

100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

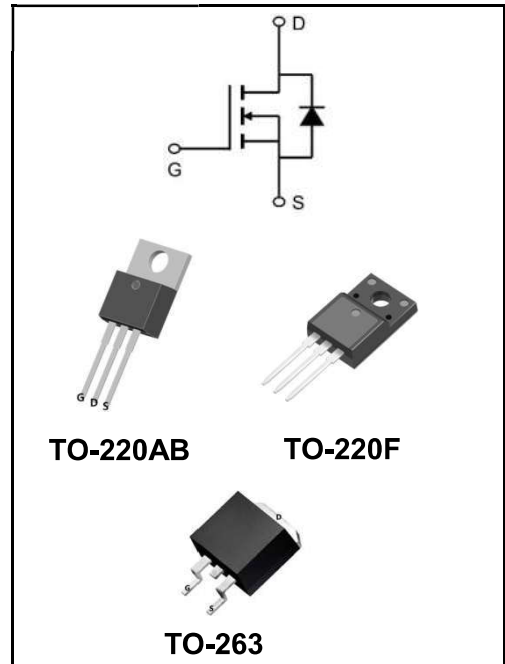
I_D	60A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 12mΩ (Type:9 mΩ)

Features

◆ YFW-SGT technology

Application

- ◆ Isolated DC
- ◆ Motor control
- ◆ Synchronous-rectification



Product Specification Classification

Part Number	Package	Marking	Pack
YFWG60N10AT	TO-220AB	YFW 60N10AT XXXXX	1000PCS/Box
YFWG60N10AF	TO-220F	YFW 60N10AF XXXXX	1000PCS/Box
YFWG60N10AS	TO-263	YFW 60N10AS XXXXX	800PCS/Reel

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 ¹⁾ , T _c =25 °C	I _D	60	A
Pulsed drain current ²⁾ , T _c =25 °C	I _{DM}	180	A
Power dissipation ³⁾ , T _c =25 °C	P _D	107	W
Single Pulse Avalanche Energy ⁴⁾	E _{AS}	183.8	mJ
Operation and storage temperature	T _{STG} , T _J	-55 to +150	°C
Thermal Resistance, Junction-case	R _{θJC}	1.17	°C/W
Thermal Resistance, Junction-ambient ⁴⁾	R _{θJA}	62	°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}	100	111	-	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	$V_{GS}=10V, I_D=20A$	$R_{DS(on)}$	-	9.0	12.0	mΩ
	$V_{GS}=4.5V, I_D=12A$		-	12	14.0	
Gate-Source Leakage Current	$V_{GS}=\pm 20V$	I_{GSS}	-	-	± 100	nA
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate resistance	f= 1 MHz, Open drain	R_G		5.5		Ω
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ f=100KHz	C_{iss}	-	1998.1	-	pF
Output Capacitance		C_{oss}	-	321.7	-	
Reverse Transfer Capacitance		C_{rss}	-	7.1	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=2\Omega$ $I_D=25A$	$t_{d(on)}$	-	22.1	-	ns
Rise Time		T_r	-	5.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	44	-	
Fall Time		t_f	-	8.4	-	
Total Gate Charge	$I_D=25A$ $V_{DS}=50V$ $V_{GS}=10V$	Q_g	-	28.9	-	nC
Gate-Source Charge		Q_{gs}	-	6	-	
Gate-Drain Charge		Q_{gd}	-	6.8	-	
Gate plateau voltage		$V_{plateau}$	-	3.7	-	
Diode forward current	$V_{GS}<V_{th}$	I_S	-	-	60	A
Pulsed Source Current		I_{SP}	-	-	180	
Diode Forward Voltage	$I_S=20A, V_{GS}=0V$	V_{SD}	-	-	1.3	V
Reverse Recovery Time	$I_S=25A, dI/dt=100A/\mu s$	t_{rr}	-	102.9	-	ns
Reverse Recovery Charge		Q_{rr}	-	379	-	nC
Peak reverse recovery current		I_{rrm}	-	6.4	-	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 $V_{DD}=30V, V_{GS}=10V, L=0.3mH$, starting $T_j=25^\circ C$
- 4、 The power dissipation is limited by $150^\circ C$ 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

