

## 20A 400V Fast recovery diode

### 1 Description

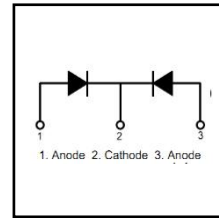
20A, 400V Ultrafast Diodes They have a low forward voltage drop and are of planar, silicon nitride passivated, ion-implanted, epitaxial construction. These devices are intended for use as energy steering/clamping diodes and rectifiers in a variety of switching power supplies and other power switching applications. Their low stored charge and ultrafast recovery with soft recovery characteristics minimizes ringing and electrical noise in many power switching circuits, thus reducing power loss in the switching transistor

### 2 Features

- Low power loss,
- high efficiency Low forward voltage,
- high current capability High surge capacity
- Super fast recovery times
- high voltage

### 3 Applications

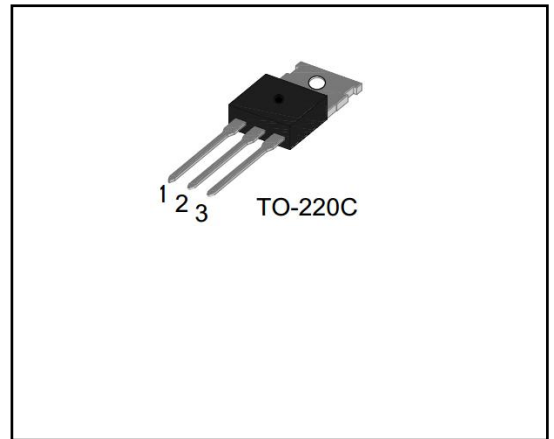
- Switching Power Supply
- Power Switching Circuits
- General Purpose



$$V_{BR} = 400V$$

$$V_{F(\text{single})}(\text{Max}) = 2.5V$$

$$I_{F(\text{AV})}(\text{single}) = 10A$$



## 4 Electrical Characteristics

### 4.1 Absolute Maximum Ratings (T<sub>c</sub>=25°C, unless otherwise noted)

PARAMETER		SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage		V <sub>RRM</sub>	400	V
Working Peak Reverse Voltage		V <sub>RWM</sub>	400	V
DC Blocking Voltage		V <sub>R</sub>	400	V
Average Rectified Forward Current(single)	TO-220/263/3P/3PN, T <sub>c</sub> =135°C	I <sub>F(AV)</sub>	10	A
Average Rectified Forward Current(double)	TO-220F, T <sub>c</sub> =100°C		20	A
Repetitive Peak Surge Current(single)		I <sub>FRM</sub>	15	A
Nonrepetitive Peak Surge Current(single)	t <sub>p</sub> =8.3ms	I <sub>FSM</sub>	120	A
Avalanche Energy(single)	L=1mH	E <sub>AS</sub>	15	mJ
Operating Junction Temperature Range		T <sub>j</sub>	-55~150	°C
Storage Temperature Range		T <sub>stg</sub>	-55~150	°C

### 4.2 Thermal Characteristics

PARAMETER	SYMBOL	VALUE			UNIT
		TO-220F	TO-220	TO-3P/3PN	
Thermal Resistance, Junction to Case-sink	R <sub>thJC</sub>	2.5	1.8	0.95	°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 <sub>F</sub>	I <sub>F</sub> = 10A	-	1.8	2.5	V
		I <sub>F</sub> = 10A, T <sub>C</sub> = 150°C	-	1.6	-	V
		I <sub>F</sub> = 15A	-	2.2	-	V
Maximum Instantaneous Reverse	I <sub>R</sub>	V <sub>R</sub> = 400V	-	-	10	uA
		V <sub>R</sub> = 400V, T <sub>C</sub> = 150°C	-	-	2.0	mA
Maximum Reverse Recovery Time	t <sub>rr</sub>	V <sub>R</sub> =30V I <sub>F</sub> =1A -di/dt=50A/us	-	19	30	ns
Total capacitance	C <sub>tot</sub>	V <sub>R</sub> =0V f=1MHz	-	155	-	pF
DC Blocking Voltage	V <sub>BR</sub>	I <sub>R</sub> =100uA	410	440	-	V

**DEFINITIONS**

V<sub>F</sub> = Instantaneous forward voltage (pw = 300µs, D = 2%).

I<sub>R</sub> = Instantaneous reverse current.

RθJC = Thermal resistance junction to case.

pw = pulse width.

D = duty cycle.

