Taiwan Semiconductor

# **30A, 100V Schottky Barrier Rectifier**

# FEATURES

TAIWAN

• AEC-Q101 qualified available

EMICONDUCTOR

- 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**

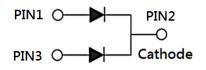
- Case: TO-220AB
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.90g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I <sub>F</sub>	30	А
V <sub>RRM</sub>	100	V
I <sub>FSM</sub>	150	А
T <sub>J MAX</sub>	175	°C
Package	TO-220AB	
Configuration	Dual dies	









ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C unless otherwise noted)			
PARAMETER	SYMBOL	MBR30H100CT	UNIT
Marking code on the device		MBR30H100CT	
Repetitive peak reverse voltage	V <sub>RRM</sub>	100	V
Reverse voltage, total rms value	V <sub>R(RMS)</sub>	70	V
Forward current	I <sub>F</sub>	30	А
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	I <sub>FSM</sub>	150	А
Peak repetitive reverse surge current <sup>(1)</sup>	I <sub>RRM</sub>	1	А
Peak repetitive forward current (Rated V <sub>R</sub> , Square wave, 20KHz)	I <sub>FRM</sub>	30	A
Critical rate of rise of off-state voltage	dv/dt	10,000	V/µs
Junction temperature	TJ	-55 to +175	°C
Storage temperature	T <sub>STG</sub>	-55 to +175	°C

- Notes:
- 1. tp = 2.0µs, 1.0KHz



THERMAL PERFORMANCE			
PARAMETER	SYMBOL	ТҮР	UNIT
Junction-to-case thermal resistance	R <sub>eJC</sub>	2	°C/W

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}C$ unless otherwise noted)					
PARAMETER	CONDITIONS	SYMBOL	ТҮР	MAX	UNIT
Forward voltage per diode <sup>(1)</sup>	$I_F = 15A, T_J = 25^{\circ}C$	VF	-	0.85	V
	$I_F = 30A, T_J = 25^{\circ}C$		-	0.98	V
	I <sub>F</sub> = 15A, T <sub>J</sub> = 125°C		-	0.75	V
	$I_F = 30A, T_J = 125^{\circ}C$		-	0.85	V
Reverse current @ rated V <sub>R</sub> per diode <sup>(2)</sup>	$T_J = 25^{\circ}C$	I	-	10	μA
	T <sub>J</sub> = 125°C	I <sub>R</sub>	-	2	mA

### Notes:

1. Pulse test with PW = 0.3ms

2. Pulse test with PW = 30ms

ORDERING INFORMATION		
ORDERING CODE <sup>(1)</sup>	PACKAGE	PACKING
MBR30H100CT	TO-220AB	50 / Tube
MBR30H100CTH	TO-220AB	50 / Tube

Notes:

1. "H" means AEC-Q101 qualified



# **CHARACTERISTICS CURVES**

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

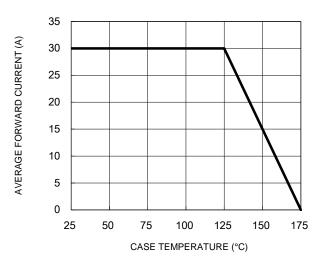
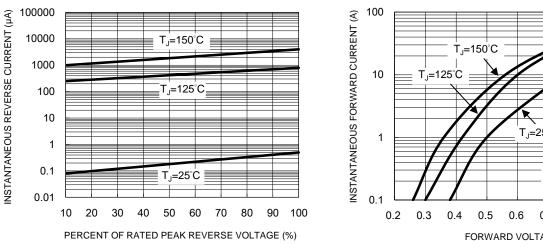


Fig.1 Forward Current Derating Curve

#### Fig.3 Typical Reverse Characteristics



10000 CAPACITANCE (pF) 1000 100 f=1.0MHz Vsig=50mVp-p 10 0.1 10 100 1 REVERSE VOLTAGE (V)

#### **Fig.2 Typical Junction Capacitance**

**Fig.4 Typical Forward Characteristics** 

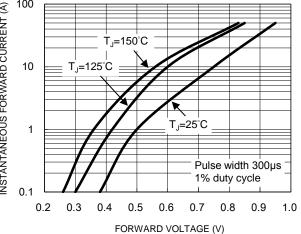
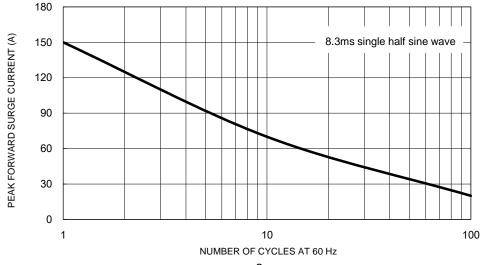


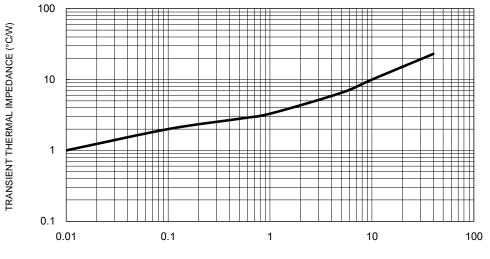
Fig.5 Maximum Non-Repetitive Forward Surge Current





# **CHARACTERISTICS CURVES**

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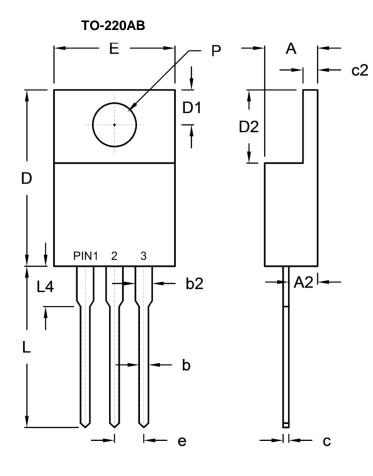
#### Fig.6 Typical Transient Thermal Impedance

PULSE DURATION (s)

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# 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
b2	1.14	1.77	0.045	0.070
с	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
е	2.41	2.67	0.095	0.105
L	13.19	14.79	0.519	0.582
L4	2.80	4.20	0.110	0.165
Р	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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