

120V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

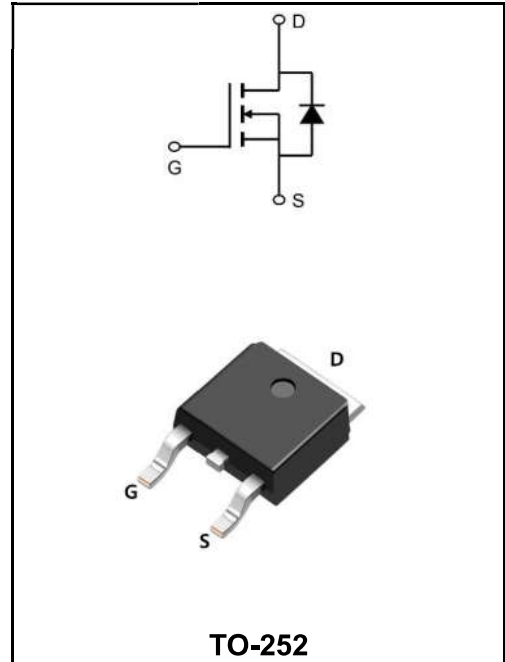
I_D	70A
V_{DSS}	120V
R_{DS(on)-typ(@V_{GS}=10V)}	< 13mΩ (Type:10 mΩ)

Features

◆ YFW-SGT technology

Application

- ◆ Mobile phone fast charging
- ◆ Brushless motor
- ◆ Home appliance control board



Product Specification Classification

Part Number	Package	Marking	Pack
YFWG70N12AD	TO-252	YFW 70N12AD XXXXX	2500PCS/Tape

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	120	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous drain current ¹⁾ , T _c =25 °C	I_D	70	A
Continuous drain current ¹⁾ , T _c =75 °C	I_D	35	A
Pulsed drain current ²⁾ , T _c =25 °C	I_{D, pulse}	150	A
Power dissipation ³⁾ , T _c =25 °C	P_D	140	W
Single Pulse Avalanche Energy ⁴⁾	E_{AS}	53.8	mJ
Operation and storage temperature	T_{STG}, T_J	-55 to +150	°C
Thermal Resistance, Junction-case	R_{θJC}	0.89	°C/W
Thermal Resistance, Junction-ambient ⁵⁾	R_{θJA}	62.5	°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}	120	125	-	V
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.8	2.5	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=30A$	$R_{DS(on)}$	-	10	13	mΩ
	$V_{GS}=4.5V, I_D=20A$		-	15	18	
Gate-Source Leakage Current	$V_{GS}=\pm 20V$	I_{GSS}	-	-	± 100	nA
Drain-Source Leakage Current	$V_{DS}=120V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=100KHz$	C_{iss}	-	2640	-	pF
Output Capacitance		C_{oss}	-	330	-	
Reverse Transfer Capacitance		C_{rss}	-	11	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=2\Omega$ $I_D=25A$	$t_{d(on)}$	-	22	-	ns
Rise Time		T_r	-	10	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	85	-	
Fall Time		t_f	-	112	-	
Total Gate Charge	$I_D=25A$ $V_{DS}=50V$ $V_{GS}=10V$	Q_g	-	33	-	nC
Gate-Source Charge		Q_{gs}	-	5.6	-	
Gate-Drain Charge		Q_{gd}	-	7.2	-	
Gate plateau voltage		$V_{plateau}$	-	3.1	-	
Diode forward current	$V_{GS}<V_{th}$	I_S	-	-	50	A
Pulsed Source Current		I_{SP}	-	-	150	A
Diode Forward Voltage	$I_S=12A, V_{GS}=0V$	V_{SD}	-	-	1.3	V
Reverse Recovery Time	$I_S=25A, dI/dt=100A/\mu s$	t_{rr}	-	62.3	-	ns
Reverse Recovery Charge		Q_{rr}	-	135.3	-	nC
Peak reverse recovery current		I_{rrm}	-	3.5	-	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 .The EAS data shows Max. rating .
- 3、 The power dissipation is limited by 175°C junction temperature
- 4、 EAS condition: $T_J=25^\circ C, V_{DD}=50V, V_G=10V, R_G=25\Omega, L=0.5mH, I_{AS}=30A$
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

