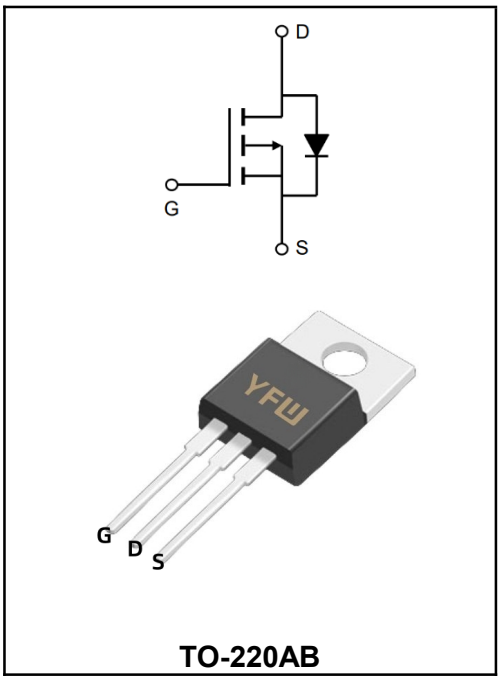
-30V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-90A
V_{DSS}	-30V
R_{DSON}-typ(@V_{GS}=-10V)	＜5.0mΩ(Typ:4.3mΩ)
R_{DSON}-typ(@V_{GS}=-4.5V)	＜7.0mΩ(Typ:5.0mΩ)



TO-220AB

Description

TheYFW90P03AT uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

Application

- Lithium battery protection
- Wireless impact
- Mobile phone fast charging

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current TC = 25℃	I_D	-90	A
Continuous Drain Current TC = 100℃	I_D	-65	A
Pulsed Drain Current note1	I_{DM}	-400	A
Single Pulsed Avalanche Energy note2	E_{AS}	225	mJ
Power Dissipation TC = 25℃	P_D	62.5	W
Thermal Resistance Junction to Case[1]	$R_{\theta JC}$	1.46	°C/W
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

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	BV_{DSS}	-30	-33	-	V
Zero Gate Voltage Drain Current	V_{DS}= -30V, V_{GS}=0V	I_{DSS}	-	-	-1	μA
Gate –Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	$V_{GS(th)}$	-1.0	-1.6	-2.5	V
Static Drain-Source On-Resistance [2]	V_{GS}=-10V, I_D=-30A	$R_{DS(ON)}$	-	4.3	5.0	mΩ
	V_{GS}=-4.5V, I_D=-10A		-	5.0	7.0	
Input Capacitance	V_{DS}=-15V V_{GS}=0V f=1MHz	C_{iss}	-	9400	-	pF
Output Capacitance		C_{oss}	-	1000	-	
Reverse Transfer Capacitance		C_{rss}	-	767	-	
Total Gate Charge	V_{DS}= -15V I_D= -30A V_{GS}= -10V	Q_g	-	42	-	nC
Gate-Source Charge		Q_{gs}	-	8.4	-	
Gate-Drain Charge		Q_{gd}	-	11.2	-	
Turn-on delay time	V_{DD}= -15V I_D= -30A V_{GS}= -10V RGEN=2.5Ω	$t_{d(on)}$	-	15	-	ns
Rise Time		T_r	-	16	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	69	-	
Fall Time		t_f	-	27	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	-90	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	-360	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=-30A	V_{SD}	-	-0.8	-1.2	V

Notes:

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 TJ =25℃, V DD = -15V, VG = -10V, RG =25Ω, L=0.5mH, IAS=-30A

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 dissip.

