

60V N-CHANNEL ENHANCEMENT MODE MOSFET
MAIN CHARACTERISTICS

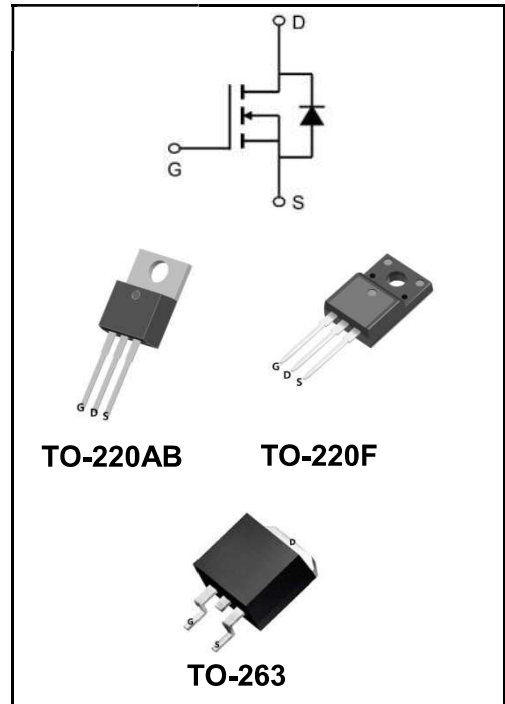
I_D	130A
V_{DSS}	60V
R_{DS(on)-typ(@V_{GS}=10V)}	< 3.5mΩ (Type:2.8 mΩ)

Features

◆YFW-SGT technology

Applications

- ◆Battery protection
- ◆Load switch
- ◆Uninterruptible power supply


Product Specification Classification

Part Number	Package	Marking	Pack
YFWG130N06AT	TO-220AB	YFW 130N06AT XXXXX	1000PCS/Box
YFWG130N06AF	TO-220F	YFW 130N06AF XXXXX	1000PCS/Box
YFWG130N06AS	TO-263	YFW 130N06AS XXXXX	800PCS/Reel

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current ^{1,6} @T _C =25°C	I_D	130	A
Continuous Drain Current ^{1,6} @T _C =100°C	I_D	66	A
Pulsed Drain Current ²	I_{DM}	240	A
Single Pulse Avalanche Energy ³	E_{AS}	101	mJ
Avalanche Current	I_{AS}	130	A
Total Power Dissipation ⁴ @T _C =25°C	P_D	168	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating and Storage Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient ¹	R_{θJA}	60	°C/W
Thermal Resistance Junction-Case ¹	R_{θJC}	1.5	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	60	67	-	V
Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.8	2.5	V
Static Drain-Source on-Resistance	$V_{GS}=10V, I_D=20A$	$R_{DS(ON)}$	-	2.8	3.5	m Ω
	$V_{GS}=4.5V, I_D=15A$		-	3.2	4.0	
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=100KHz$	C_{iss}	-	5950	-	pF
Output Capacitance		C_{oss}	-	1250	-	
Reverse Transfer Capacitance		C_{rss}	-	85	-	
Total Gate Charge	$V_{DS}=50V$ $I_D=50A$ $V_{GS}=10V$	Q_g	-	93	-	nC
Gate-Source Charge		Q_{gs}	-	17	-	
Gate-Drain Charge		Q_{gd}	-	14	-	
Reverse Recovery Charge	$I_F=25A, dI/dt=100A/\mu s$	Q_{rr}	-	73	-	nC
Reverse Recovery Time		t_{rr}	-	68	-	
Turn-on delay time	$V_{GS}=10V, V_{DD}=30V$ $I_D=25A, R_{GEN}=2\Omega$	$t_{d(on)}$	-	22.5	-	ns
Turn-on Rise Time		T_r	-	6.7	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	80.3	-	
Turn-Off Fall Time		t_f	-	26.9	-	
Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	V_{SD}	-	-	1.2	V
Maximum Body-Diode Continuous Current		I_S	-	-	200	A

