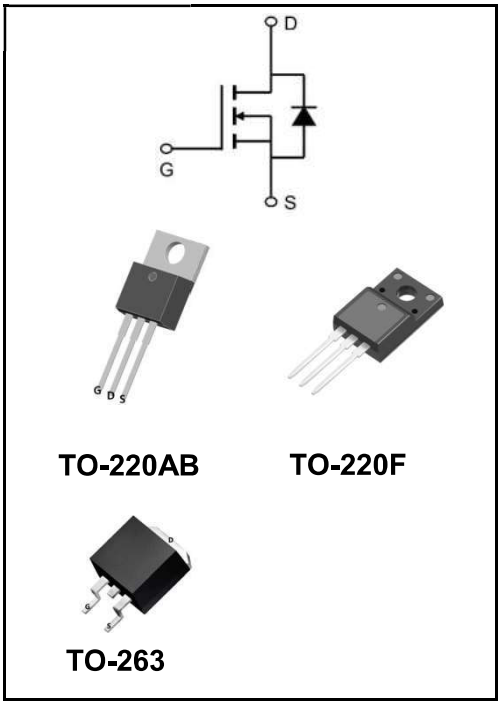
60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	90A
V_{DSS}	60V
R_{DSON}-typ(@V_{GS}=10V)	< 7.0mΩ(Type:5.8 mΩ)



Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW90N06AT	TO-220AB	YFW 90N06AT XXXXX	1000PCS/box
YFW90N06AF	TO-220F	YFW 90N06AF XXXXX	1000PCS/box
YFW90N06AS	TO-263	YFW 90N06AS XXXXX	800PCS/Reel

Maximum Ratings at Tc=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)]	I_D	90	A
Pulsed drain current[2)]	I_{DM}	320	A
Diode forward current	I_S	37	A
Pulsed source current	I_{SP}	210	A
Power dissipation	P_D	108	W
Single pulsed avalanche energy[3)]	E_{AS}	205.4	mJ
Operation and storage temperature	T_{STG} ,T_J	-55 to +150	°C
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.4	°C/W
Thermal Resistance, Junction-to-Ambient [4)]	$R_{\theta JA}$	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=250uA	V(BR)DSS	60	64	-	V
Zero Gate Voltage Drain Current	V_{DS}=60V , V_{GS}=0V	I_{DSS}	-	-	1.0	μA
Gate to Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	2.0	3.0	4.0	V
Static Drain-Source on-Resistance note	V_{GS}=10V, I_D=30A	$R_{DS(ON)}$	-	5.8	7.0	mΩ
Input Capacitance	V_{DS}=30V V_{GS}=0V f=1.0MHz	C_{iss}	-	4136	-	pF
Output Capacitance		C_{oss}	-	286	-	
Reverse Transfer Capacitance		C_{rss}	-	257	-	
Total Gate Charge	V_{DS}=30V I_D=30A V_{GS}=10V	Q_g	-	90	-	nC
Gate-Source Charge		Q_{gs}	-	9	-	
Gate-Drain(“Miller”) Charge		Q_{gd}	-	18	-	
Turn-on delay time	V_{DS}=30V ,I_D=30A R_G=1.8Ω, V_{GS}=10V	$t_{d(on)}$	-	9	-	ns
Turn-on Rise Time		T_r	-	7	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	40	-	
Turn-Off Fall Time		t_f	-	15	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	90	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}		-	320	A
Drain to Source Diode Forward Voltage	V_{GS}=0V , I_S=30A	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	I_S=30A , dI/dt=100A/μs	t_{rr}	-	33	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	46	-	nC

Note :

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 .The EAS data shows Max. rating .

3、The test cond≦ 300us duty cycle ≦ 2%, duty cycle ition is TJ =25℃, VDD =35V, VG =10V, R G =25Ω, L=0.5mH, IAS =21A