Ratings and Characteristic Curves

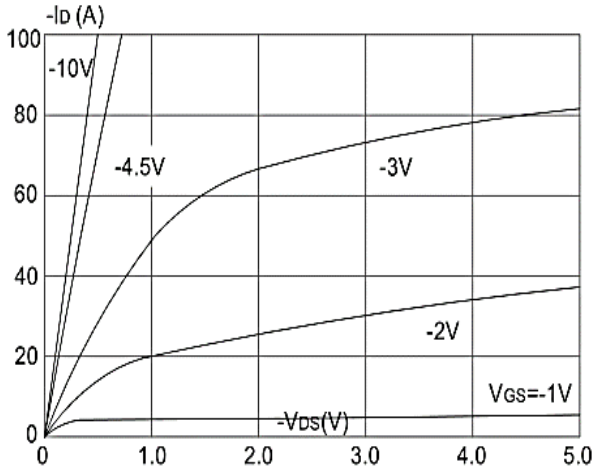


Figure1: Output Characteristics

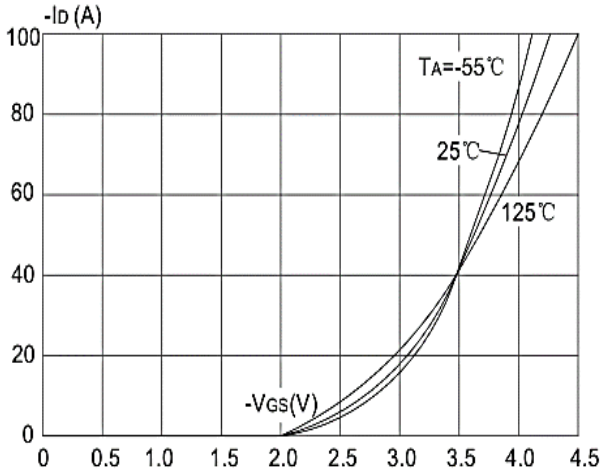


Figure 2: Typical Transfer Characteristics

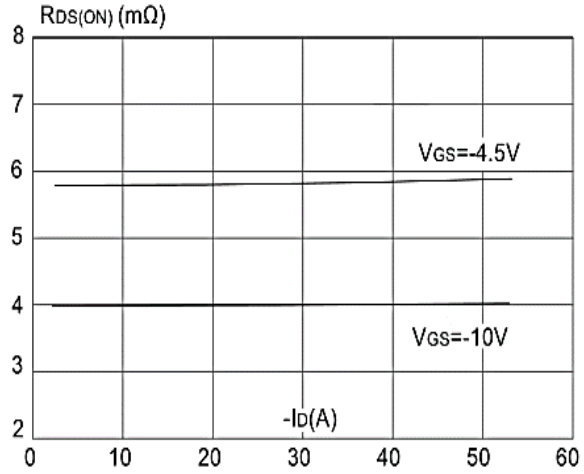


Figure 3:On-resistance vs. Drain Current

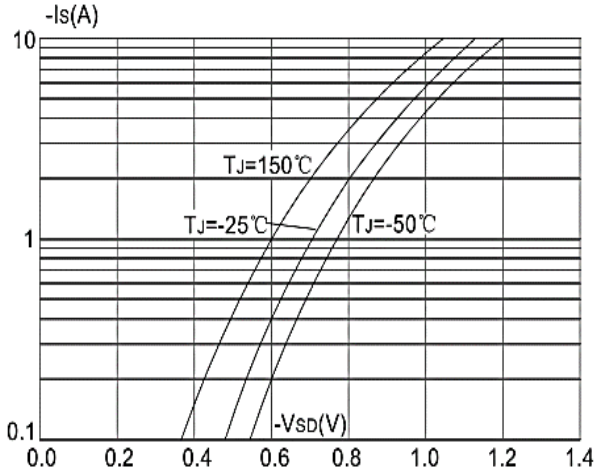


Figure 4: Body Diode Characteristics

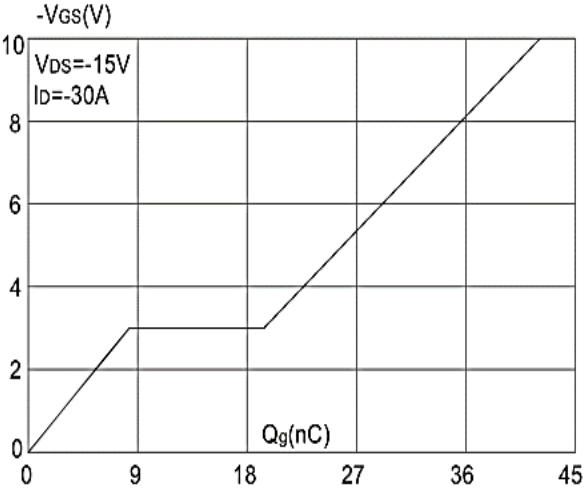


Figure 5: Gate Charge Characteristics

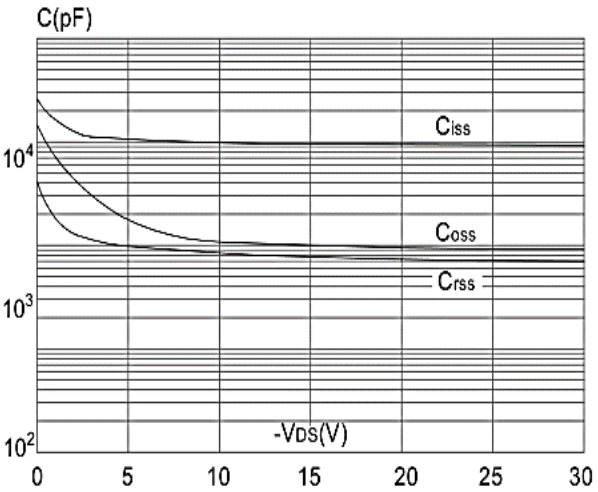