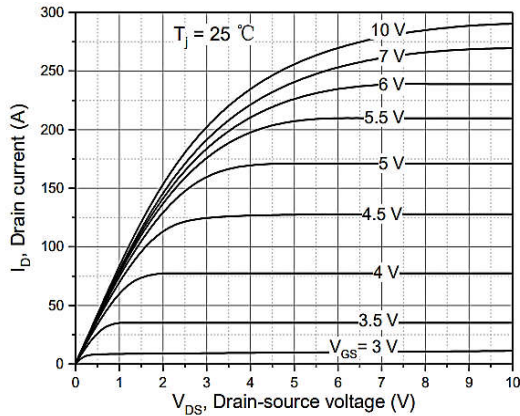


Figure 1. Typ. output characteristics

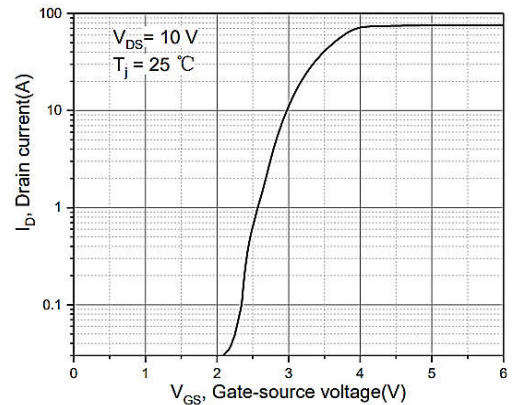


Figure 2. Typ. transfer characteristics

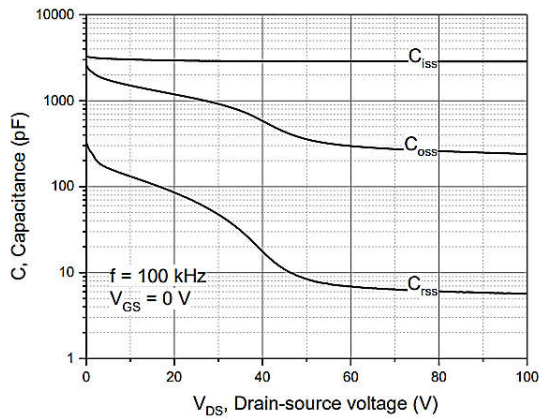


Figure 3. Typ. capacitances

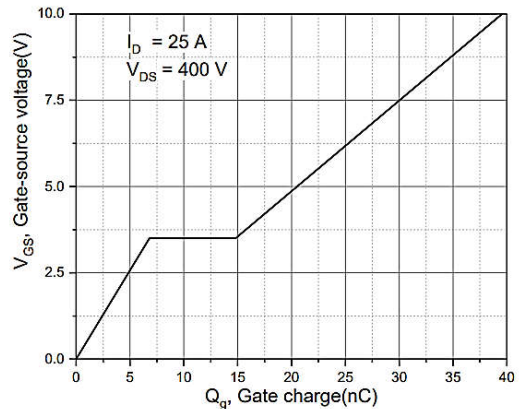


Figure 4. Typ. gate charge

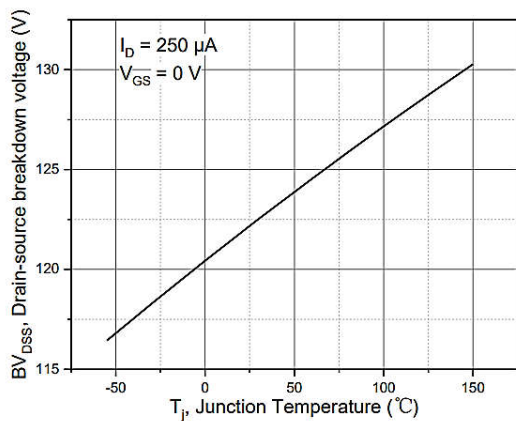


Figure 5. Drain-source breakdown voltage

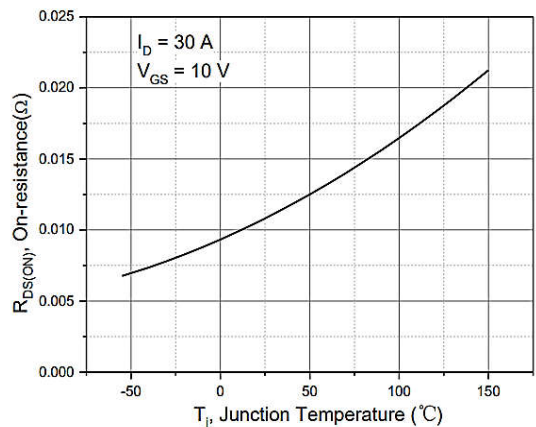


Figure 6. Drain-source on-state resistance

Ratings and Characteristic Curves

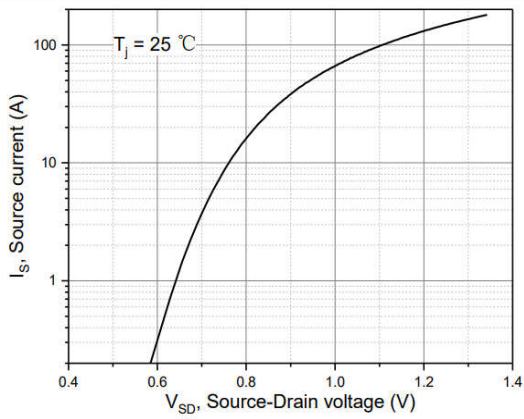


