

30A 200V SchottkyBarrierDiode

1 Description

Dual center tab Schottky rectifier suited for High Frequency server and telecom base station SMPS. Packaged in TO, this device combines high current rating and low volume to enhance both reliability and power density of the application.

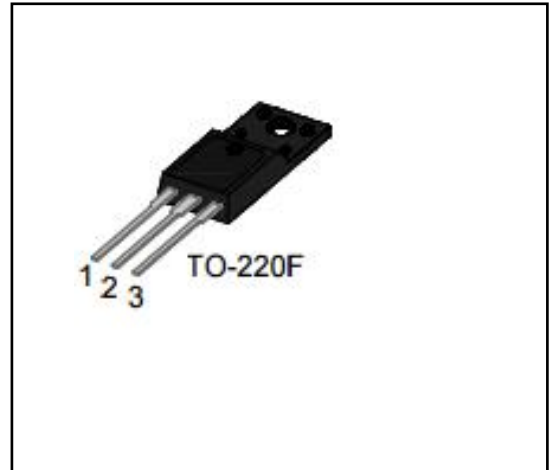
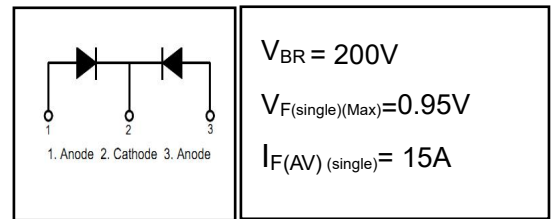
TO-220F provides insulation voltage rated at 2000V RMS from all three terminals to external heatsink.

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 (Tc=25°C, unless otherwise noted)

PARAMETER		SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage		V_{RRM}	200	V
RMS Reverse Voltage		$V_{R(RMS)}$	160	V
DC Blocking Voltage		V_R	200	V
Average Rectified Forward Current(single)	Tc=90°C	$I_{F(AV)}$	15	A
Average Rectified Forward Current(double)			30	A
Repetitive Peak Surge Current(single)		I_{FRM}	20	A
Nonrepetitive Peak Surge Current(single)	t=8.3ms	I_{FSM}	250	A
Avalanche Energy(single)	L=1mH	E_{AS}	32	mJ
Operating Junction Temperature Range		T_j	-55~150	°C
Storage Temperature Range		T_{stg}	-55~150	°C
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 = 15A	-	0.85	0.95	V
		I _F = 15A, T _C = 125°C	-	0.75	-	V
		I _F = 20A	-	0.88	-	V
		I _F = 30A	-	0.91	1.1	V
Maximum Instantaneous Reverse	I _R	V _R = 200V	-	5	100	μA
		V _R = 200V, T _C = 125°C	-	-	20	mA
Total capacitance	C _{tot}	V _R =10V f=1MHz	-	180	-	pF
DC Blocking Voltage	V _{BR}	I _R =100μA	200	240	-	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

