

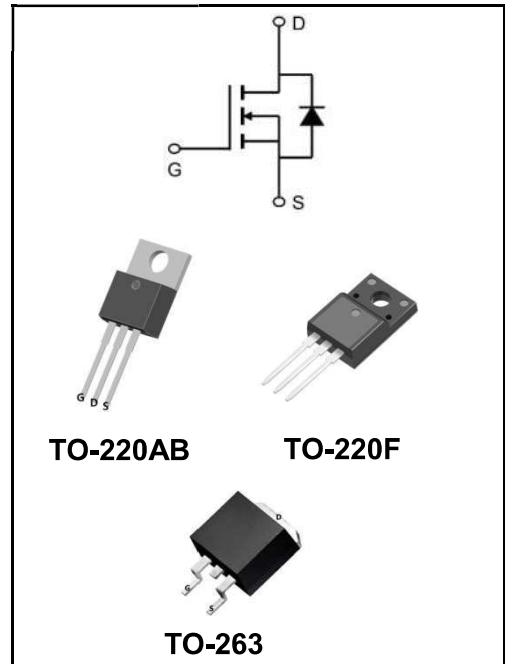
150V N-CHANNEL ENHANCEMENT MODE MOSFET
MAIN CHARACTERISTICS

I_D	120A
V_{DSS}	150V
R_{DS(on)-typ(@V_{GS}=10V)}	< 12mΩ (Type:9.5 mΩ)

Features

 ♦ **YFW-SGT technology**
Application

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


Product Specification Classification

Part Number	Package	Marking	Pack
YFWG120N15AT	TO-220AB	YFW 120N15AT XXXXX	1000PCS/Box
YFWG120N15AF	TO-220F	YFW 120N15AF XXXXX	1000PCS/Box
YFWG120N15AS	TO-263	YFW 120N15AS XXXXX	800PCS/Reel

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	150	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V _{GS} @ 10V @T _c =25°C	I_D	120	A
Continuous Drain Current, V _{GS} @ 10V @T _c =100°C	I_D	80	A
Pulsed Drain Current	I_{DM}	360	A
Single Pulse Avalanche Energy	E_{AS}	406	mJ
Avalanche Current	I_{AS}	43	A
Total Power Dissipation ⁴ @T _c =25°C	P_D	160	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}	0.78	°C/W
Thermal Resistance Junction-Case	R_{θJC}	62	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	VDSS	150	168	-	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)	2.5	3.5	4.5	V
Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=20A$	RDS(ON)	-	9.5	12	mΩ
Input Capacitance	$V_{GS}=0V$ $V_{DS}=25V$ $f=100KHz$	Ciss	-	5469	-	μF
Output Capacitance		Coss	-	1702	-	
Reverse Transfer Capacitance		Crss	-	186	-	
Gate Resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	Rg	-	1.7	-	nC
Total Gate Charge	$V_{GS}=10V$ $V_{DS}=80V$ $I_D=40A$	Qg	-	65.5	-	
Gate-Source Charge		Qgs	-	26	-	
Gate-Drain Charge		Qgd	-	17.2	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=80V$ $R_G=2\Omega$ $I_D=40A$	td(on)	-	36	-	ns
Rise Time		Tr	-	95	-	
Turn-Off Delay Time		td(OFF)	-	56	-	
Fall Time		tf	-	11	-	
Diode Forward Voltage ²	$I_F=20A, V_{GS}=0V$	VSD	-	-	1.2	V
Continuous Source Current ^{1,5}	$V_G=V_D=0V, \text{Force Current}$	IS	-	-	120	A
Body Diode Reverse Recovery Time	$V_R=80V, I_F=40A, di/dt=100A/\mu s$	trr	-	76	-	ns
Body Diode Reverse Recovery Charge		Qrr	-	285	-	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 $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=35A$
- 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