4、The power dissipation is limited by 175℃ junction temperature

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

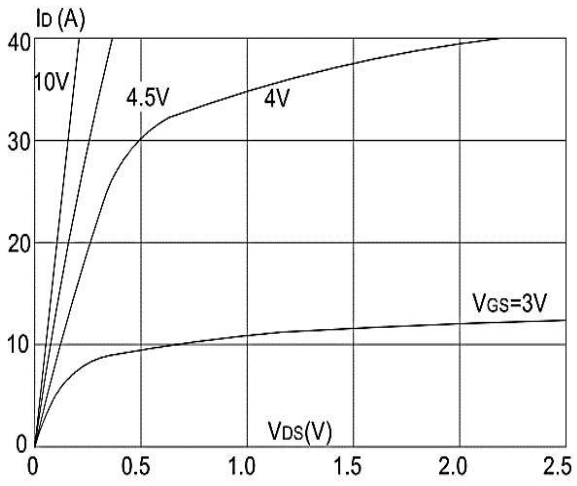


Figure1: Output Characteristics

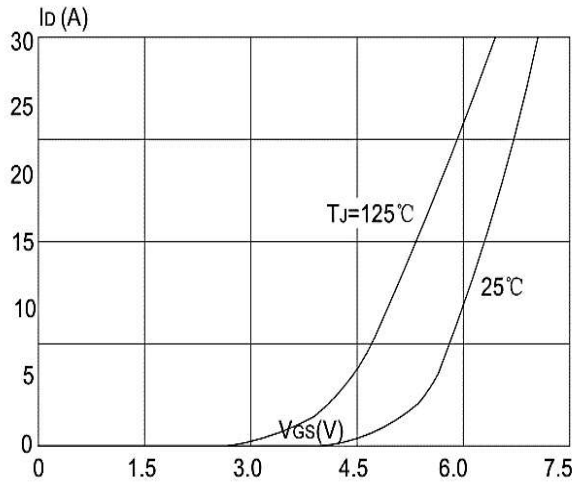


Figure 2: Typical Transfer Characteristics

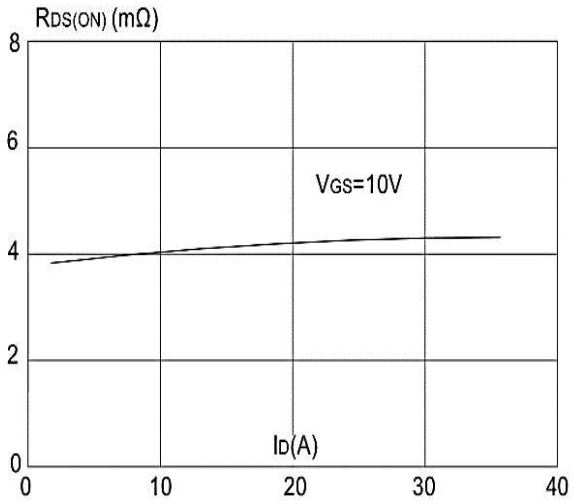


Figure 3:On-resistance vs. Drain Current

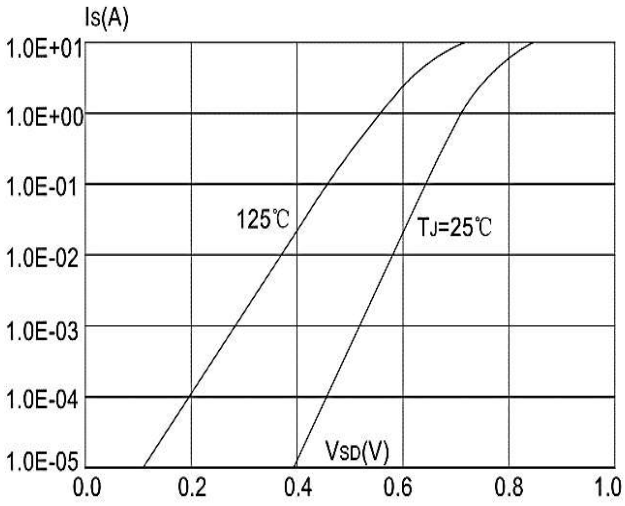


Figure 4: Body Diode Characteristics

