

100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

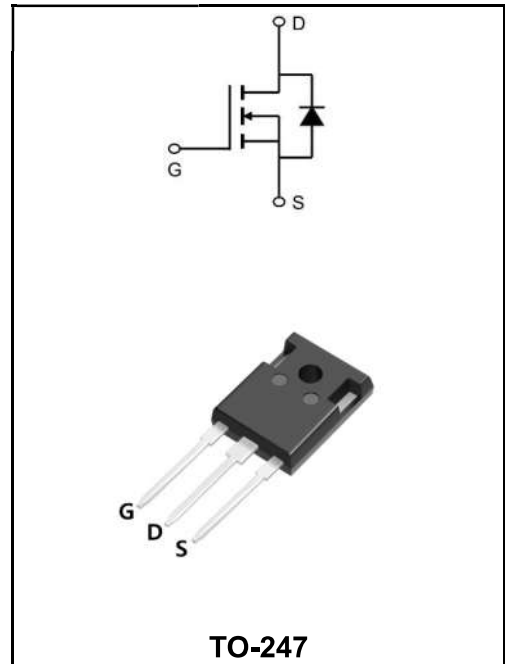
I_D	220A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 2.8mΩ (Type:2.1 mΩ)

Features

◆ YFW-SGT technology

Application

- ◆ DC/DC Converter
- ◆ LED Backlighting
- ◆ Power Management Switches



Product Specification Classification

Part Number	Package	Marking	Pack
YFWG220N10AP	TO-247	YFW 220N10AP XXXXX	600PCS/Tube

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V _{DS}	100	V
Gate - Source Voltage	V _{GS}	±20	V
Continuous Drain Current, V _{GS} @ 10V @T _c =25°C	I _D	220	A
Continuous Drain Current, V _{GS} @ 10V @T _c =100°C	I _D	180	A
Pulsed Drain Current	I _{DM}	840	A
Single Pulse Avalanche Energy	E _{AS}	500	mJ
Avalanche Current	I _{AS}	106.8	A
Total Power Dissipation ⁴ @T _c =25°C	P _D	296	W
Storage Temperature Range	T _{STG}	-55 to +150	°C
Operating Junction Temperature Range	T _J	-55 to +150	°C
Thermal Resistance, Junction-ambient	R _{θJA}	0.42	°C/W
Thermal Resistance, Junction-case	R _{θJC}	40	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	VDSS	100	-	-	V
Gate -Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	IGSS	-	-	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$	IDSS	-	-	1	μA
	$V_{DS}=100V, V_{GS}=0V, T_J=100^\circ C$		-	-	100	
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	VGS(th)	2.0	2.9	4.0	V
Drain-Source on-Resistance ²	$V_{GS}=10V, I_D=20A$	RDS(ON)	-	2.1	2.8	mΩ
Input Capacitance	$V_{DS}=50V$ $V_{GS}=0V$ $f=1MHz$	Ciss	-	8800	-	μF
Output Capacitance		Coss	-	1290	-	
Reverse Transfer Capacitance		Crss	-	40	-	
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	Rg	-	3.4	-	Ω
Total Gate Charge	$V_{DS}=50V$ $V_{GS}=10V$ $I_D=20A$	Qg	-	150	-	nC
Gate-Source Charge		Qgs	-	34	-	
Gate-Drain Charge		Qgd	-	26	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=3\Omega$ $I_D=20A$	td(on)	-	30.8	-	ns
Rise Time		Tr	-	26	-	
Turn-Off Delay Time		td(OFF)	-	68	-	
Fall Time		tf	-	12.4	-	
Diode Forward Voltage ²	$V_{GS}=0V, I_F=20A$	VSD	-	-	1.2	V
Continuous Source Current ^{1,5}	$V_G=V_D=0V, \text{Force Current}$	IS	-	-	190	A
Body Diode Reverse Recovery Time	$I_F=20A, di_{SD}/dt=100A/\mu s$	trr	-	110	-	ns
Body Diode Reverse Recovery Charge		Qrr	-	202	-	nC

Notes:

- 1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The EAS data shows Max. rating . The test condition is VDD=50V, VGS=10V, L=0.4mH, IAS=64A
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

