

## Dual Common Cathode High-Voltage Schottky Rectifier, 30A (15A x 2), 100V



### FEATURES

- 150°C T<sub>J</sub> operation
- High frequency operation
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness, long term reliability and overvoltage protection
- Compliant to RoHS
- Designed and qualified according to JEDEC-JESD47
- Solder bath temperature 275°C maximum, 10 s per JESD 22B-106

### DESCRIPTION

The **MBR30100CT** Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150°C junction temperature.

### APPLICATIONS

- Switching mode power supplies
- DC to DC converters
- Freewheeling diodes
- Reverse battery protection.

### MECHANICAL DATA

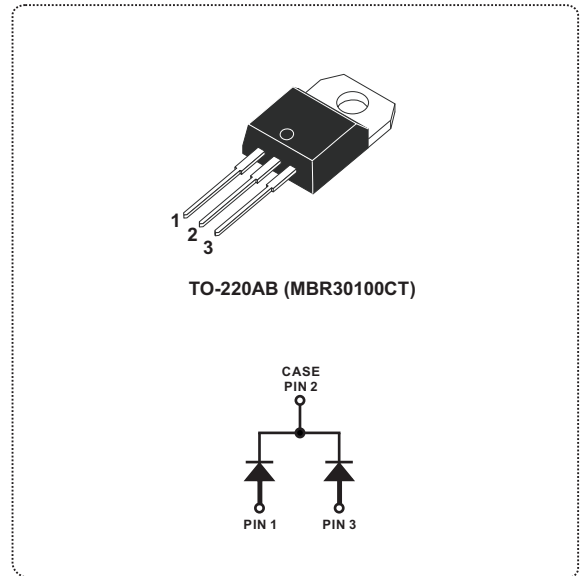
**Case:** TO-220AB

Molding compound meets UL 94 V-O flammability rating

**Terminals:** Mat tin plated leads, solderable per J-STD-002 and JESD 22-B102

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum



PRODUCT SUMMARY	
I <sub>F(AV)</sub>	15A x 2
V <sub>R</sub>	100V
V <sub>F</sub> at I <sub>F</sub> =15 A	0.67V
I <sub>RM</sub> max.	6 mA at 125°C
T <sub>J</sub> max.	150°C
Diode variation	Dual dice
E <sub>AS</sub>	7.5 mJ

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUE	UNIT
I <sub>F(AV)</sub>	Rectangular waveform	15 x 2	A
V <sub>R</sub>		100	V
I <sub>FSM</sub>	t <sub>p</sub> = 8.3ms, single half sine-wave	275	A
V <sub>F</sub>	15 A <sub>pk</sub> , T <sub>J</sub> = 125°C	0.67	V
T <sub>J</sub>	Range	-65 to 150	°C

VOLTAGE RATINGS			
SYMBOL	PARAMETER	VALUE	UNIT
V <sub>R</sub>	Maximum DC reverse voltage	100	V
V <sub>RWM</sub>	Maximum working peak reverse voltage		
V <sub>DC</sub>	Maximum DC blocking voltage		

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Maximum average forward current <small>per device per diode</small>	$I_{F(AV)}$	$T_C = 125^\circ\text{C}$ , rated $V_R$	30	A
			15	
Non-repetitive peak surge current	$I_{FSM}$	Surge applied at rated load condition half wave single phase 60 Hz	275	A
Non-repetitive avalanche energy, per diode	$E_{AS}$	$T_J = 25^\circ\text{C}$ , $L = 60\text{mH}$ , $I_{AS} = 0.5\text{A}$	7.5	mJ
Repetitive avalanche current	$I_{AR}$	Current decaying linearly to zero in $1\ \mu\text{s}$ Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical	0.5	A

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT	
Maximum forward voltage drop	$V_{FM}^{(1)}$	$I_F = 15\text{A}$	$T_J = 25^\circ\text{C}$	0.85	V
		$I_F = 30\text{A}$		0.95	
		$I_F = 15\text{A}$	$T_J = 125^\circ\text{C}$	0.67	
		$I_F = 30\text{A}$		0.8	
Maximum instantaneous reverse current	$I_{RM}^{(2)}$	$T_J = 25^\circ\text{C}$	Rated DC voltage	0.1	mA
		$T_J = 125^\circ\text{C}$		6	
Maximum junction capacitance	$C_T$	$V_R = 5\ V_{DC}$ (test signal range 100 kHz to 1 MHz) $25^\circ\text{C}$	500	pF	

**Note**

(1) Pulse test : 300  $\mu\text{s}$  pulse width, 1% duty cycle

(2) Pulse test : Pulse width  $\leq 40\ \text{ms}$

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Maximum junction temperature range	$T_J$		-65 to 150	°C
Maximum storage temperature range	$T_{stg}$		-65 to 175	
Maximum thermal resistance, junction to case (per diode)	$R_{thJC}$	DC operation	1.9	°C/W
Typical thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth and greased	0.5	
Approximate weight			2	g
			0.07	oz.
Mounting torque	<small>minimum maximum</small>		6 (5)	kgf · cm (lbf · in)
			12 (10)	