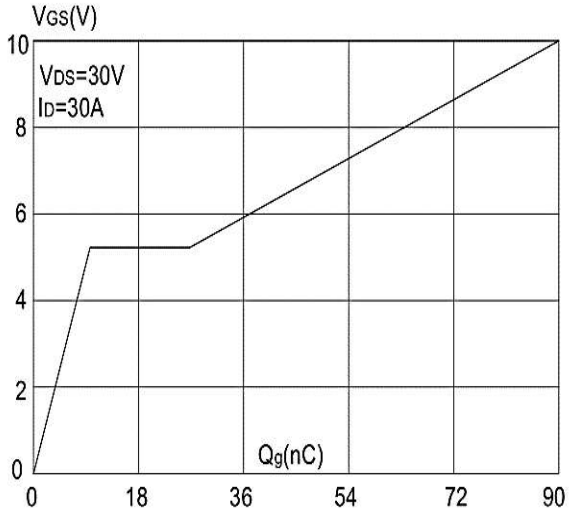


Figure 5: Gate Charge Characteristics

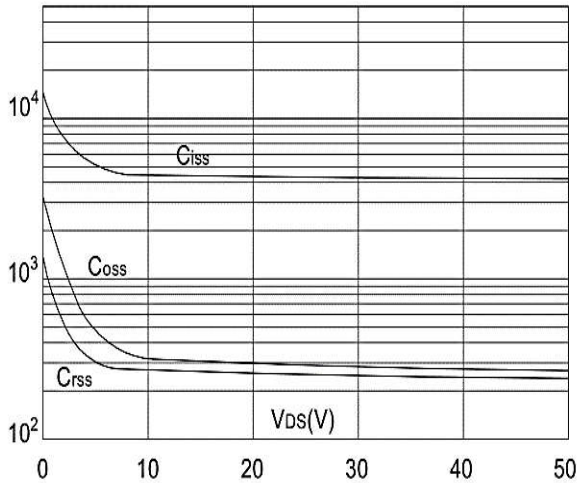


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

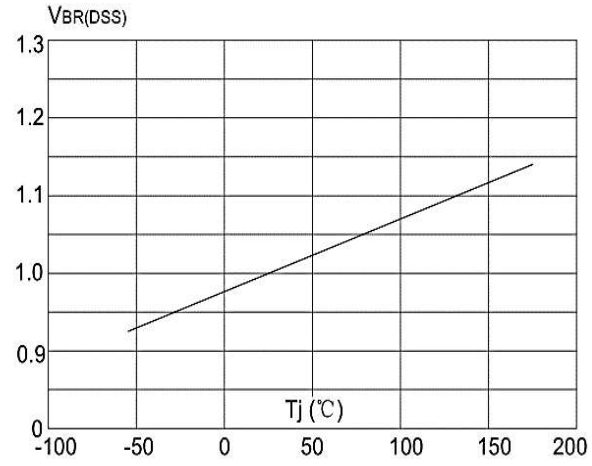


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

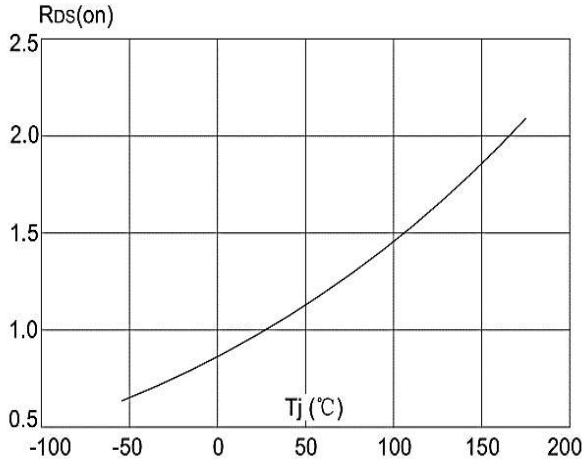


Figure 8: Normalized on Resistance vs. Junction Temperature

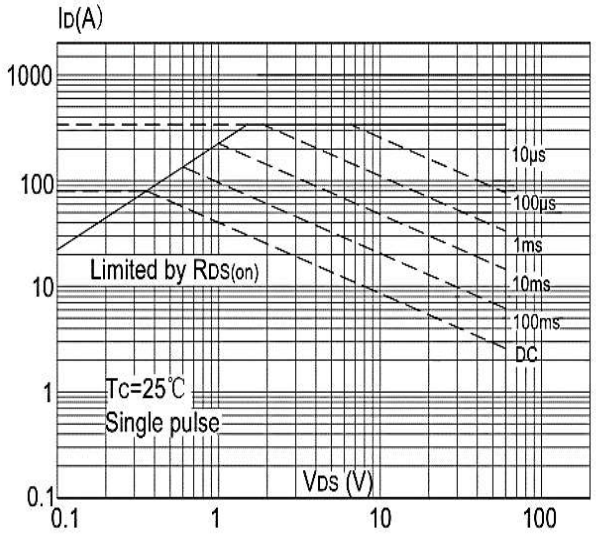


Figure 9: Maximum Safe Operating Area