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 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 $V_{DD}=48V, V_{GS}=10V, L=0.1mH, I_{AS}=130A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation

Ratings and Characteristic Curves

Typical Characteristics

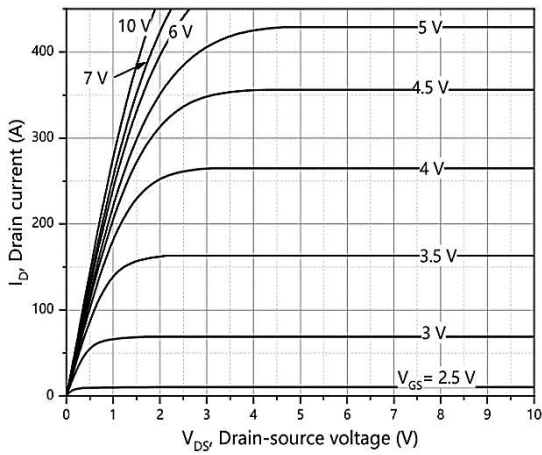


Figure 1. Typ. output characteristics

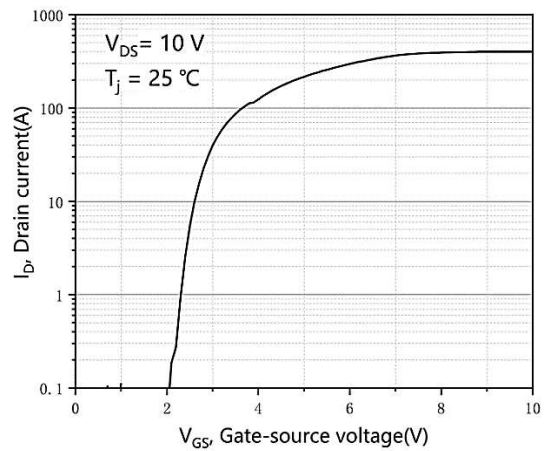


Figure 2. Typ. transfer characteristics

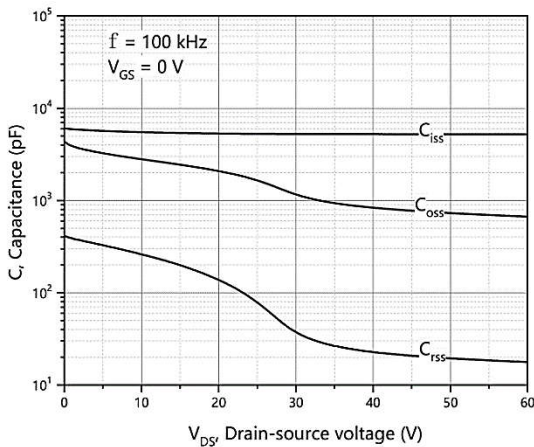


Figure 3. Typ. capacitances

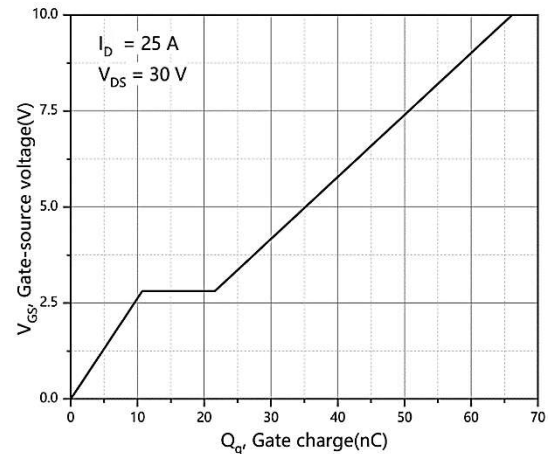


Figure 4. Typ. gate charge

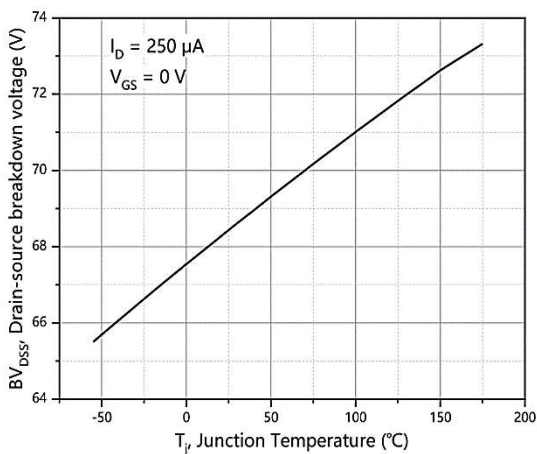