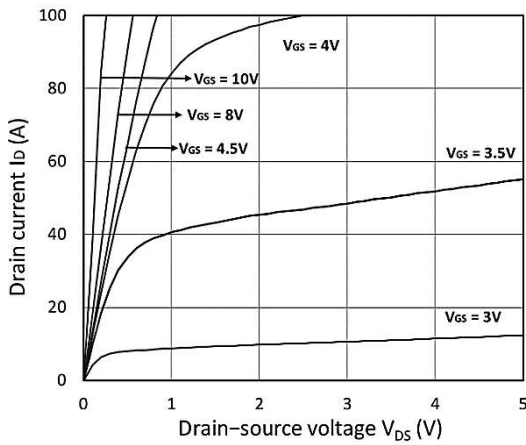


Figure 1. Output Characteristics

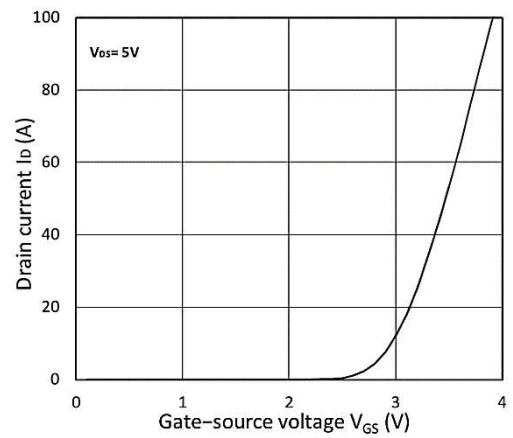


Figure 2. Transfer Characteristics

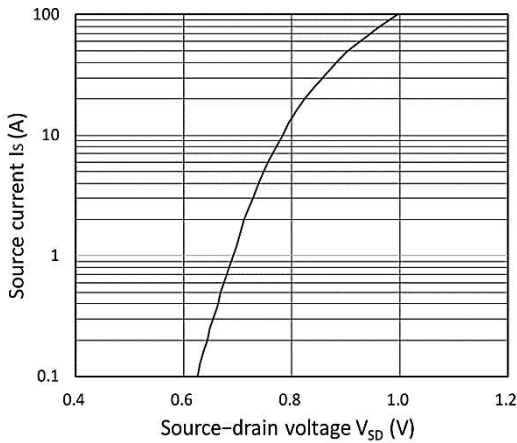


Figure 3. Forward Characteristics of Reverse

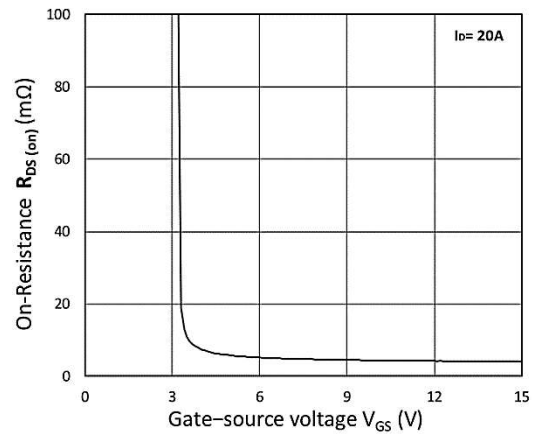


Figure 4. R_{DS(ON)} vs. V_{GS}

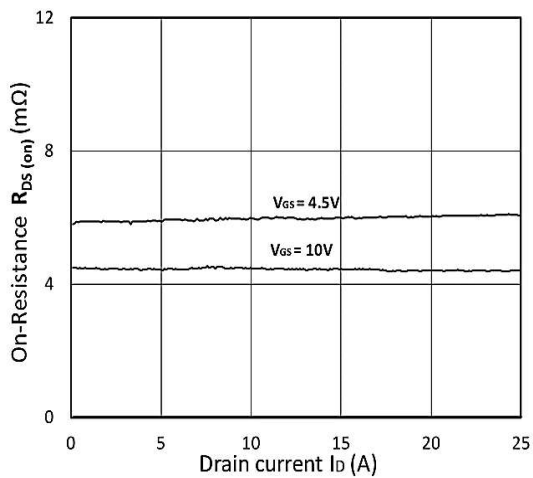


Figure 5. R_{DS(ON)} vs. I_D

