

7.5A, 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

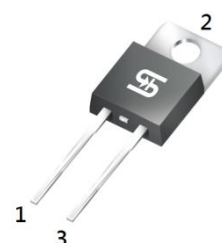
APPLICATIONS

- 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: 1.85g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	7.5	A
V_{RRM}	35 - 150	V
I_{FSM}	150	A
$T_{J\ MAX}$	150	°C
Package	TO-220AC	
Configuration	Single die	



TO-220AC



ABSOLUTE MAXIMUM RATINGS (T _A = 25°C unless otherwise noted)									
PARAMETER	SYMBOL	MBR 735	MBR 745	MBR 750	MBR 760	MBR 790	MBR 7100	MBR 7150	UNIT
Marking code on the device		MBR 735	MBR 745	MBR 750	MBR 760	MBR 790	MBR 7100	MBR 7150	
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	7.5							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}	15							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 +175							°C

Notes:

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

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient resistance	$R_{\theta JA}$	15	°C/W
Junction-to-case resistance	$R_{\theta JC}$	5	°C/W

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

PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	MBR735 MBR745	V_F	-	-	V
	MBR750 MBR760		-	0.75	V
	MBR790 MBR7100		-	0.92	V
	MBR7150		-	0.95	V
	MBR735 MBR745		-	0.84	V
	MBR750 MBR760		-	-	V
	MBR790 MBR7100		-	-	V
	MBR7150		-	-	V
	MBR735 MBR745		-	0.57	V
	MBR750 MBR760		-	0.65	V
	MBR790 MBR7100		-	0.82	V
	MBR7150		-	0.92	V
	MBR735 MBR745		-	0.72	V
	MBR750 MBR760		-	-	V
	MBR790 MBR7100		-	-	V
	MBR7150		-	-	V
Reverse current @ rated V_R ⁽²⁾	MBR735 MBR745 MBR750 MBR760 MBR790 MBR7100 MBR7150	I_R	-	100	μA
	MBR735 MBR745		-	15	mA
	MBR750 MBR760		-	10	mA
	MBR790 MBR7100 MBR7150		-	5	mA

Notes:

1. Pulse test with $PW = 0.3\text{ms}$
2. Pulse test with $PW = 30\text{ms}$

ORDERING INFORMATION

ORDERING CODE⁽¹⁾⁽²⁾	PACKAGE	PACKING
MBR7x	TO-220AC	50 / Tube
MBR7xH	TO-220AC	50 / Tube

Notes:

1. “x” defines voltage from 35V(MBR735) to 150V(MBR7150)
2. “H” means AEC-Q101 qualified

