

**500V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

$I_D$	13A
$V_{DSS}$	500V
$R_{DS(ON)-typ}(@V_{GS}=10V)$	<0.55Ω (Type:0.42 Ω)

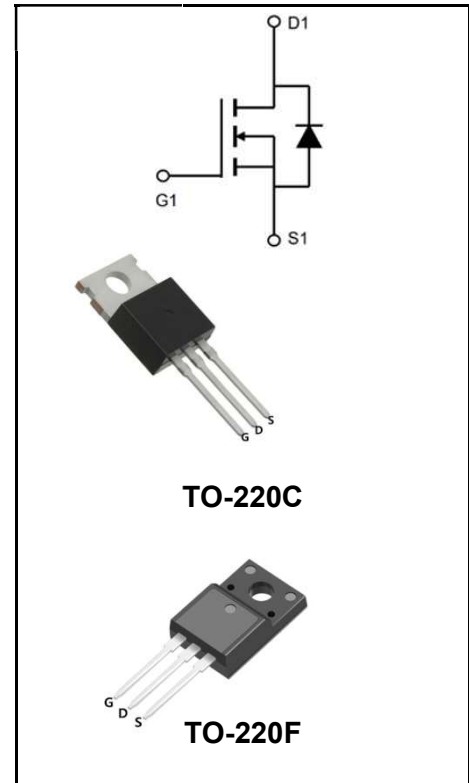
**Features**

- ◆Fast Switching
- ◆Low ON Resistance
- ◆Low Gate Charge
- ◆100% Single Pulse avalanche energy Test
- ◆LeadfreeincomplywithEUroHS2011/65/EUdirectives



**Mechanical Data**

- ◆Case: Molded plastic
- ◆Mounting Position: Any
- ◆Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆Solder bath temperature275°C maximum,10s per JESD22-106



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW13N50AF	TO-220F	YFW 13N50AF XXXXX	50PCS/Tube
YFW13N50AC	TO-220C	YFW 13N50AC XXXXX	50PCS/Tube

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Symbols	Value		Units
		220F	220C	
Drain-Source Voltage	<b>V<sub>DS</sub></b>	500		<b>V</b>
Gate-Source Voltage	<b>V<sub>GS</sub></b>	±30		<b>V</b>
Continue Drain Current	<b>I<sub>D</sub></b>	13		<b>A</b>
-Continuous (TC = 100°C)		8		
Pulsed Drain Current (Note1)	<b>I<sub>DM</sub></b>	52		<b>A</b>
Power Dissipation	<b>P<sub>D</sub></b>	60	150	<b>W</b>
-Derate above 25°C		0.4	1.14	<b>W/°C</b>
Single Pulse Avalanche Energy (Note2)	<b>E<sub>AS</sub></b>	845		<b>mJ</b>
Avalanche Current (Note 1)	<b>I<sub>AR</sub></b>	13		<b>A</b>
Repetitive Avalanche Energy (Note 1)	<b>E<sub>AS</sub></b>	17		<b>mJ</b>
Operating Temperature Range	<b>T<sub>J</sub></b>	150		<b>°C</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +150		<b>°C</b>
Thermal Resistance, Junction to Case	<b>R<sub>θJC</sub></b>	2.6	0.93	<b>°C/W</b>
Thermal Resistance, Junction to Ambient	<b>R<sub>θJA</sub></b>	62.5	62.5	<b>°C/W</b>

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	<b>BV<sub>DSS</sub></b>	500	-	-	<b>V</b>
Drain-Source Leakage Current	V <sub>DS</sub> = 500 V, V <sub>GS</sub> = 0 V	<b>I<sub>DSS</sub></b>	-	-	1	<b>uA</b>
	V <sub>DS</sub> = 400 V, T <sub>c</sub> = 125°C		-	-	10	
Gate Leakage Current	V <sub>GS</sub> = ± 30 V, V <sub>DS</sub> = 0 V	<b>I<sub>GSS</sub></b>	-	-	±100	<b>nA</b>
Gate-Source Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	<b>V<sub>GS(th)</sub></b>	2	-	4	<b>V</b>
Drain-Source On-State Resistance	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 6.5 A	<b>R<sub>DS(on)</sub></b>	-	0.42	0.55	<b>Ω</b>
Forward Transconductance	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 6.5 A	<b>g<sub>fs</sub></b>	-	13	-	<b>S</b>
Input Capacitance	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1MHz	<b>C<sub>iss</sub></b>	-	1560	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	160	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	17	-	
Turn-on Delay Time	I <sub>D</sub> = 13 A, V <sub>DD</sub> = 250 V, R <sub>G</sub> = 10Ω(Note3,4)	<b>td(ON)</b>	-	13	-	<b>nS</b>
Rise Time		<b>tr</b>	-	16	-	
Turn-Off Delay Time		<b>td(OFF)</b>	-	40	-	
Fall Time		<b>tf</b>	-	17	-	
Total Gate Charge	I <sub>D</sub> = 13 A, V <sub>DD</sub> = 400V, V <sub>GS</sub> = 10 V(Note3,4)	<b>Q<sub>G</sub></b>	-	40	-	<b>nC</b>
Gate to Source Charge		<b>Q<sub>GS</sub></b>	-	8	-	
Gate to Drain Charge		<b>Q<sub>GD</sub></b>	-	16	-	

