

30A 100V Schottky Barrier Diode

1 Description

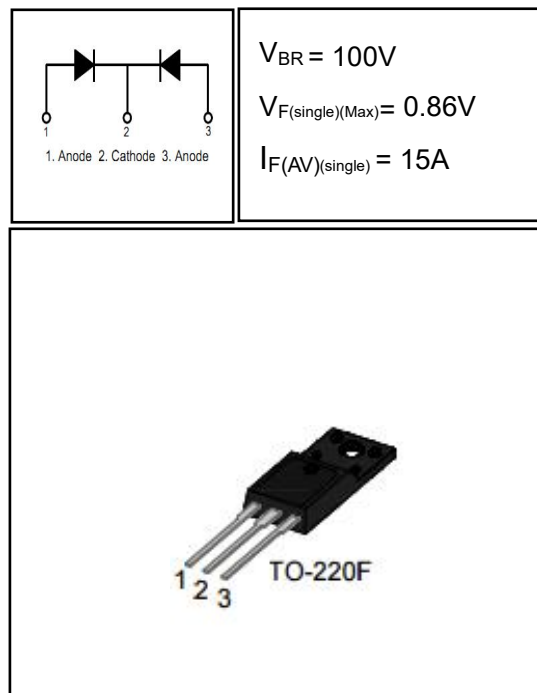
This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150°C junction temperature.

2 Features

- High junction temperature capability
- Low leakage current
- Low thermal resistance
- High frequency operation
- Avalanche specification

3 Applications

- Switching Power Supply
- Power Switching Circuits
- General Purpose



4 Electrical Characteristics

4.1 Absolute Maximum Ratings (T_c=25°C, unless otherwise noted)

PARAMETER		SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage		V _{RRM}	100	V
RMS Reverse Voltage		V _{R(RMS)}	80	V
DC Blocking Voltage		V _R	100	V
Average Rectified Forward Current(single)	T _C =90℃	I _{F(AV)}	15	A
Average Rectified Forward Current(double)			30	A
Repetitive Peak Surge Current(single)		I _{FRM}	20	A
Nonrepetitive Peak Surge Current(single)	tp=8.3ms	I _{FSM}	200	A
Avalanche Energy(single)	L=1mH	E _{AS}	32	mJ
Operating Junction Temperature Range		T _j	-55~150	℃
Storage Temperature Range		T _{stg}	-55~150	℃
ESD (Machine Model=C)			>400	V
ESD (Human Body Model=3B)			>8000	V
ESD(Noncontact)			>15000	V

4.2 Thermal Characteristics

PARAMETER	SYMBOL	VALUE	UNIT
Thermal Resistance, Junction to Case-sink	R_{thJC}	2.8	°C/W

4.3 Electrical Characteristics (Tc=25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Maximum Instantaneous Forward Voltage	V_F	$I_F = 1A$	-	0.47	-	V
		$I_F = 3A$	-	0.60	-	V
		$I_F = 5A$	-	0.68	-	V
		$I_F = 10A$	-	0.77	-	V
		$I_F = 15A$	-	0.83	0.86	V
		$I_F = 15A, T_a = 125^\circ C$	-	0.75	-	V
		$I_F = 20A$	-	0.89	1.1	V
		$I_F = 30A$	-	0.91	-	V
Maximum Instantaneous Reverse	I_R	$V_R = 100V$	-	2.6	20	uA
		$V_R = 100V, T_a = 125^\circ C$	-	2.0	20	mA
Total capacitance	C_{tot}	$V_R=4V \quad f=1MHz$	-	209	-	pF
DC Blocking Voltage	V_{BR}	$I_R=100uA$	100	120	-	V

DEFINITIONS

V_F = Instantaneous forward voltage (pw = 300μs, D = 2%).

I_R = Instantaneous reverse current.

RθJC = Thermal resistance junction to case.

pw = pulse width.

D = duty cycle.