Figure 7. Forward characteristic of body diode

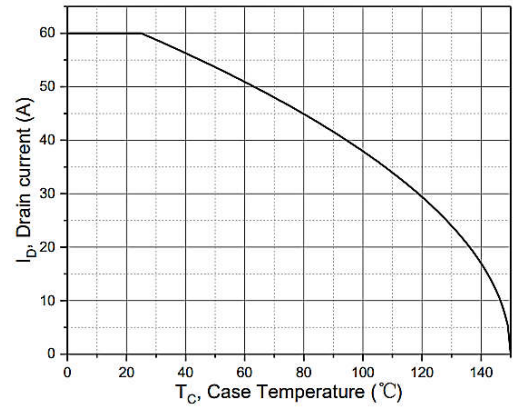


Figure 8. Drain current

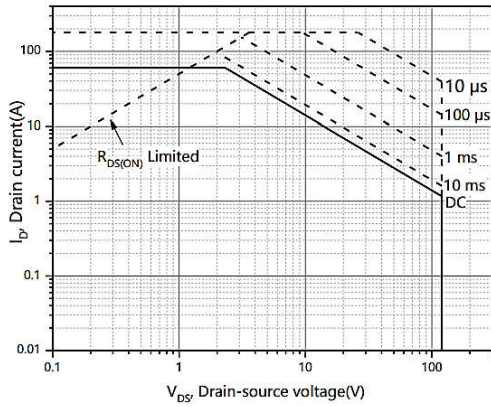


Figure 9. Safe operation area T_C=25 °C

Package Outline Dimensions Millimeters

TO-252

Dim.	Min.	Typ.	Max.
A	2.10	-	2.50
A2	0	-	0.10
B	0.66	-	0.86
B2	5.18	-	5.48
C	0.40	-	0.60
C2	0.44	-	0.58
D	5.90	-	6.30
D1	5.30REF		
E	6.40	-	6.80
E1	4.63	-	-
G	4.47	-	4.67
H	9.50	-	10.70
L	1.09	-	1.21
L2	1.35	-	1.65
V1	-	7°	-
V2	0°	-	6°
All Dimensions in millimeter			