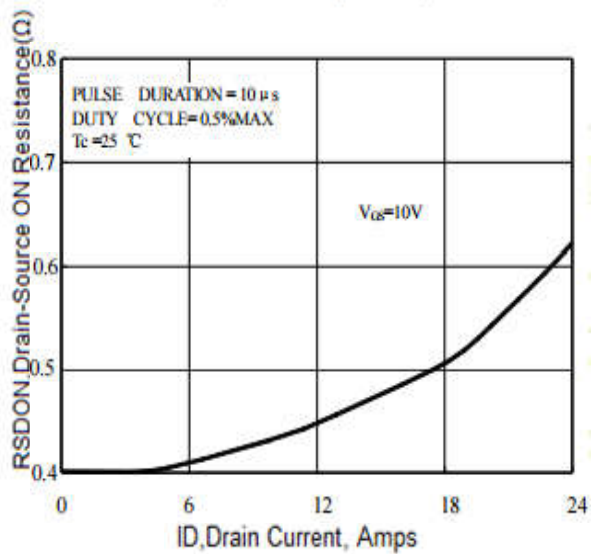
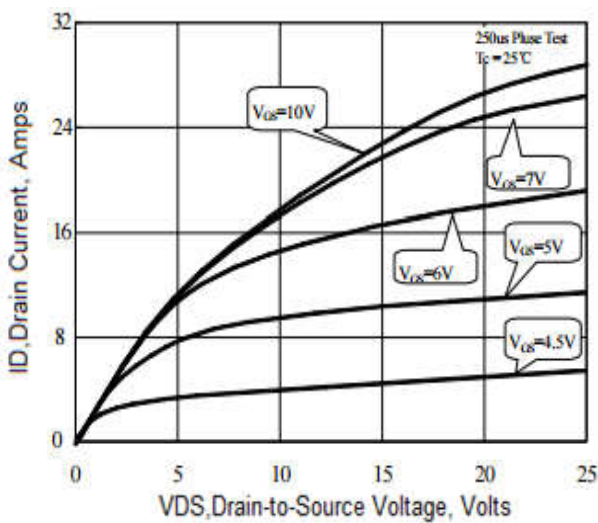
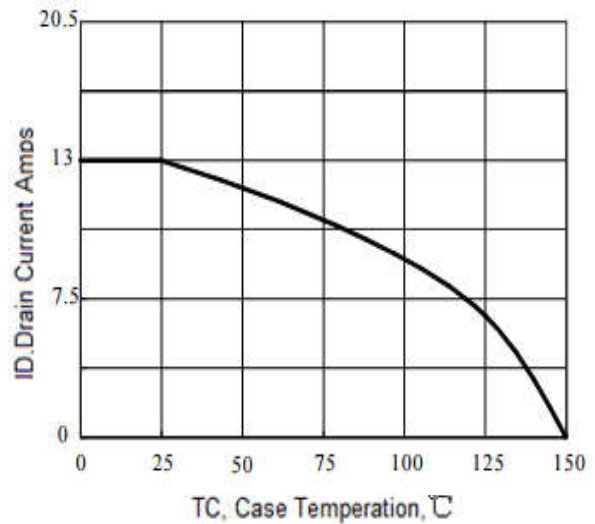
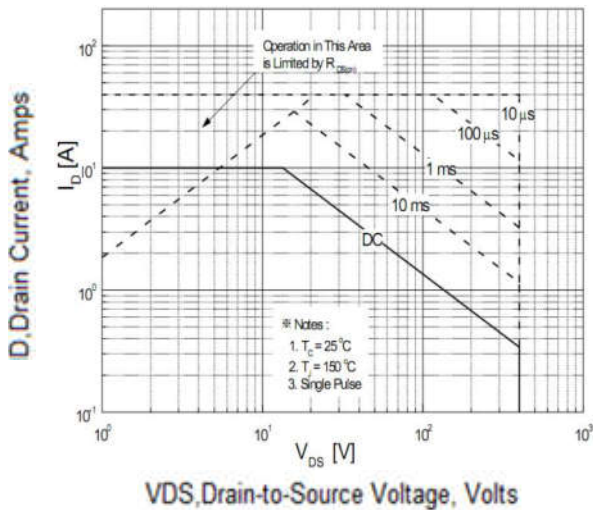
**Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximum Continuous Drain-Source Diode Forward Current		<b>I<sub>S</sub></b>	-	-	13	<b>A</b>
Maximum Pulsed Drain-Source Diode Forward Current		<b>I<sub>SM</sub></b>	-	-	52	<b>A</b>
Drain-Source Diode Forward Voltage	I <sub>SD</sub> = 13 A	<b>V<sub>SD</sub></b>	-	-	1.4	<b>V</b>
Reverse Recovery Time	I <sub>SD</sub> = 13 A, V <sub>GS</sub> = 0 V, dI <sub>F</sub> / dt = 100 A/μs	<b>trr</b>	-	262	-	<b>nS</b>
Reverse Recovery Charge		<b>Q<sub>rr</sub></b>	-	1.7	-	<b>uC</b>