5 Typical characteristics diagrams

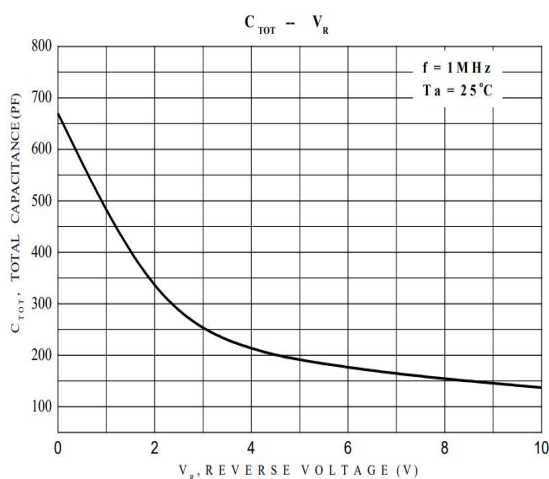


FIGURE 1. Total capacitance vs Voltage

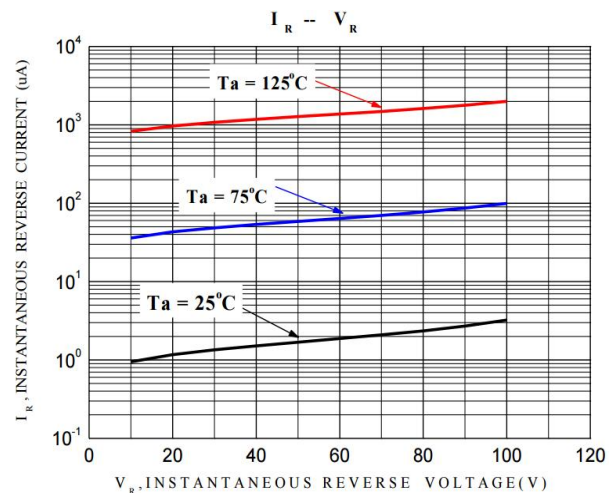


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

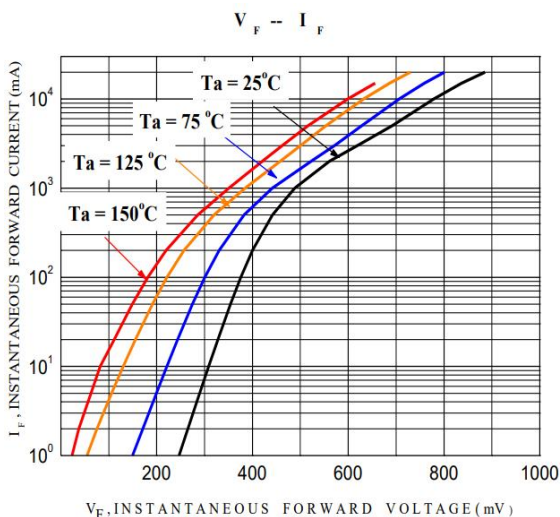


FIGURE 3. FORWARD CURRENT vs FORWARD VOLTAGE

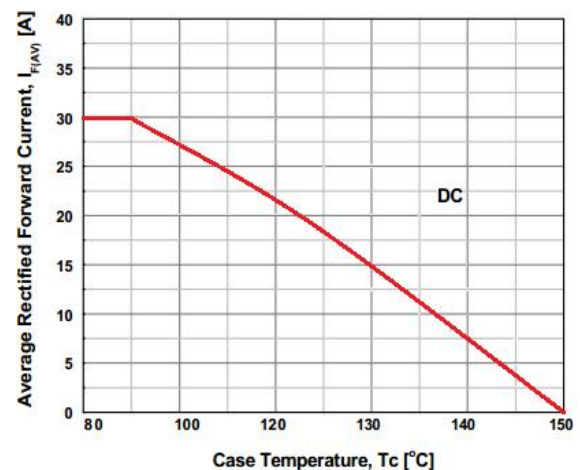


FIGURE 4. CURRENT DERATING CURVE

6 Typical Test Circuit and Waveform

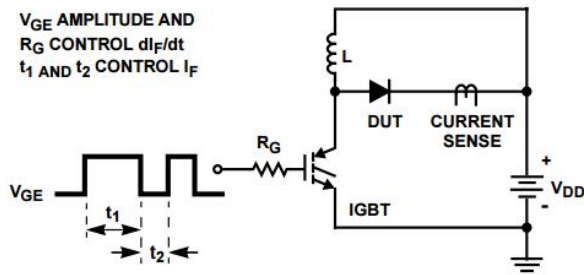


FIGURE 5. trr TEST CIRCUIT

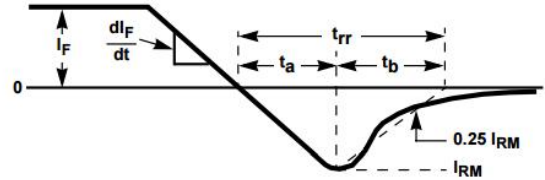


FIGURE 6. trr WAVEFORMS AND DEFINITIONS

$R < 0.1\Omega$
 $E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
 $Q_1 = \text{IGBT (BV}_{CES} > V_{R(AVL)})$