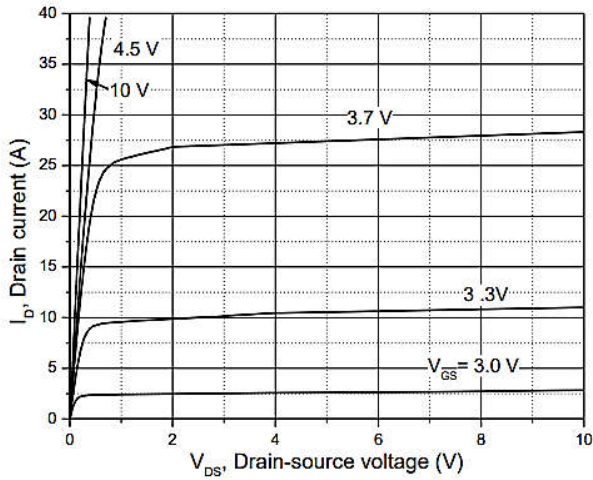


Figure 1. Typ. output characteristics

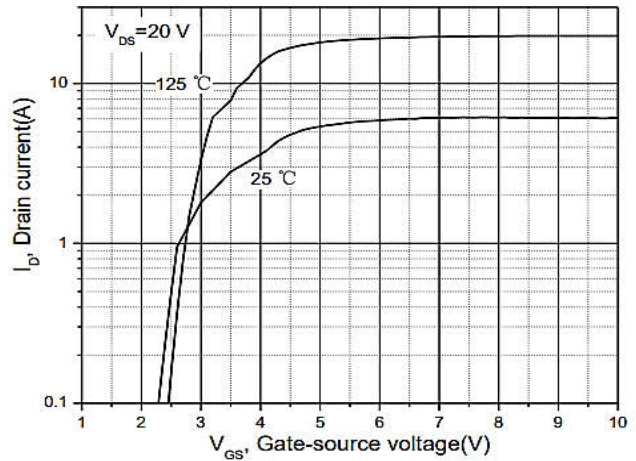


Figure 2. Typ. transfer characteristics

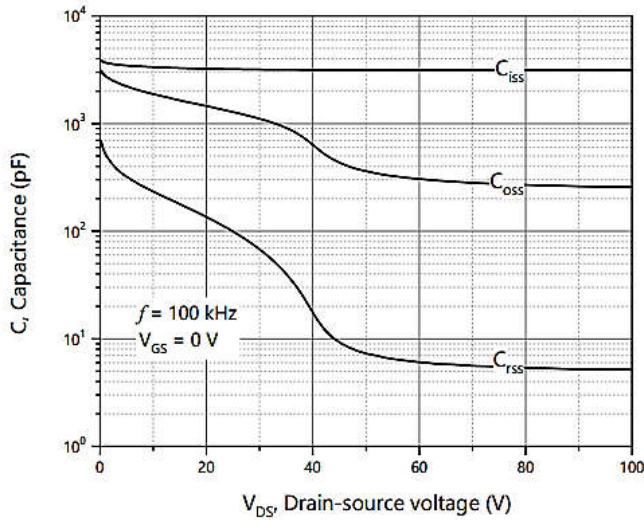


Figure 3. Typ. capacitances

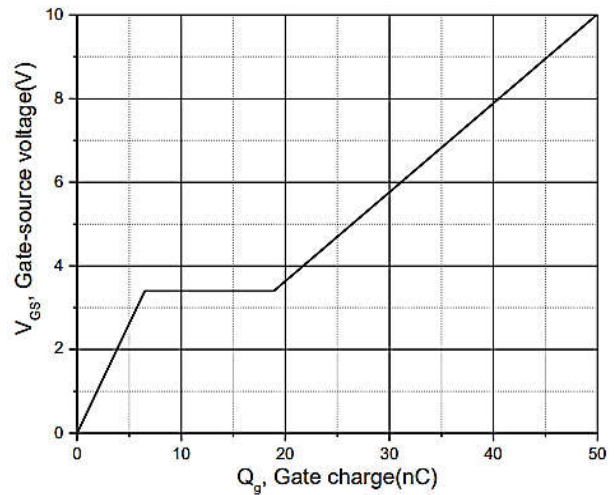


Figure 4. Typ. gate charge

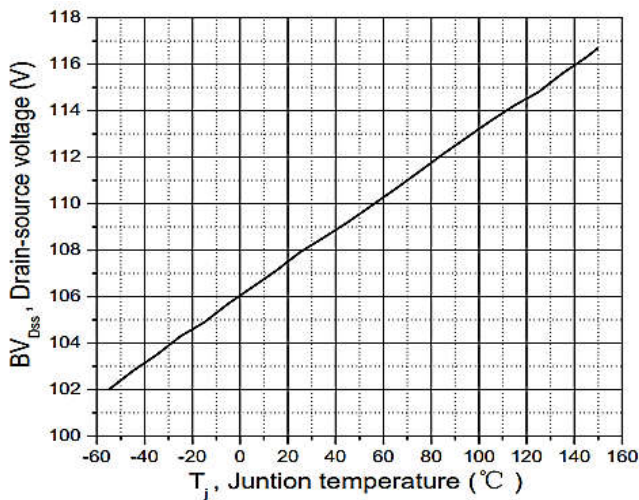


Figure 5. Drain-source breakdown voltage

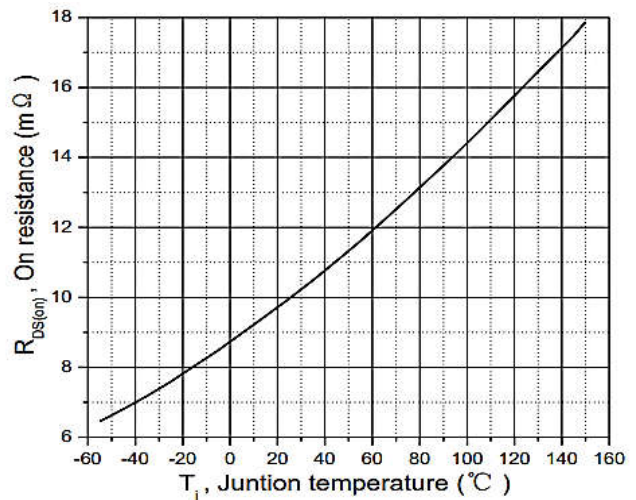


Figure 6. Drain-source on-state resistance

Ratings and Characteristic Curves

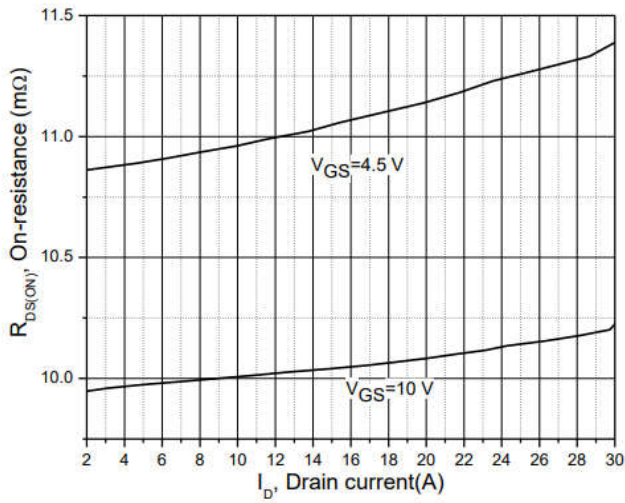


Figure 7. Drain-source on-state resistance

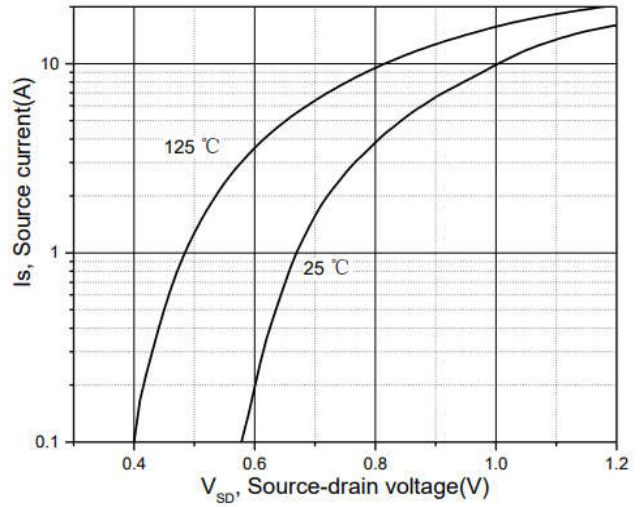


Figure 8. Forward characteristic of body diode

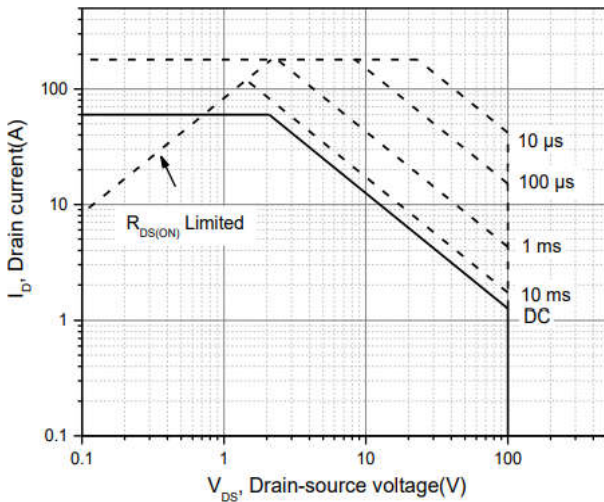


Figure 9. Safe operation area $T_c=25\text{ °C}$

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

<p>The image shows a technical drawing of a TO-263 package. The left view is a top-down perspective showing dimensions A (total width), B (width of the top flange), C (height of the top flange), D (height of the main body), F (height of the mounting tab), G (width of the lead), H (height of the lead), and I (width of the lead). The right view is a side profile showing dimensions J (height of the main body), K (width of the top flange), L (width of the mounting tab), E (height of the lead), M (width of the lead), N (width of the lead), and O (width of the lead).</p>	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			