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

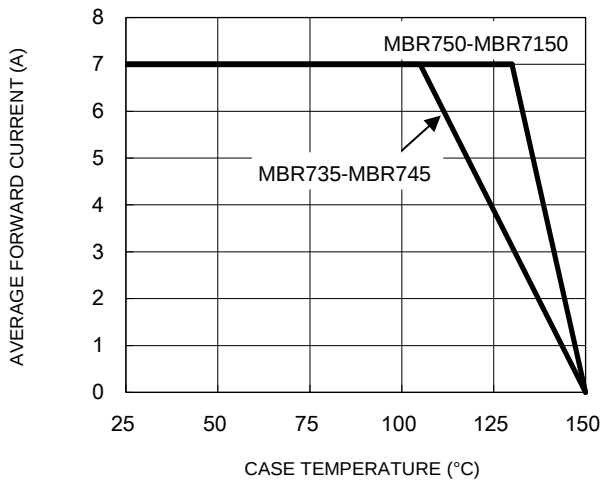


Fig.2 Typical Junction Capacitance

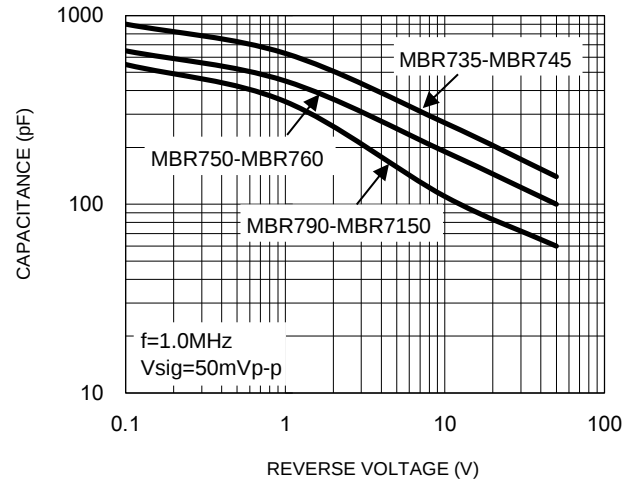


Fig.3 Typical Reverse Characteristics

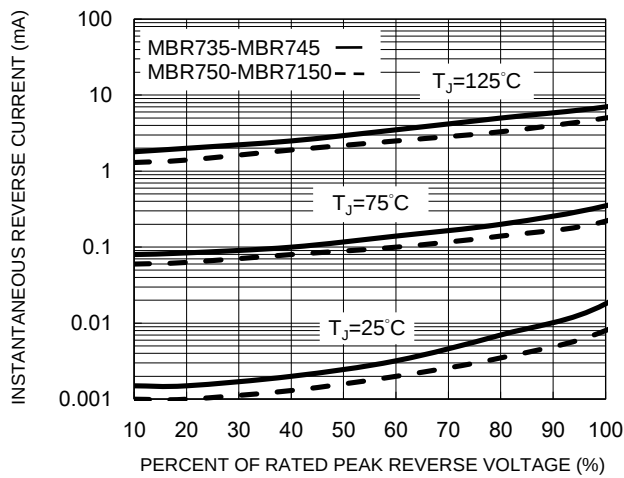


Fig.4 Typical Forward Characteristics

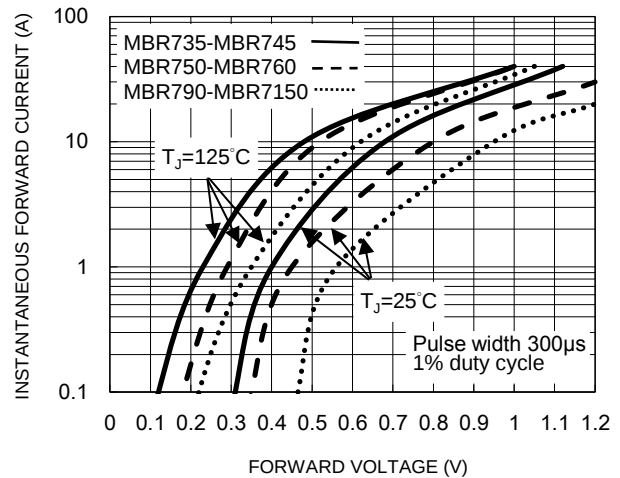
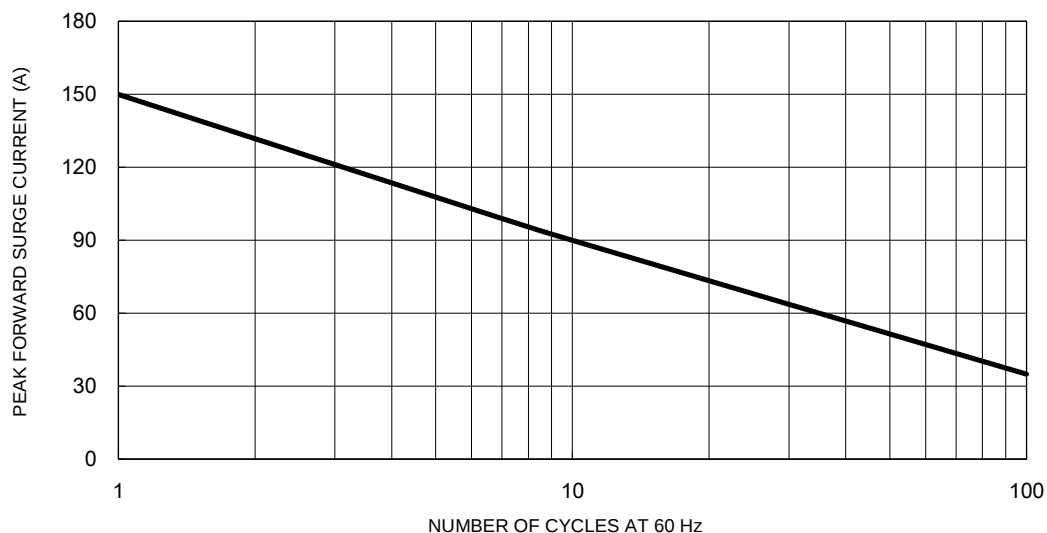