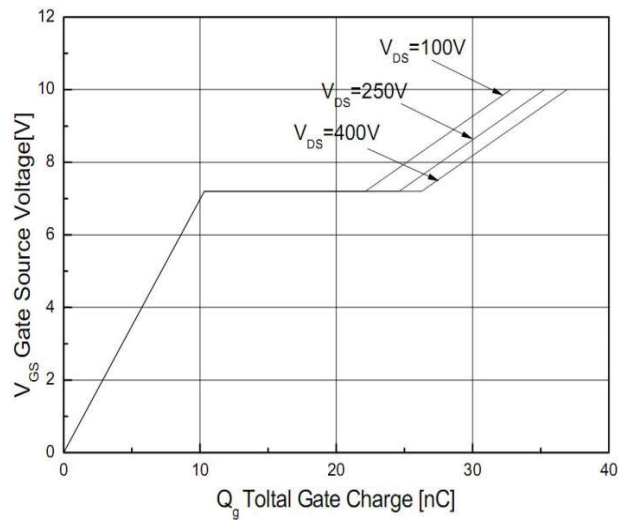
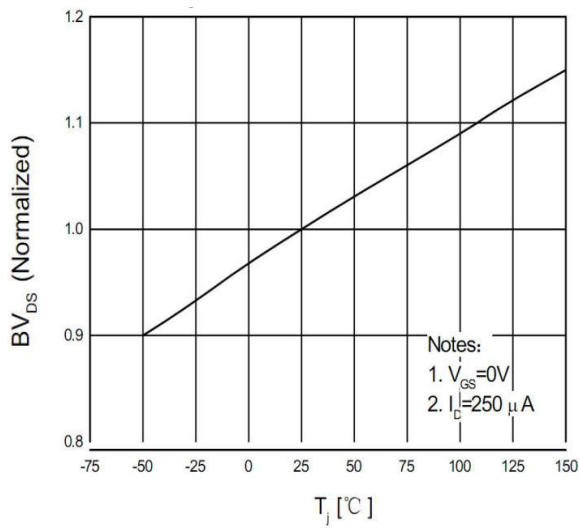
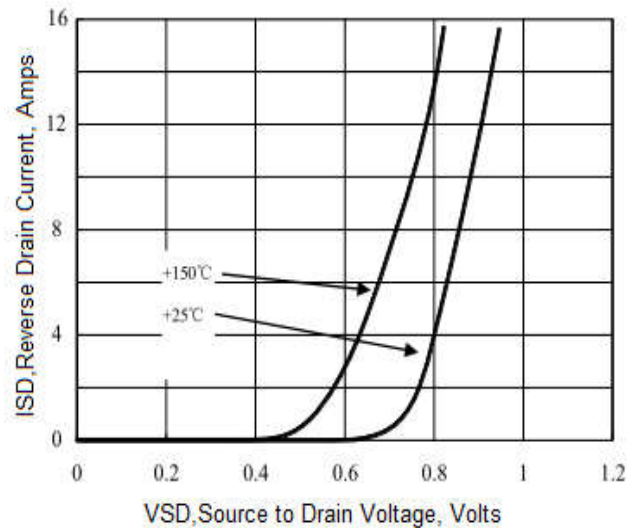
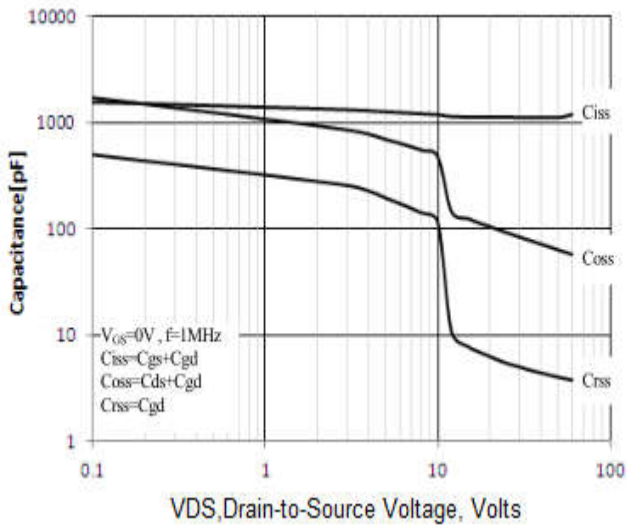
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. IAS = 13 A, VDD = 50 V, L = 10mH, RG = 25Ω, starting TJ = 25°C.
3. ulse test: Pulse Width ≤300 μ s, Duty Cycles≤2%.
4. Essentially Independent of Operating Temp