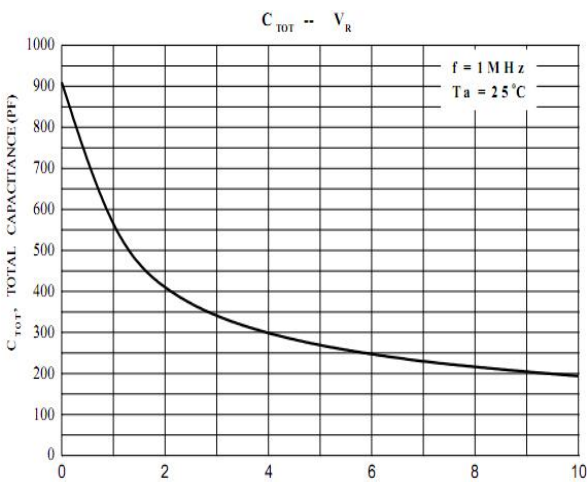


FIGURE 1. Total capacitance vs Voltage

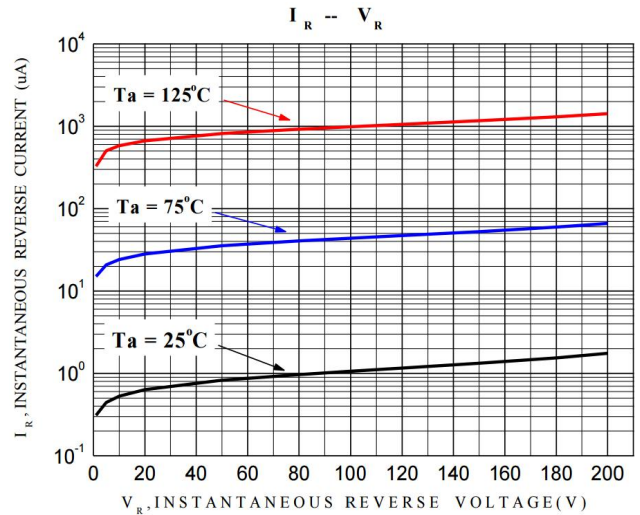


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

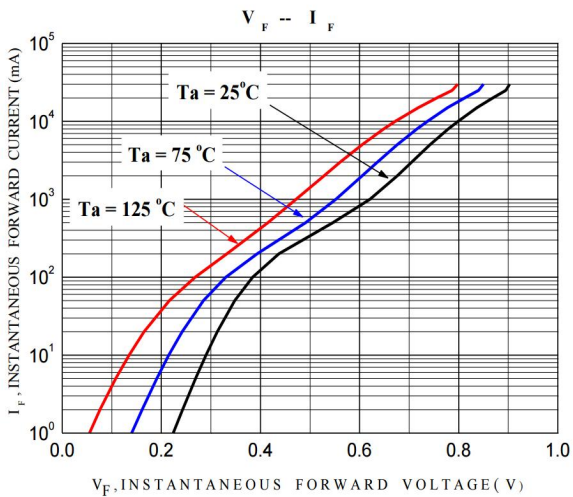


FIGURE 3. FORWARD CURRENT vs FORWARD VOLTAGE

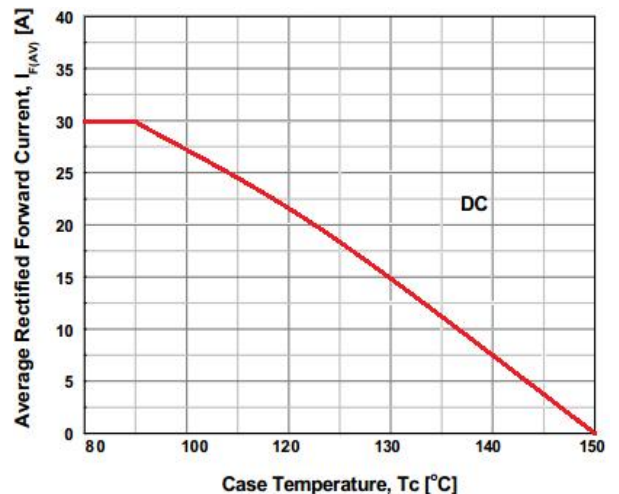


FIGURE 4. CURRENT DERATING CURVE

6 Typical Test Circuit and Waveform

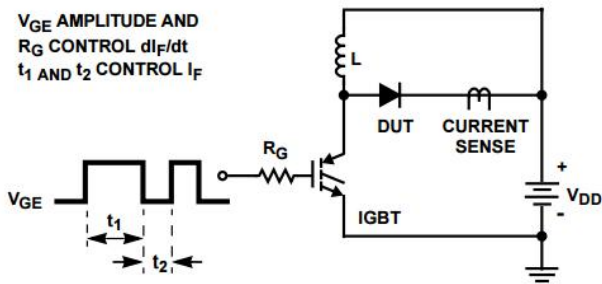


FIGURE 5. trr TEST CIRCUIT

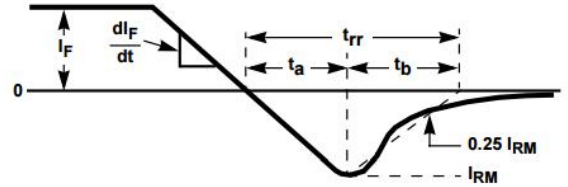


FIGURE 6. trr WAVEFORMS AND DEFINITIONS

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

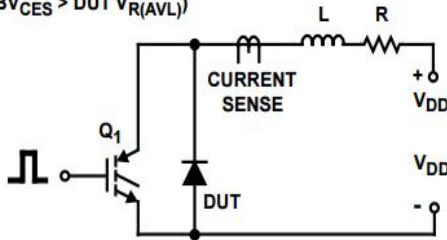


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT FIGURE

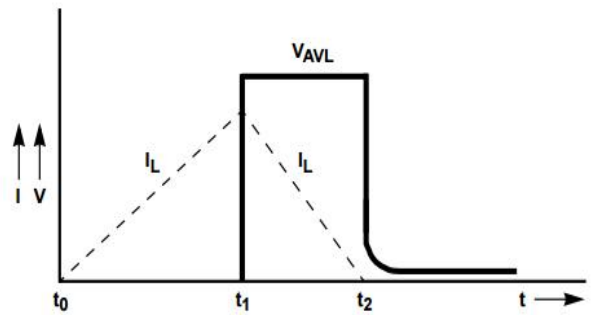


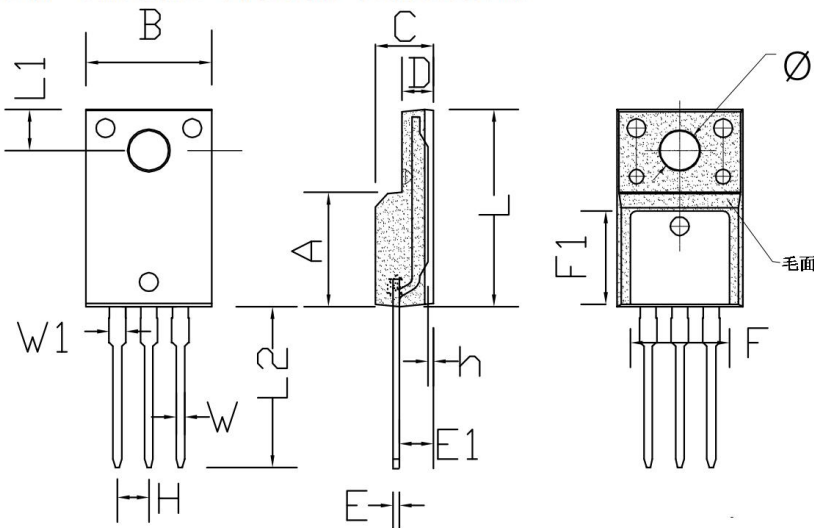
FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

7 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
MBRF30200CT	TO-220F	MBRF30200CT	Pb-free	Tube	1000/box

8 Dimensions

TO-220F PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In 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
phi	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	