**5 Typical characteristics diagrams**

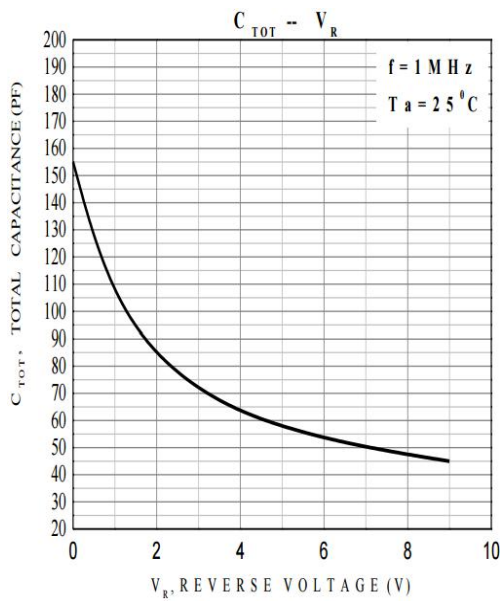


FIGURE 1. Total capacitance vs Voltage

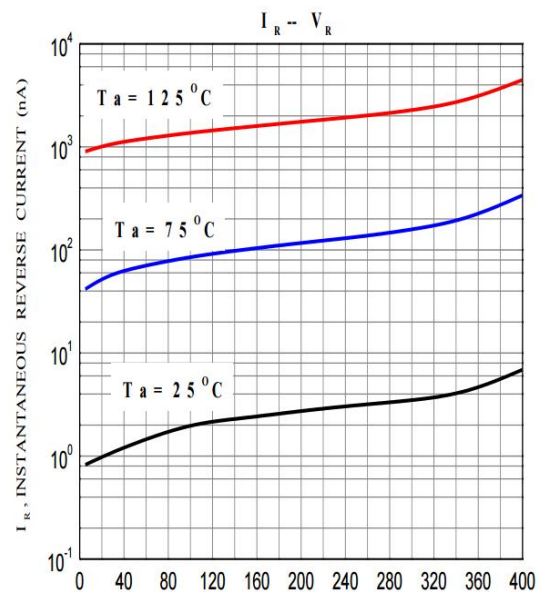


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

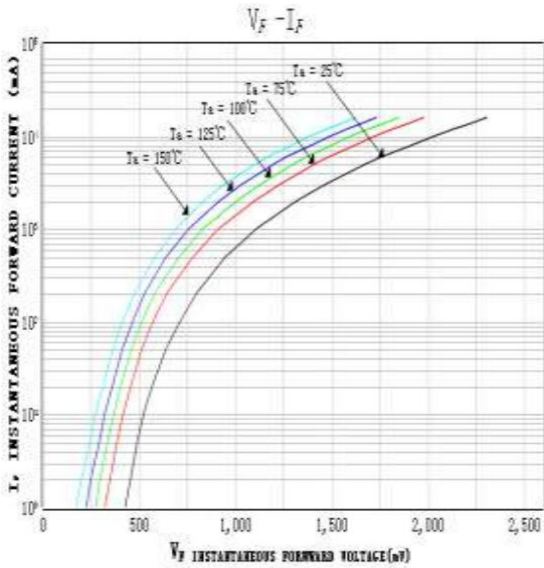


FIGURE 3. FORWARD CURRENT vs FORWARD VOLTAGE

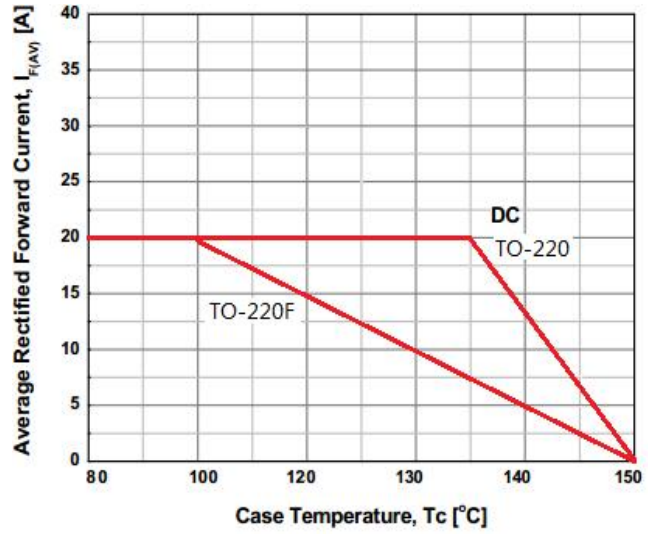


FIGURE 4. CURRENT DERATING CURVE

## 6 Typical Test Circuit and Waveform

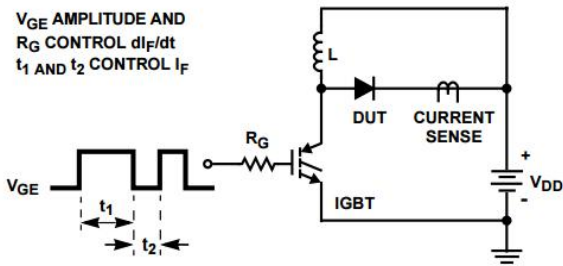


FIGURE 5. trr TEST CIRCUIT

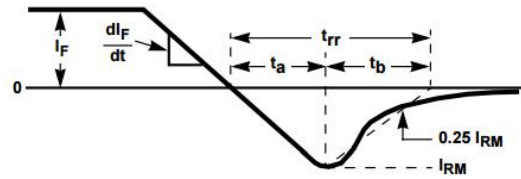


FIGURE 6. trr WAVEFORMS AND DEFINITIONS

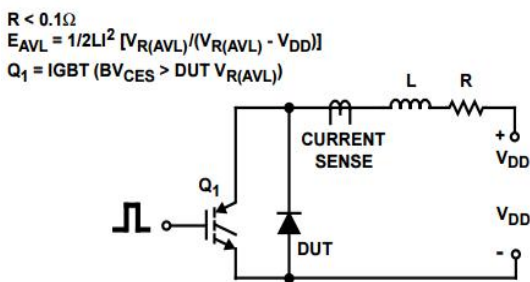


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT FIGURE

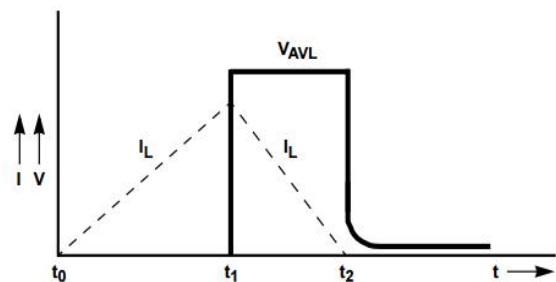


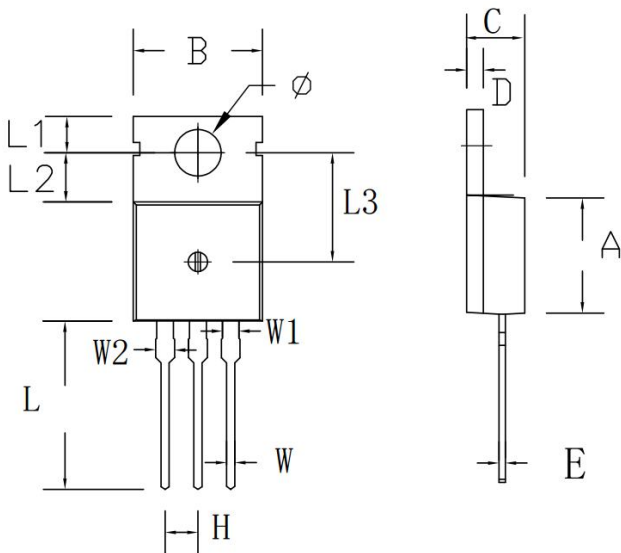
FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

## 7 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
MUR20FU40CT	TO-220	MUR20FU40CT	Pb-free	Tube	1000/box

## 8 Dimensions

### TO-220 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	8.80	9.30	0.346	0.366
B	9.70	10.30	0.382	0.406
C	4.25	4.75	0.167	0.187
D	1.20	1.45	0.047	0.057
E	0.40	0.60	0.016	0.024
H	2.54 TYP		0.100 TYP	
W	0.60	0.95	0.024	0.037
W1	1.05	1.45	0.041	0.057
W2	1.20	1.60	0.047	0.063
L	12.60	13.40	0.496	0.528
L1	2.45	2.95	0.096	0.116
L2	3.45	3.95	0.136	0.156
L3	8.15	8.65	0.321	0.341
$\Phi$	3.50	3.90	0.138	0.154

## 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.
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- Product promotion is endless, our company will be dedicated to provide customers with better products.

## 10 Appendix

Revision history:

Date	REV.	Description	Page
2017.07.22	1.0	Original	
2023.7.20	1.1	Modify company name	All