

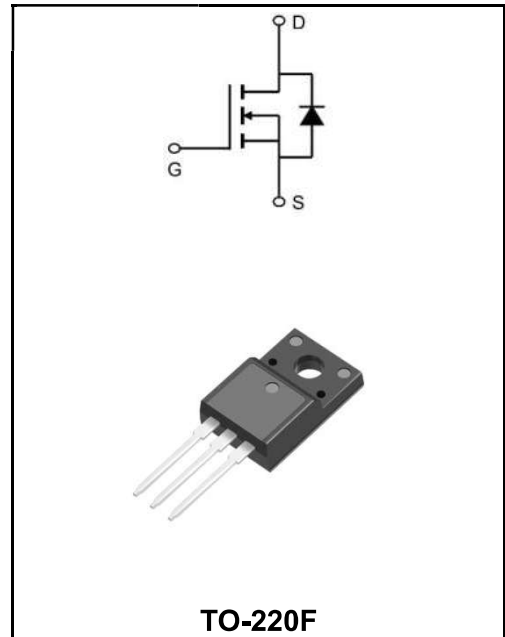
60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	90A
V_{DSS}	60V
R_{DS(on)-typ(@V_{GS}=10V)}	< 7.5mΩ (Type:5.8 mΩ)

Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply



Product Specification Classification

Part Number	Package	Marking	Pack
YFW90N06AF	TO-220F	YFW 90N06AF XXXXX	1000PCS/Tape

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 Pulse 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_{θJC}	1.4	°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	$V_{GS}=0V, I_D=250\mu A$	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	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	2	3	4	V
Static Drain-Source on-Resistance	$V_{GS}=10V, I_D=30A$	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	$V_{DS}=30V$ $V_{GS}=10V$ $I_D=30A$	Q_g	-	90	-	nC
Gate-Source Charge		Q_{gs}	-	9	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	18	-	
Turn-on delay time	$V_{DS}=30V$ $I_D=30A$ $R_G=1.8\Omega$ $V_{GS}=10V$	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	-	-	80	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	$I_F=30A, di/dt=100A/\mu s$	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 T_J =25°C, V_{DD} =35V, V_G =10V, R_G =25Ω, L=0.5mH, I_{AS} =21A
- 4、 The power dissipation is limited by 175°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