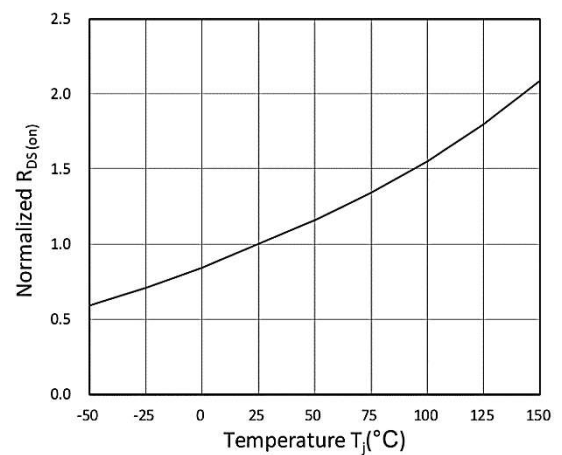


Figure 6. Normalized R_{DS(on)} vs. Temperature

Ratings and Characteristic Curves

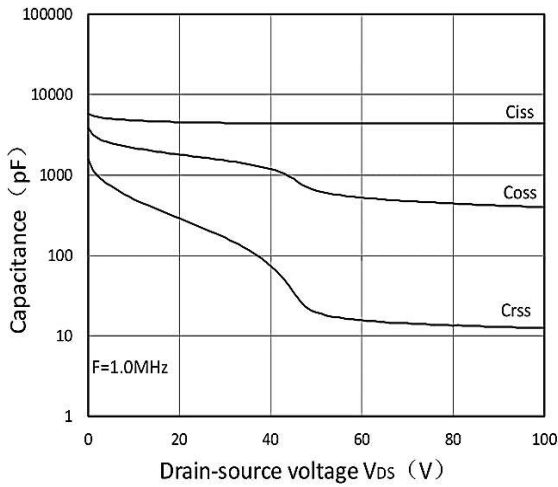


Figure 7. Capacitance Characteristics

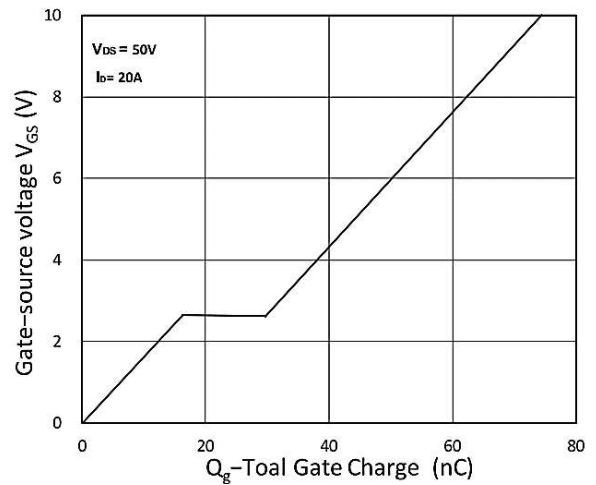


Figure 8. Gate Charge Characteristics

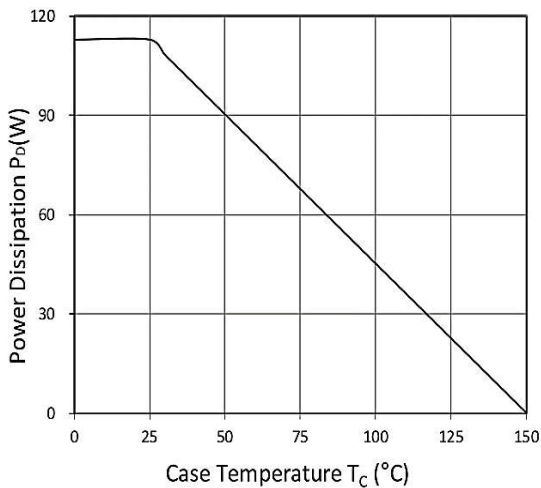


Figure 9. Power Dissipation

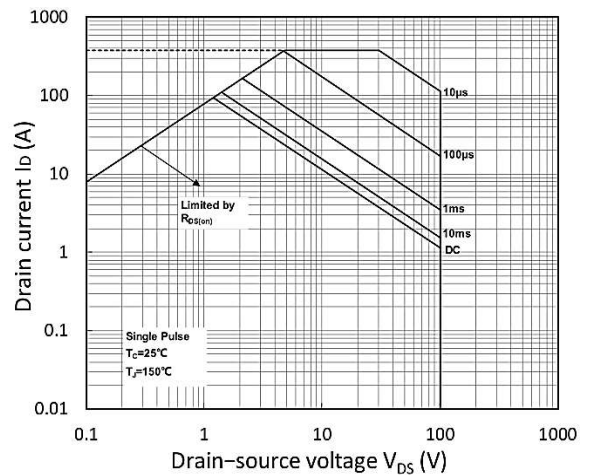