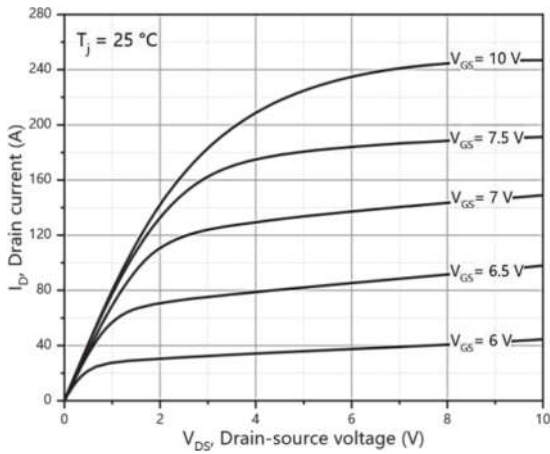


Figure 1. Type. output characteristics

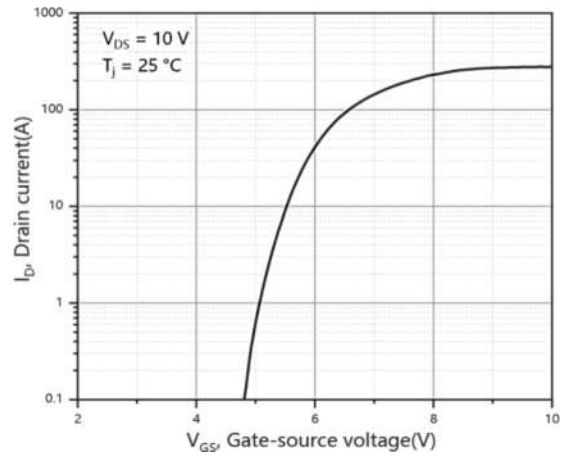


Figure 2. Type. transfer characteristics

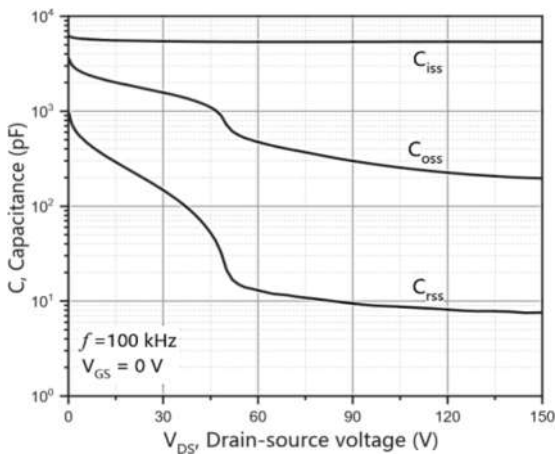


Figure 3. Type. capacitances

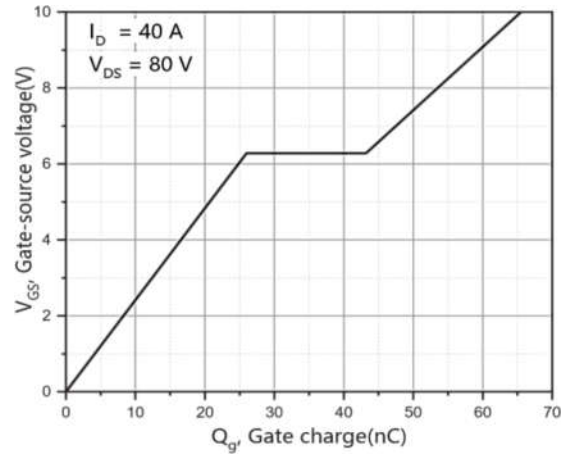


Figure 4. Type. gate charge

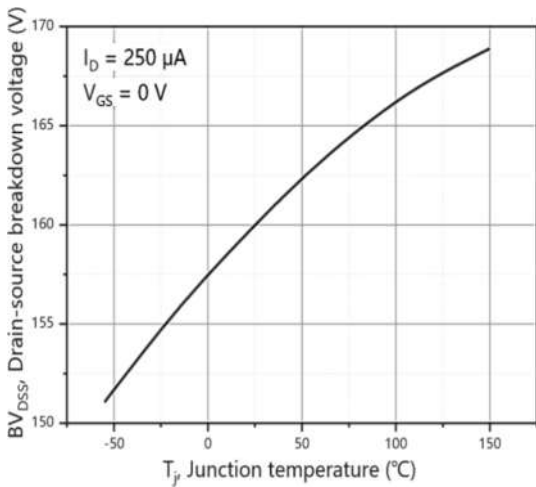


Figure 5. Drain-source breakdown voltage

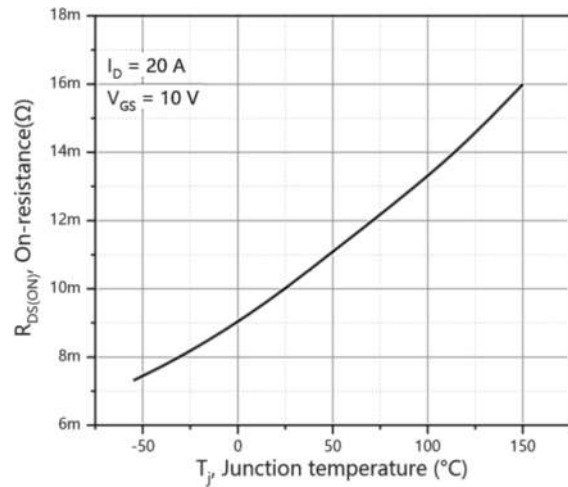


Figure 6. Drain-source on-state resistance

Ratings and Characteristic Curves