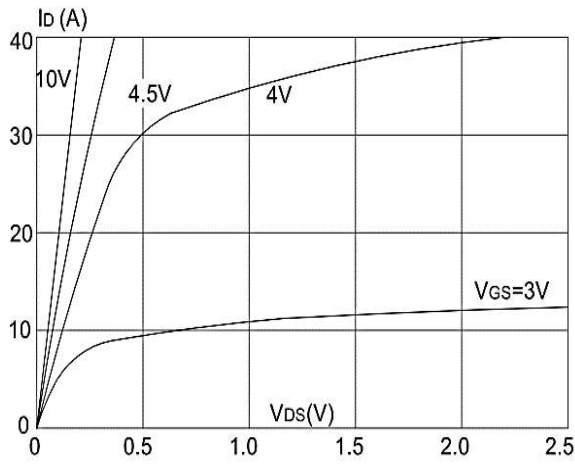


Figure 1: Output Characteristics

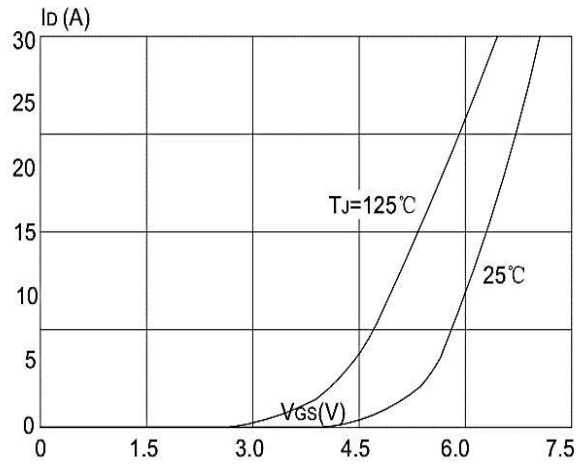


Figure 2: Typical Transfer Characteristics

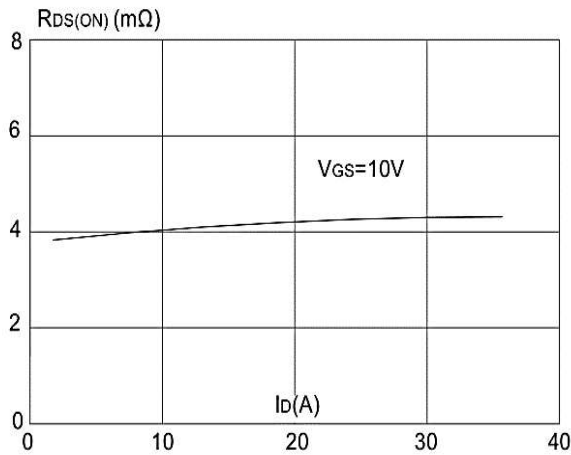


Figure 3: On-resistance vs. Drain Current

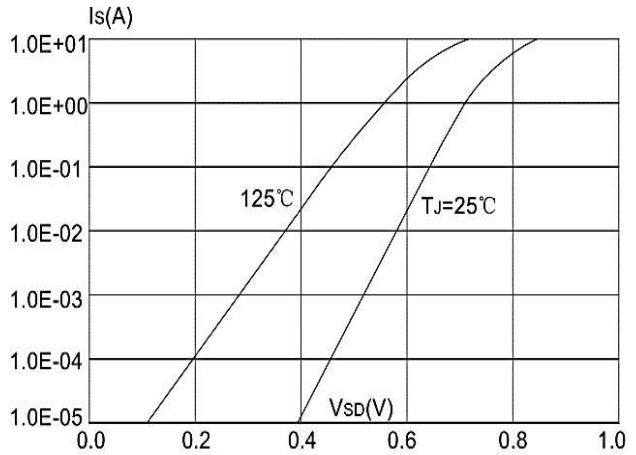


Figure 4: Body Diode Characteristics

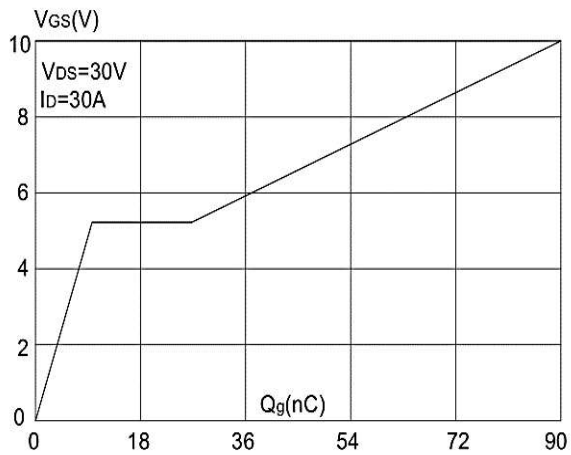


Figure 5: Gate Charge Characteristics

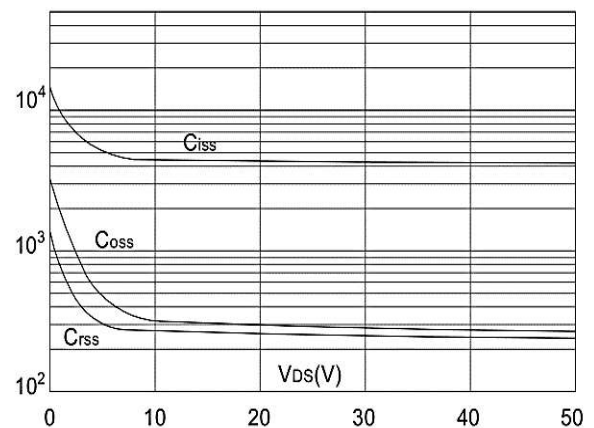


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

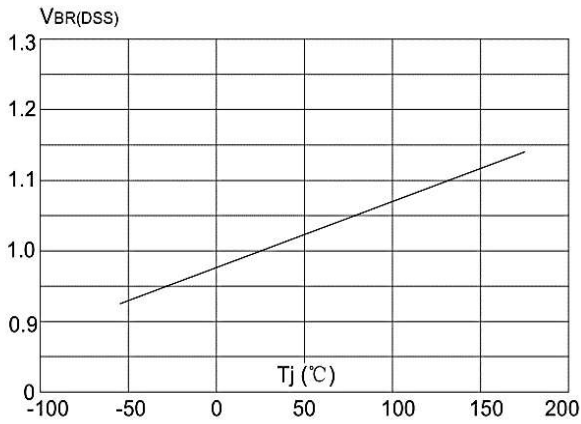