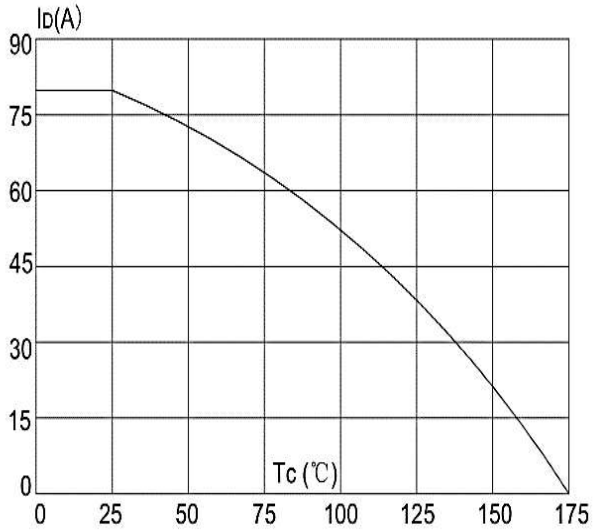


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

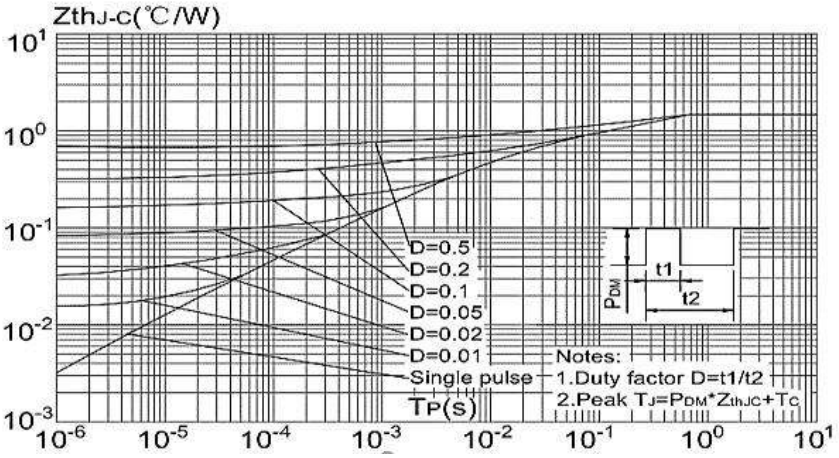
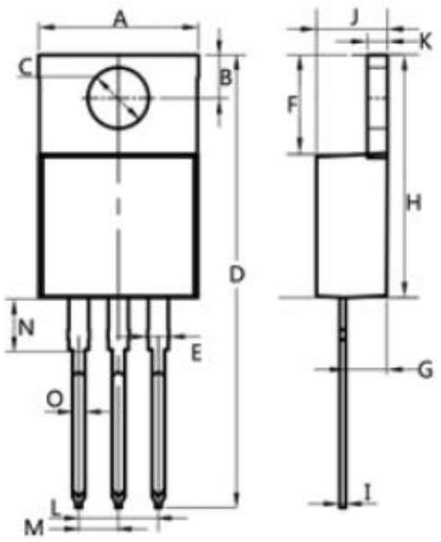


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

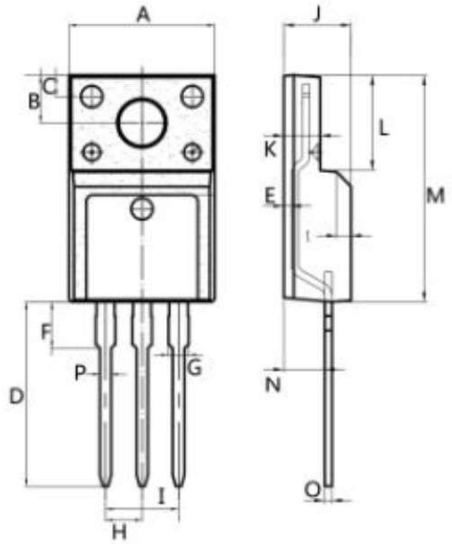
Package Outline Dimensions Millimeters

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		

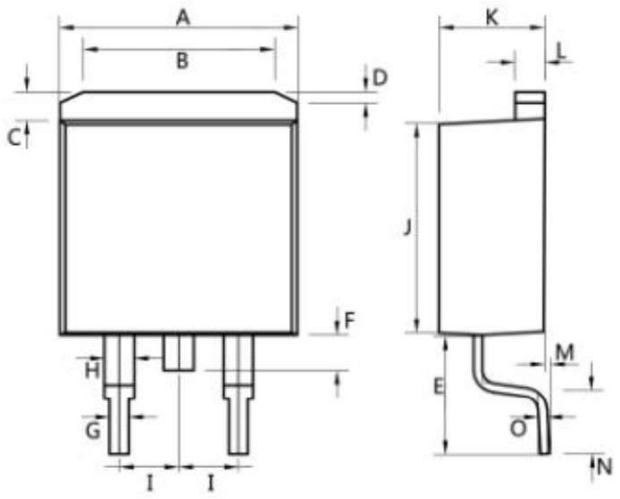
TO-220F



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		