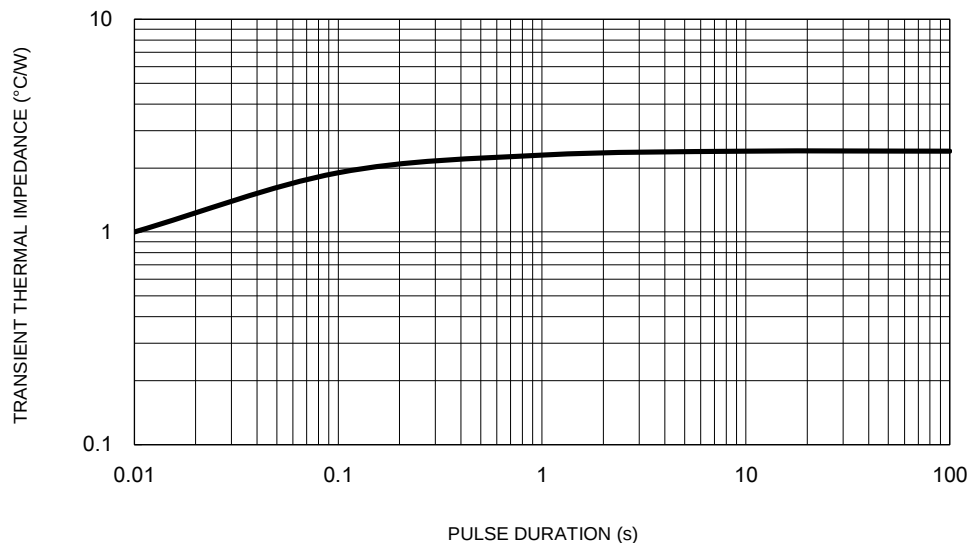
Fig.5 Maximum Non-Repetitive Forward Surge Current



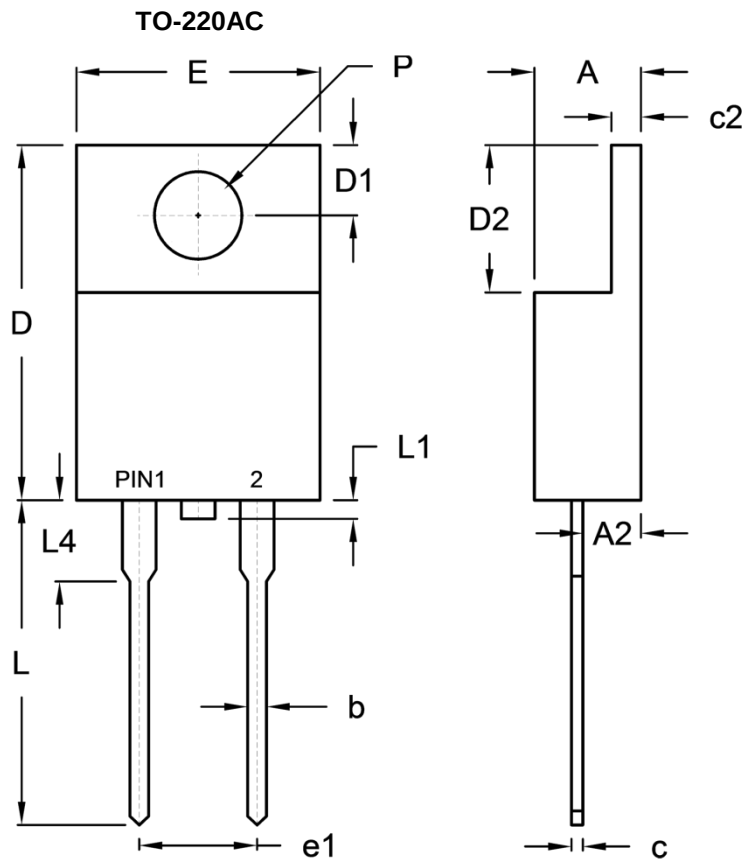
CHARACTERISTICS CURVES

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