Figure 10. Safe Operating Area

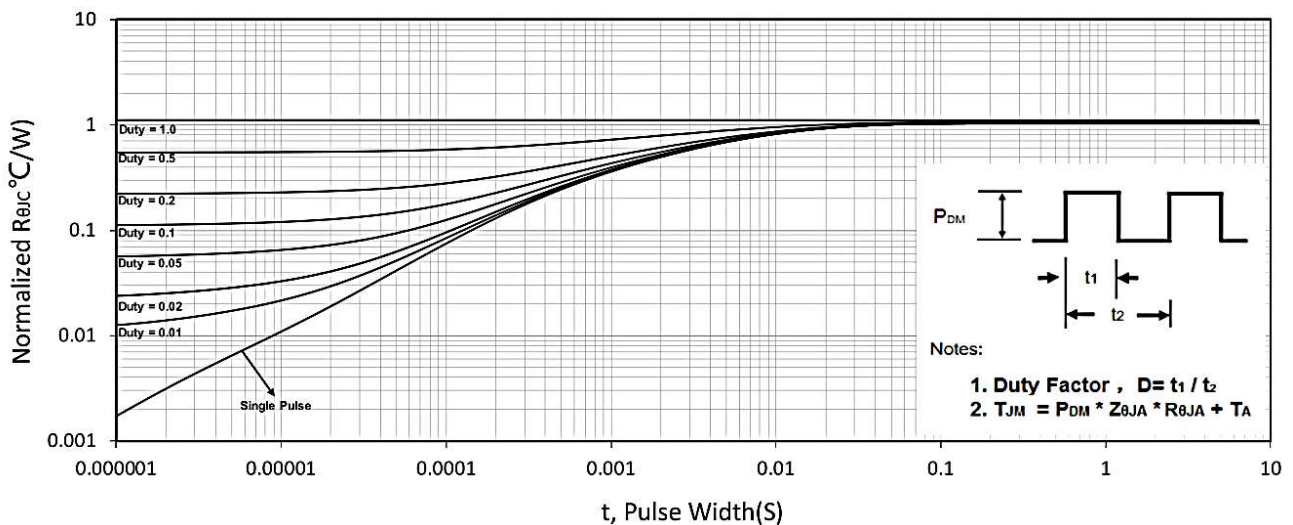
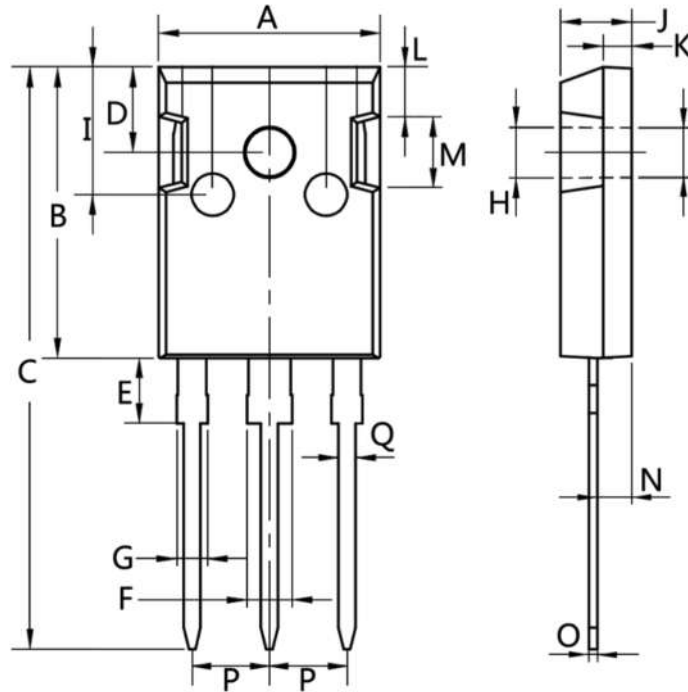


Figure 11. Normalized Maximum Transient Thermal Impedance

TO-247



Dim.	Min.	Max.
A	15.0	16.0
B	20.0	21.0
C	41.0	42.0
D	5.0	6.0
E	4.0	5.0
F	2.5	3.5
G	1.75	2.5
H	3.0	3.5
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.5	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.75
P	Typ 5.08	
Q	1.2	1.3