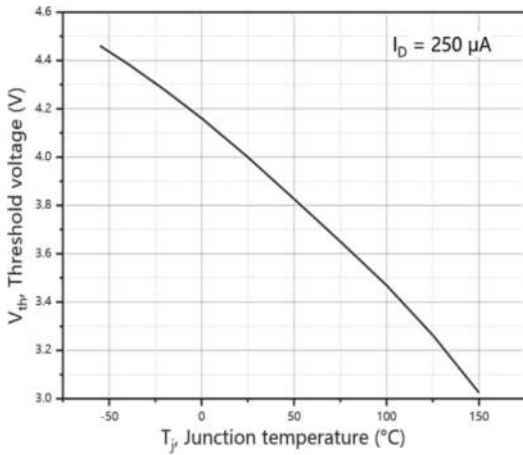


Figure 7. Threshold voltage

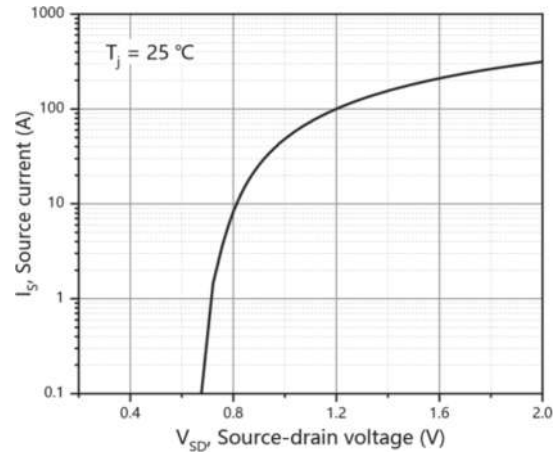


Figure 8. Forward characteristic of body diode

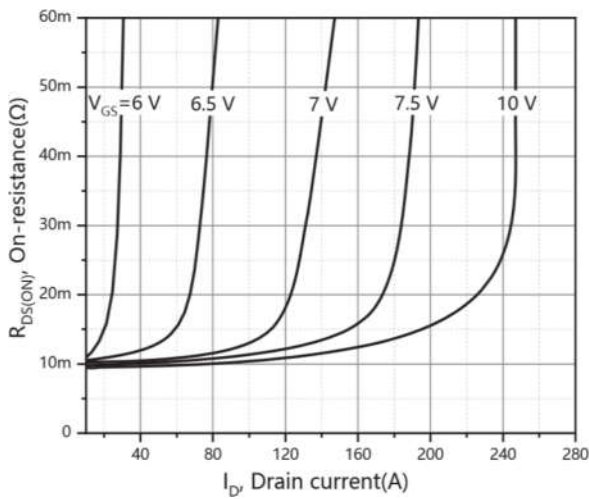


Figure 9. Drain-source on-state resistance

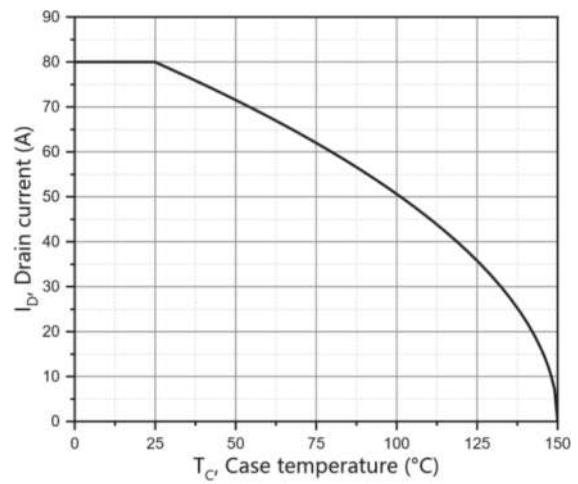


Figure 10. Drain current

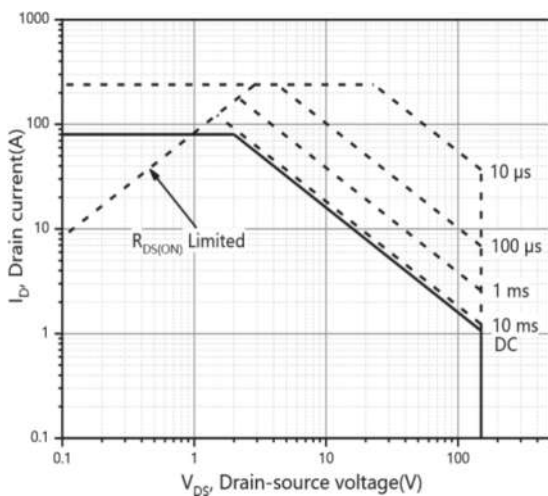


Figure 11. Safe operation area T_C=25°C

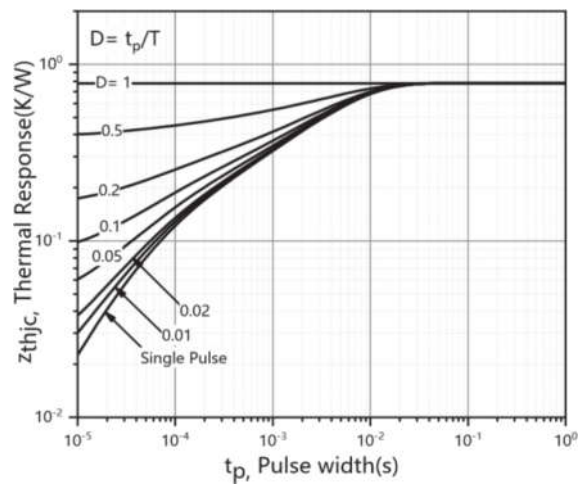


Figure 12. Max. transient thermal impedance

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		