Figure 5. Drain-source breakdown voltage

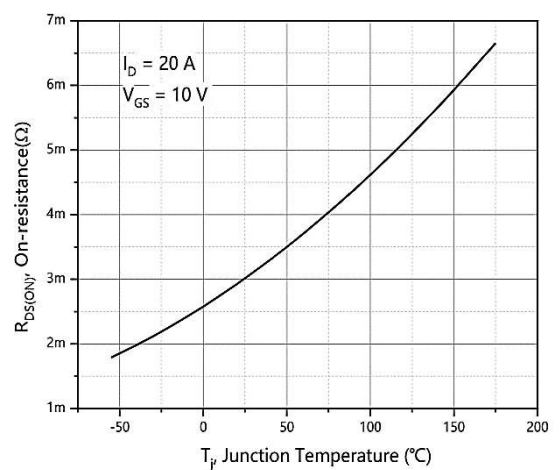


Figure 6. Drain-source on-state resistance

Ratings and Characteristic Curves

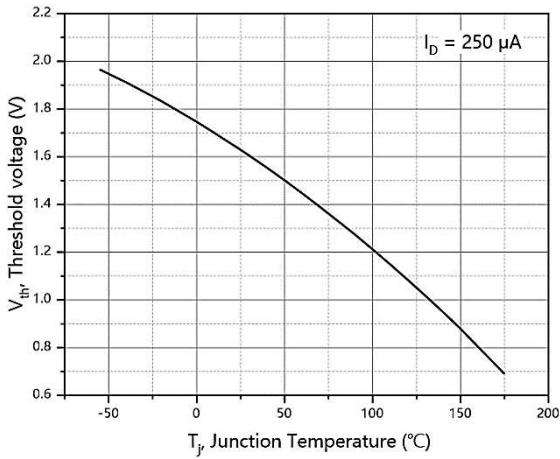


Figure 7. Threshold voltage

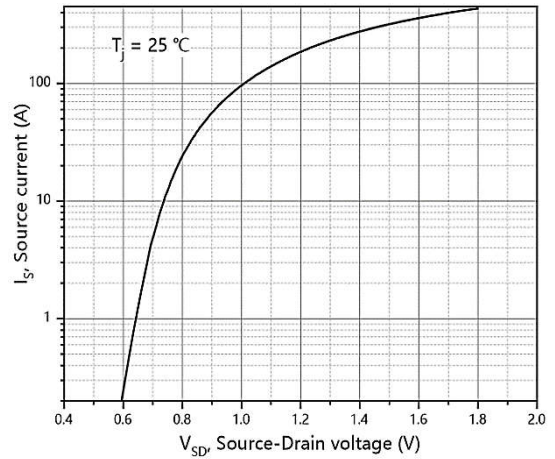


Figure 8. Forward characteristic of body diode

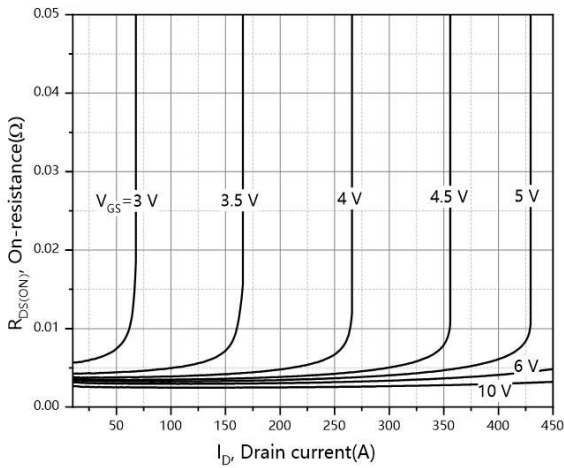


Figure 9. Drain-source on-state resistance

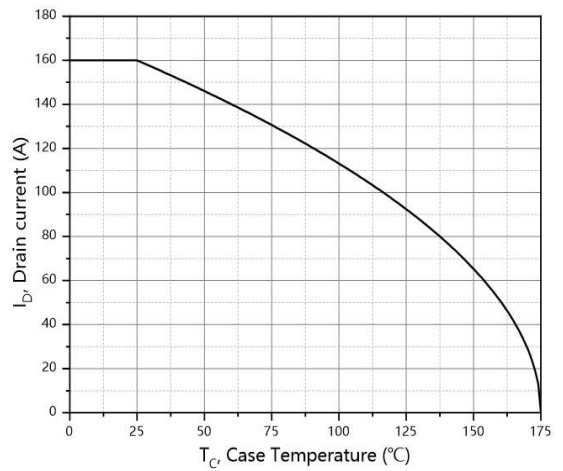


Figure 10. Drain current

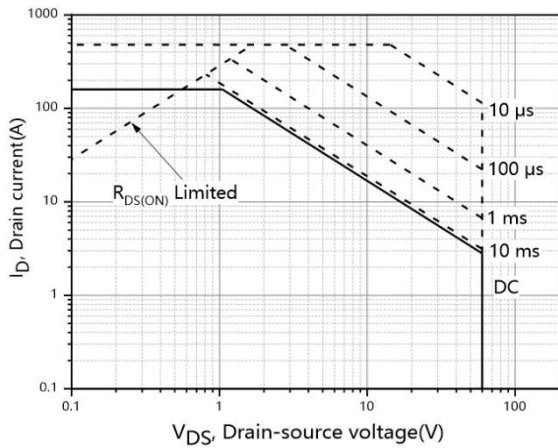


Figure 11. Safe operation area T_C=25 °C

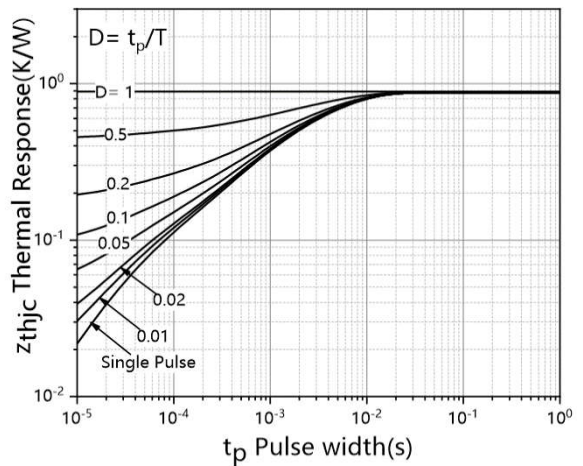


Figure 12. Max. transient thermal impedance

Package Outline Dimensions Millimeters

TO-220AB

	Dim.	Min.	Max.
	A	10.15	10.35
	B	2.65	2.95
	C	3.70	3.90
	D	28.5	29.5
	E	1.30	1.45
	F	6.35	6.55
	G	2.9	3.3
	H	15.0	16.0
	I	0.38	0.42
	J	4.45	4.55
	K	1.25	1.35
	L	Typ 5.08	
	M	Typ 2.54	
N	3.1	3.3	
O	0.76	0.84	
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			

Package Outline Dimensions Millimeters

TO-263

Dim.	Min.	Max.
A	10.1	10.2
B	7.4	7.6
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.78	0.86
H	1.2	1.3
I	Typ2.54	
J	8.4	8.6
K	4.45	4.55
L	1.25	1.35
M	0.02	0.1
N	2.4	2.8
O	0.36	0.40
All Dimensions in millimeter		