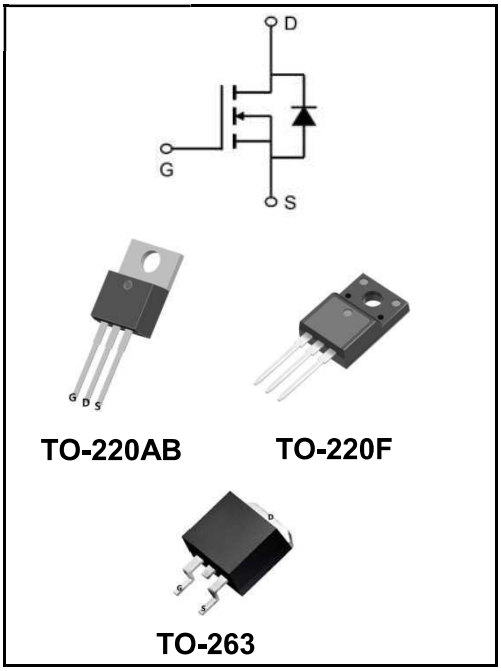
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	160A
V_{DSS}	100V
R_{DSON}-typ(@V_{GS}=10V)	< 4.2mΩ(Type:3.6 mΩ)



Features

♦YFW-SGT technology

Application

♦Isolated DC
♦Motor control
♦Synchronous-rectification

Product Specification Classification

Part Number	Package	Marking	Pack
YFWG160N10AT	TO-220AB	YFW 160N10AT XXXXX	1000PCS/Box
YFWG160N10AF	TO-220F	YFW 160N10AF XXXXX	1000PCS/Box
YFWG160N10AS	TO-263	YFW 160N10AS XXXXX	800PCS/Reel

Maximum Ratings at Tc=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_A=25℃	I_D	160	A
Continuous Drain Current[1] @T_A=70℃	I_D	110	A
Pulsed drain current[2]	I_{DM}	580	A
Single Pulse Avalanche Energy[3]	E_{AS}	320	mJ
Avalanche Current	I_{AS}	40	A
Total Power dissipation[4] @T_A=25℃	P_D	208	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient [1]	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction-case[1]	$R_{\theta JC}$	0.6	°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=250uA	**V(BR)DSS**	100	107	-	**V**
Gate-body Leakage current	V_{GS}=±20V ,V_{DS}=0V ,	**I_{GSS}**	-	-	±100	**nA**
Zero Gate Voltage Drain Current	V_{DS}=100V , V_{GS}=0V , T_J=25℃	**I_{DSS}**	-	-	1	**μA**
	V_{DS}=100V , V_{GS}=0V , T_J=100℃		-	-	100	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	**$V_{GS(th)}$**	1.2	1.8	2.5	**V**
Drain-Source On-Resistance[4]	V_{GS}=10V, I_D=20A	**$R_{DS(ON)}$**	-	3.6	4.2	**mΩ**
	V_{GS}=4.5V, I_D=15A		-	5.2	6.7	
Forward Transconductance[4]	V_{DS}=5V, I_D=20A	**g_{FS}**	-	70	-	**S**
Input Capacitance	V_{DS}=50V V_{GS}=0V f=1MHz	**C_{iss}**	-	6095	-	**pF**
Output Capacitance		**C_{oss}**	-	722	-	
Reverse Transfer Capacitance		**C_{rss}**	-	22	-	
Gate Resistance	f=1MHz	**R_g**	-	1.3	-	**Ω**
Total Gate Charge	V_{DS}=50V V_{GS}=10V I_D=20A	**Q_g**	-	111.2	-	**nC**
Gate-Source Charge		**Q_{gs}**	-	17.5	-	
Gate-Drain Charge		**Q_{gd}**	-	30.2	-	
Turn-on delay time	V_{DD}=50V V_{GS}=10V R_G=3Ω I_D=20A	**$t_{d(on)}$**	-	22.2	-	**ns**
Rise Time		**T_r**	-	37.8	-	
Turn-Off Delay Time		**$t_{d(OFF)}$**	-	95.2	-	
Fall Time		**t_f**	-	35.6	-	
Body Diode Reverse Recovery Time	I_F=20A , dI/dt=100A/μs	**t_{rr}**	-	59.4	-	**ns**
Body Diode Reverse Recovery Charge		**Q_{rr}**	-	91.8	-	**nC**
Diode Forward Voltage [2]	V_{GS}=0V , I_S=20A	**V_{SD}**	-	-	1.2	**V**
Continuous Source Current T_C=25℃		**I_S**	-	-	120	**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 ≦ 300us , duty cycle ≦ 2%
3、The EAS data shows Max. rating . The test condition is VDD=72V,VGS=10V, L=0.1mH IAS=40A
4、The power dissipation is limited by 150℃ 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

