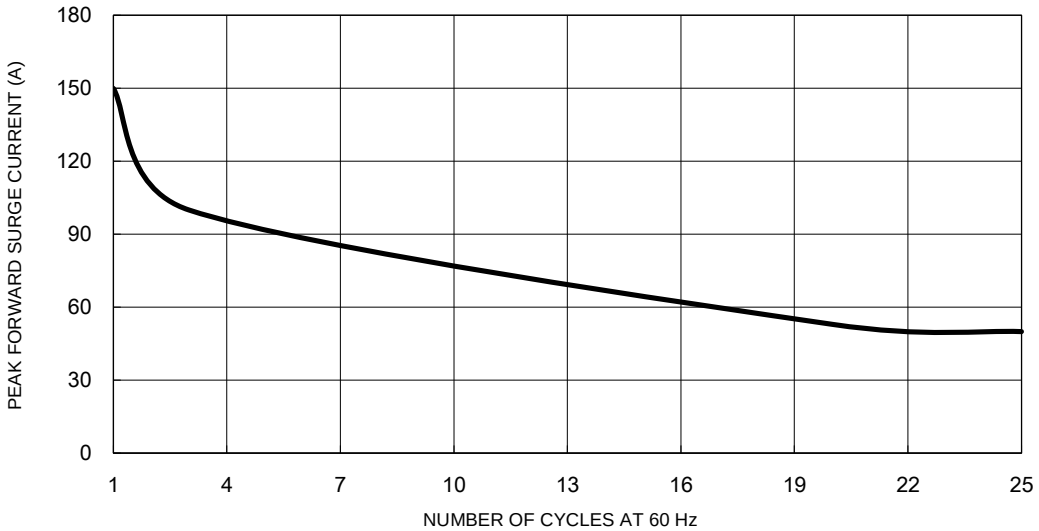


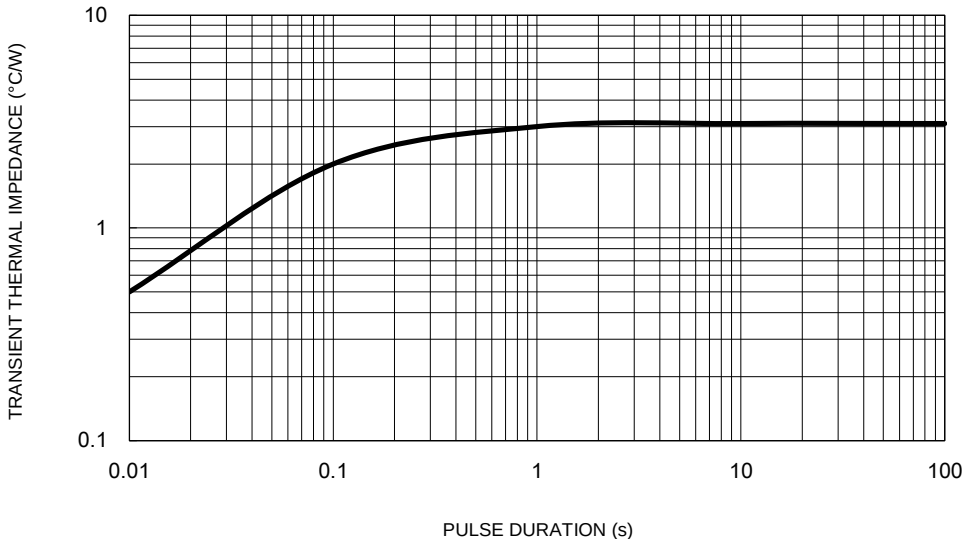
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

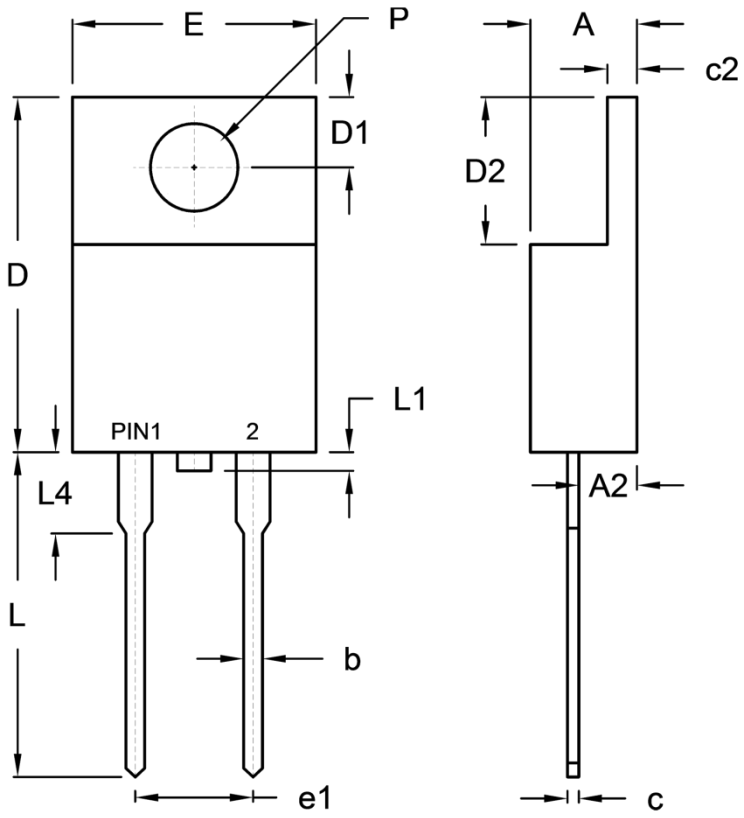
(T_A = 25°C unless otherwise noted)

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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