**Ratings and Characteristic Curves**



**Ratings and characteristic Curves**



Package Outline Dimensions Millimeters

TO-220C

Dim.	Min.	Max.
A	9.8	10.2
A2	4.8	5.2
C	4.35	4.65
C1	1.45	1.05
D	0.65	0.95
E	3.45	3.75
F	2.85	3.15
G	6.4	6.8
H	0.35	0.65
J	28.68	28.98
K	2.8	3.2
M	1.15	1.45
N	Typical 2.54	
P	2.2	2.6
Q	9	9.4
S	0.15	0.35
U	2.65	2.95
DIA	宽1.50±0.10 深0.50 MAX	
All Dimensions in millimeter		

TO-220F

Dim.	Min.	Max.
A	9.95	10.25
B	2.95	3.25
C	1.25	1.45
D	12.95	13.25
E	0.50	0.65
F	3.1	3.3
G	1.30	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.60	4.75
K	2.50	2.65
L	6.35	6.55
M	15.4	16.0
N	2.75	3.05
O	0.48	0.52
P	0.76	0.84
All Dimensions in millimeter		

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [MOSFET](#) category:*

*Click to view products by [YFW Electronics](#) manufacturer:*

Other Similar products are found below :

[IRFD120](#) [JANTX2N5237](#) [2SK2267\(Q\)](#) [BUK455-60A/B](#) [TK100A10N1,S4X\(S](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#)  
[IRS2092STRPBF-EL](#) [IPS70R2K0CEAKMA1](#) [TK31J60W5,S1VQ\(O](#) [TK31J60W,S1VQ\(O](#) [TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#)  
[DMN1017UCP3-7](#) [EFC2J004NUZTDG](#) [P85W28HP2F-7071](#) [DMN1053UCP4-7](#) [NTE2384](#) [DMC2700UDMQ-7](#) [DMN2080UCB4-7](#)  
[DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [IPS60R3K4CEAKMA1](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#)  
[STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [DMTH10H4M6SPS-13](#) [IPS60R360PFD7SAKMA1](#)  
[DMN2990UFB-7B](#) [SSM3K35CT,L3F](#) [IPLK60R1K0PFD7ATMA1](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [IPWS65R035CFD7AXKSA1](#)  
[MCQ7328-TP](#) [SSM3J143TU,LXHF](#) [DMN12M3UCA6-7](#) [PJMF280N65E1\\_T0\\_00201](#) [PJMF380N65E1\\_T0\\_00201](#)  
[PJMF280N60E1\\_T0\\_00201](#) [PJMF600N65E1\\_T0\\_00201](#) [PJMF900N65E1\\_T0\\_00201](#)