Typical Characteristics

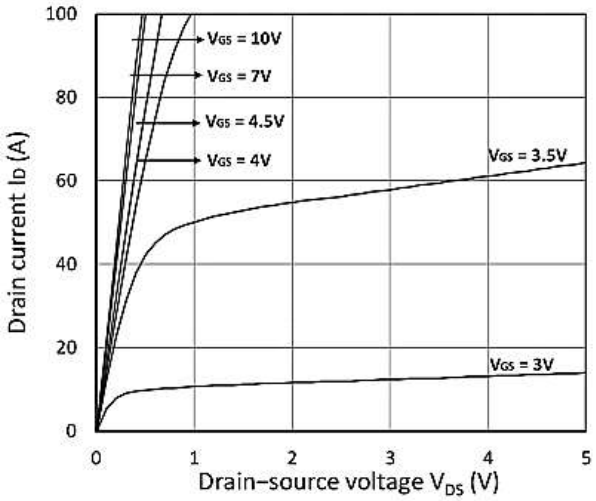


Figure 1. Output Characteristics

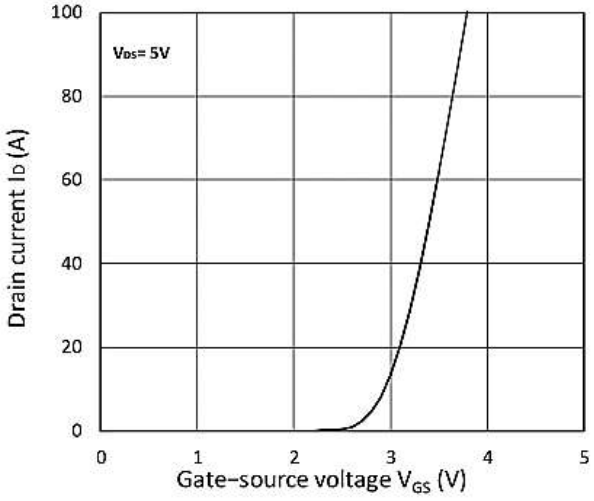


Figure 2. Transfer Characteristics

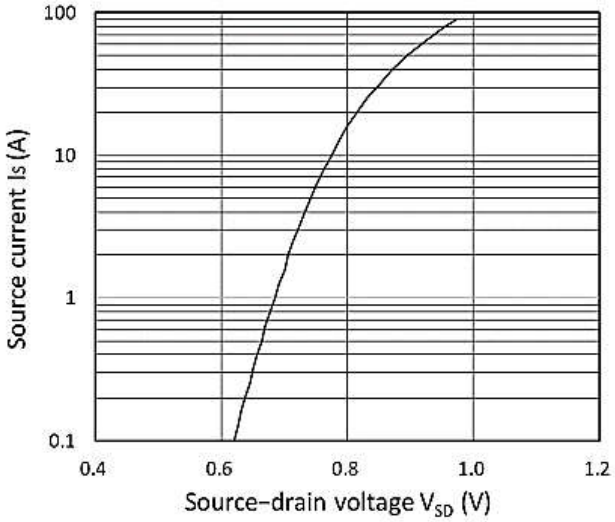


Figure 3. Forward Characteristics of Reverse

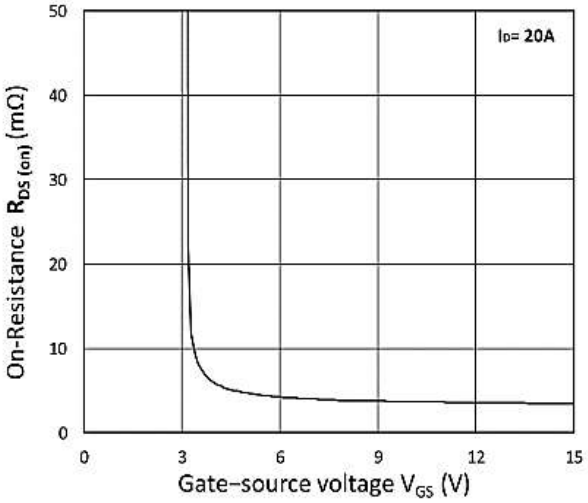