## Ordering Information Table

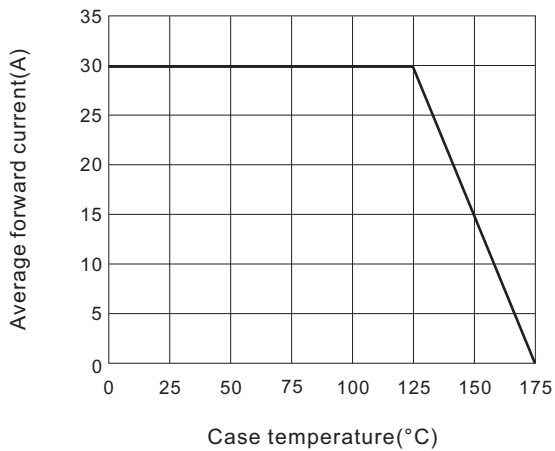
Device code

<b>MBR</b>	<b>F</b>	<b>30</b>	<b>100</b>	<b>CT</b>
①	②	③	④	⑤

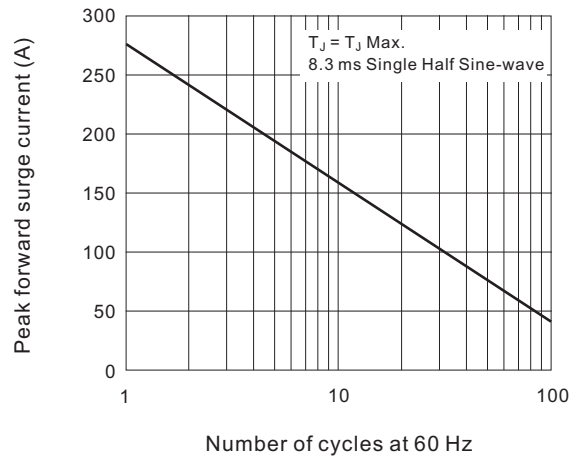
- ① - Schottky MBR series
- ② - Package outline  
"none" for TO-220AB  
"F" for ITO-220AB (TO-220F)  
"H" for TO-263AB (D<sup>2</sup>PAK)
- ③ - Current rating (30 = 30A, 15A x 2)
- ④ - Voltage ratings, 100=100V
- ⑤ - Circuit configuration, Center tap common cathode,  
TO-220 series package

## BATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25°C unless otherwise noted)

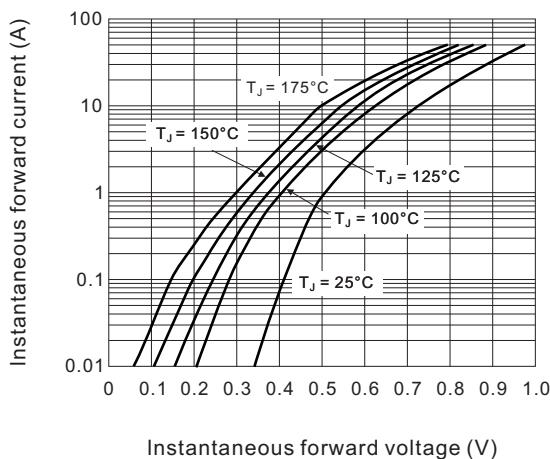
**Fig.1 Forward current derating curve**



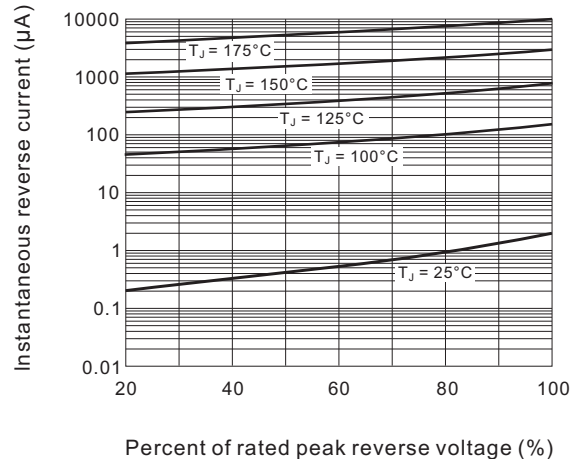
**Fig.2 Maximum non-repetitive peak forward surge current per diode**



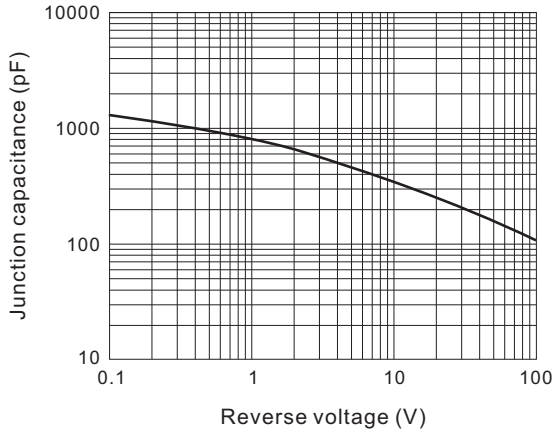
**Fig.3 Typical instantaneous forward characteristics per diode**



**Fig.4 Typical reverse characteristics per diode**



**Fig.5 Typical junction capacitance per diode**



**Fig.6 Typical transient thermal Impedance per diode**