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

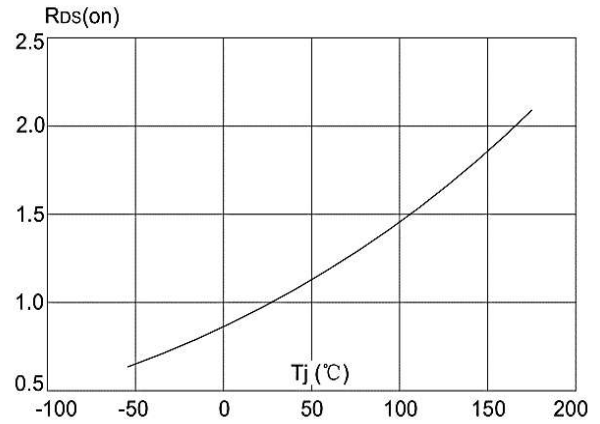


Figure 8: Normalized on Resistance vs. Junction Temperature

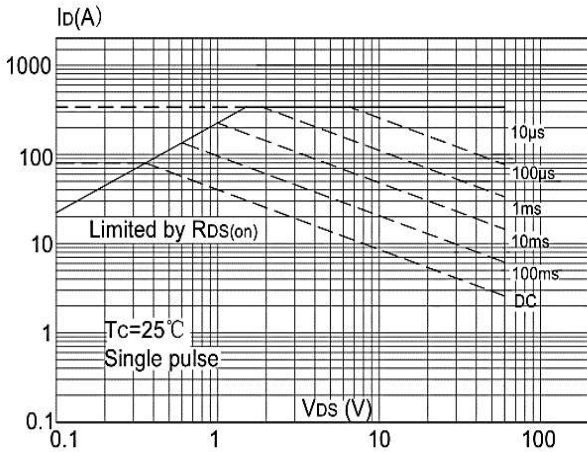


Figure 9: Maximum Safe Operating Area

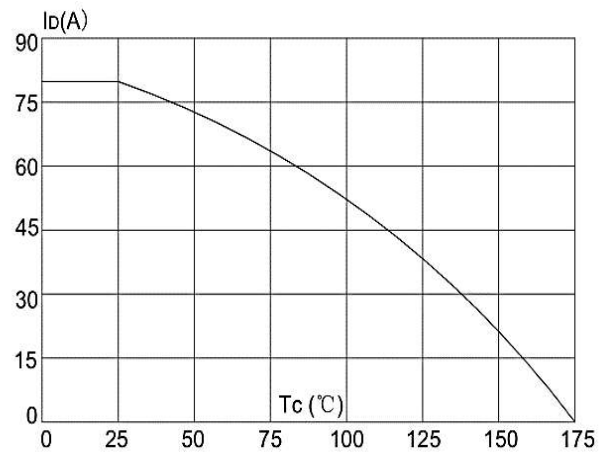


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

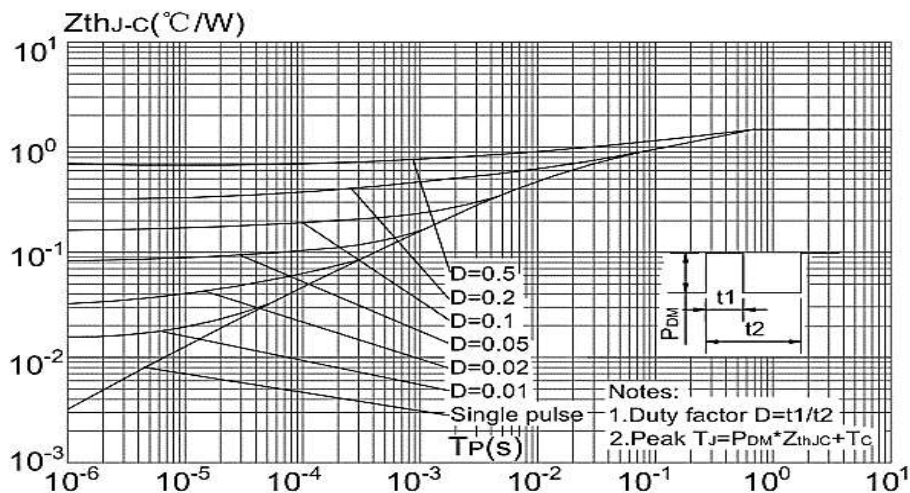


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Package Outline Dimensions Millimeters

TO-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			