Figure 4. RDS(ON) vs. VGS

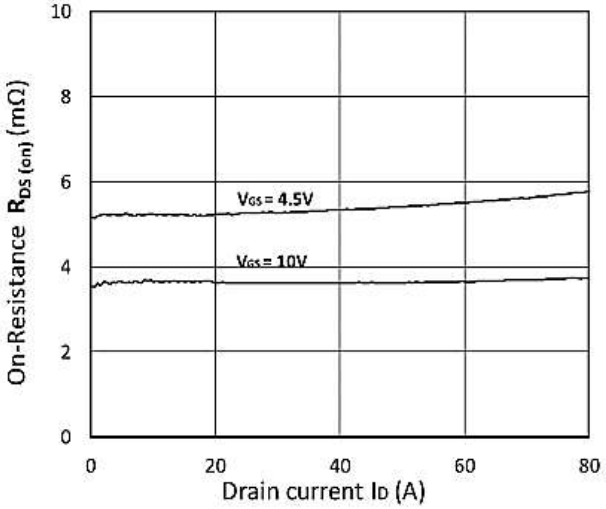


Figure 5. RDS(ON) vs. ID

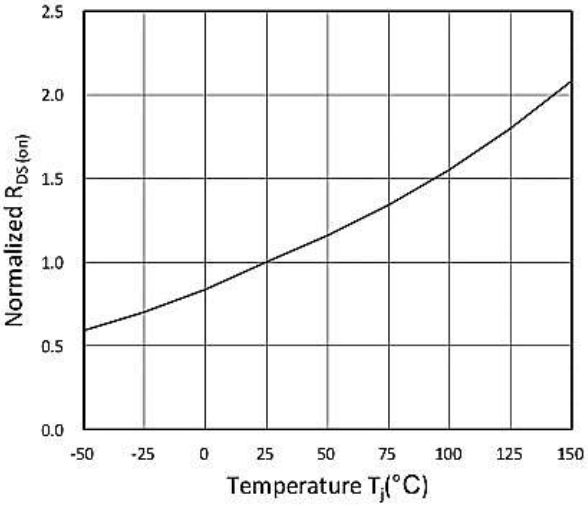


Figure 6. Normalized RDS(on) vs. Temperature

Ratings and Characteristic Curves

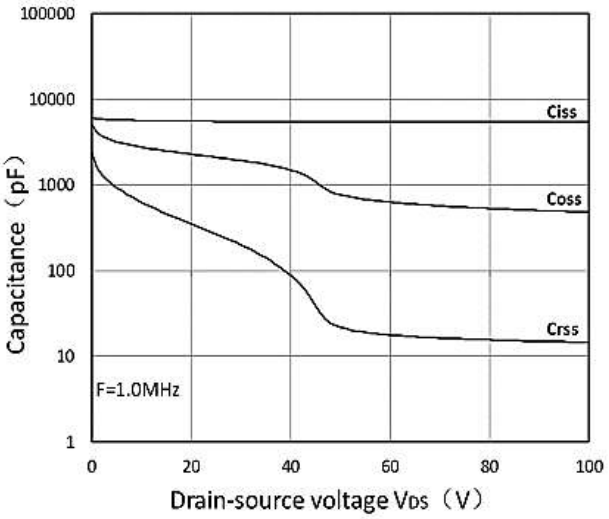


Figure 7. Capacitance Characteristics