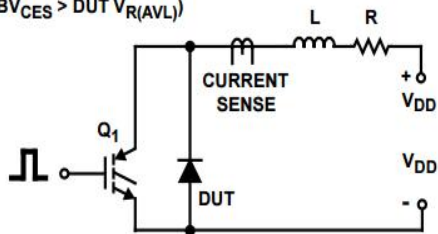


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

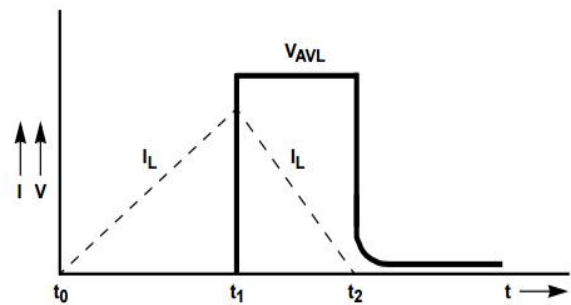


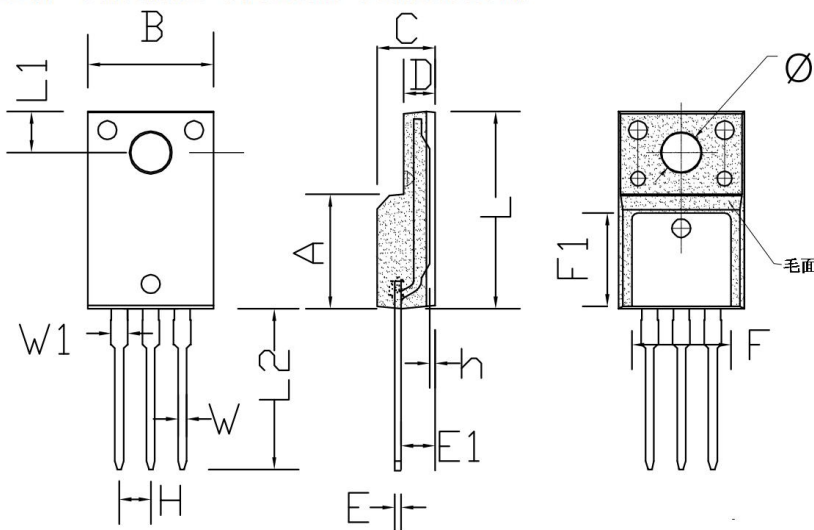
FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

7 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
MBRF30100CT	TO-220F	MBRF30100CT	Pb-free	Tube	1000/box

8 Dimensions

TO-220F PACKAGE OUTLINE DIMENSIONS



Symbol	DimensionsIn Millimeters		DimensionsIn Inches	
	min.	max.	min.	max.
A	8.80	9.30	0.346	0.366
B	10.00	10.50	0.394	0.413
C	4.30	4.90	0.169	0.193
D	2.30	2.70	0.091	0.106
L	15.55	16.15	0.612	0.636
h	0.40	0.60	0.016	0.024
L1	3.15	3.55	0.124	0.140
L2	12.65	13.35	0.498	0.526
W	0.70	0.90	0.028	0.035
W1	1.15	1.55	0.045	0.061
H	2.54 TYP		0.100 TYP	
E	0.48	0.53	0.019	0.021
φ	2.90	3.40	0.114	0.134
E1	2.40	2.90	0.094	0.114
F	7.75	8.25	0.305	0.325
F1	7.35	7.85	0.289	0.309

9 Attentions

- Jiangsu Donghai Semiconductor Co.,Ltd. reserves the right to change the specification without prior notice! The customer should obtain the latest version of the information before making the order and verify that the information is complete and up to date.
- It is the responsibility of the purchaser for any failure or failure of any semiconductor product under certain conditions. It is the responsibility of the purchaser to comply with safety standards and to take safety measures in the system design and machine manufacturing of Jiangsu Donghai Semiconductor Co.,Ltd. products in order to avoid potential risk of failure. Injury or property damage.
- Product promotion is endless, our company will be dedicated to provide customers with better products.

10 Appendix

Revision history:

Date	REV.	Description	Page
2023.6.20	1.0	Original	
2024.11.06	1.1	add value	2 Page