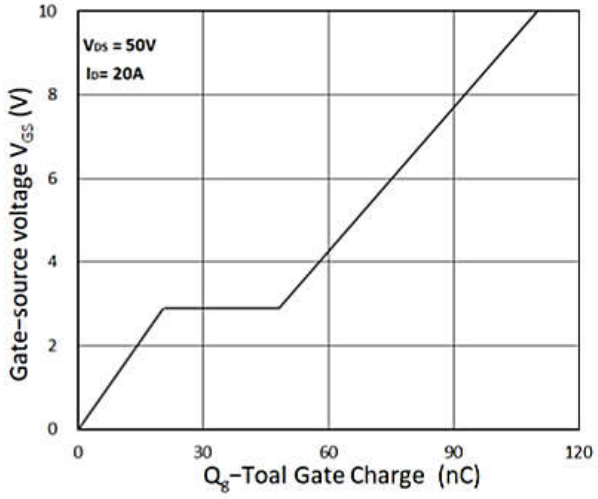


Figure 8. Gate Charge Characteristics

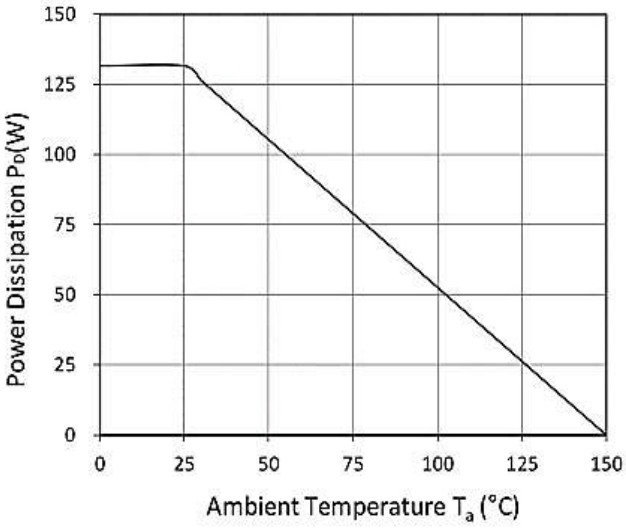


Figure 9. Power Dissipation

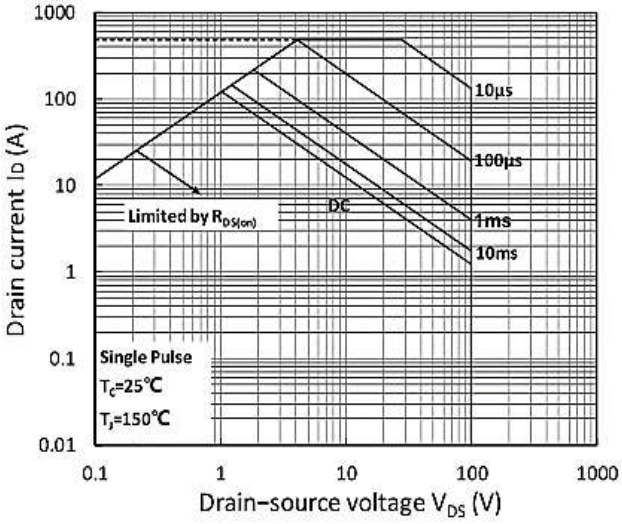


Figure10. Safe Operating Area

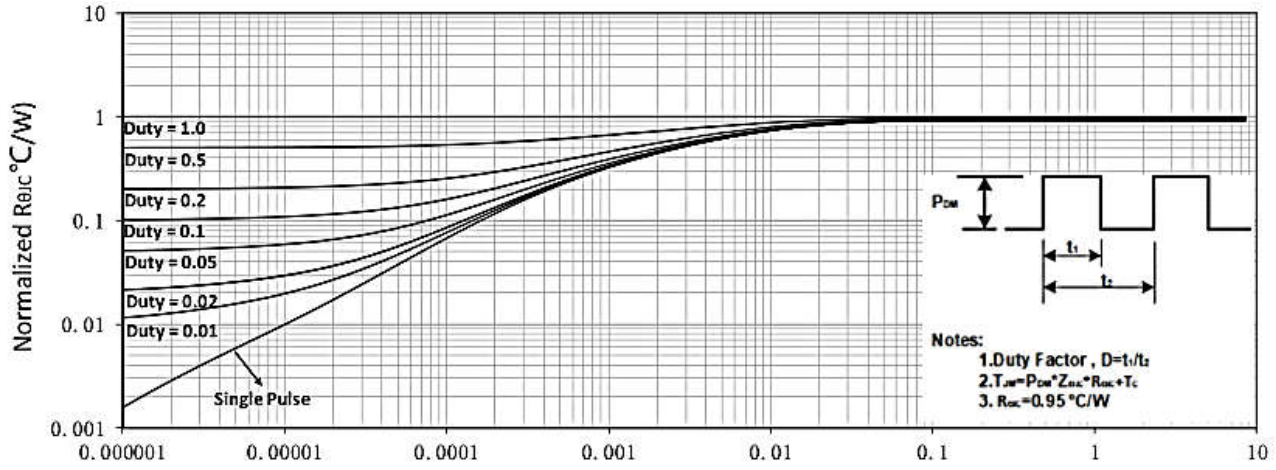
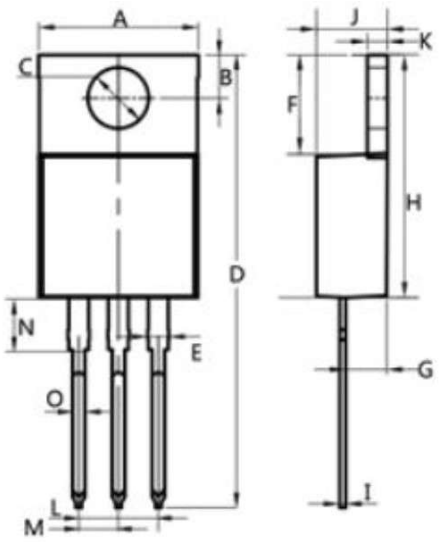


Figure 11. Normalized Maximum Transient Thermal Impedance

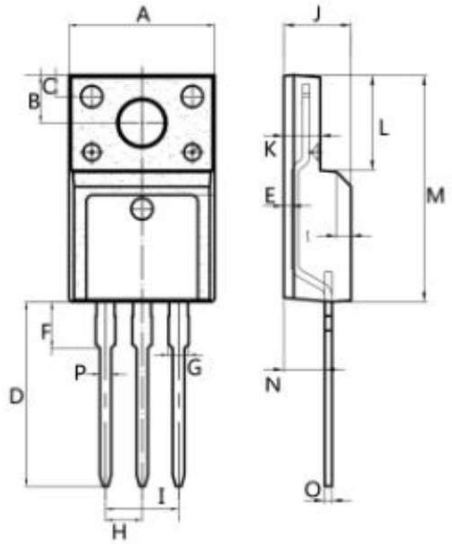
Package Outline Dimensions Millimeters

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		

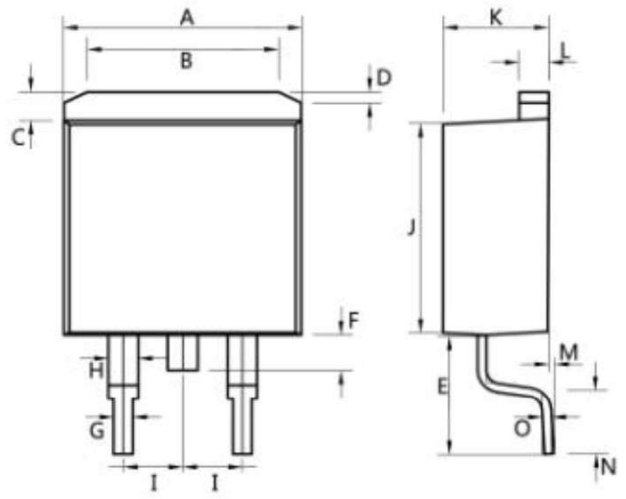
TO-220F



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		