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

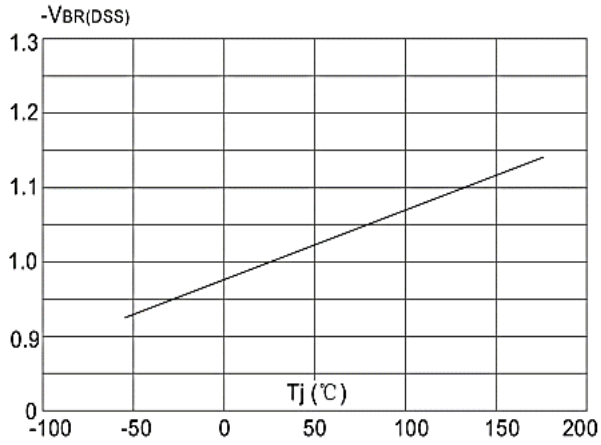


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

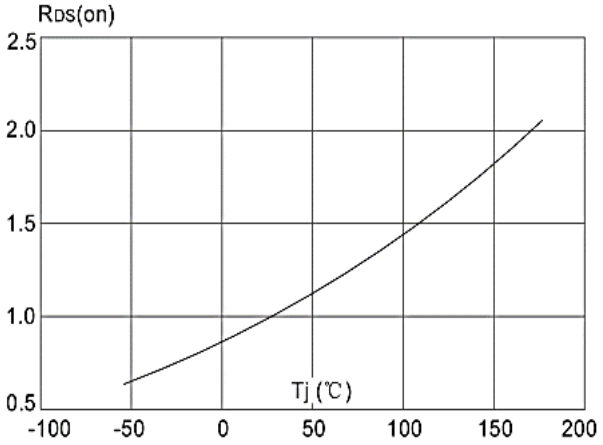


Figure 8: Normalized on Resistance vs. Junction Temperature

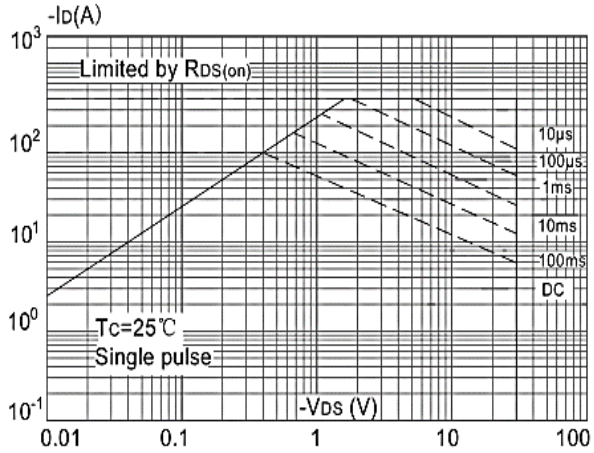


Figure 9: Maximum Safe Operating Area

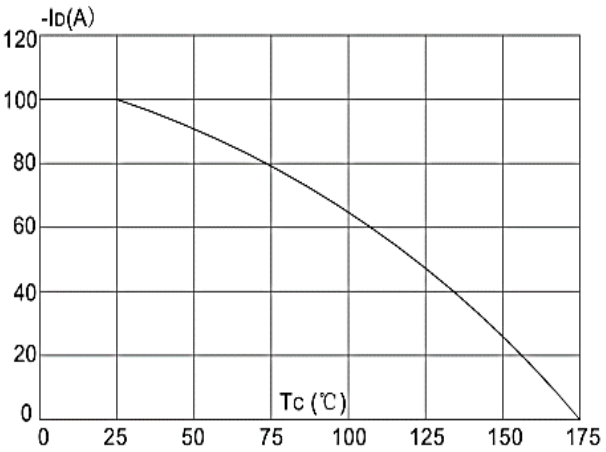


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

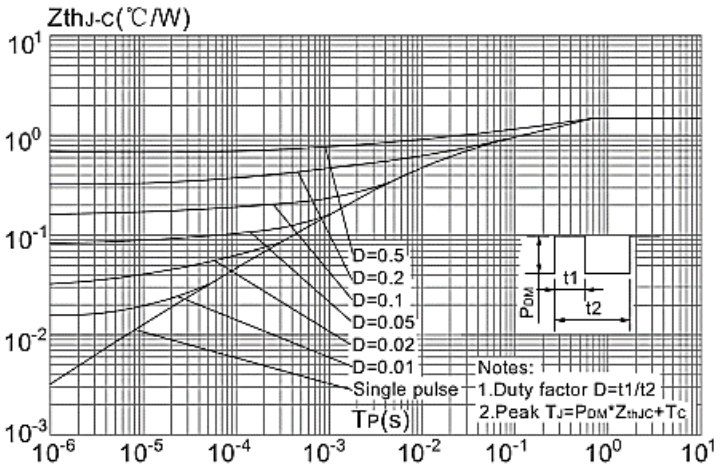
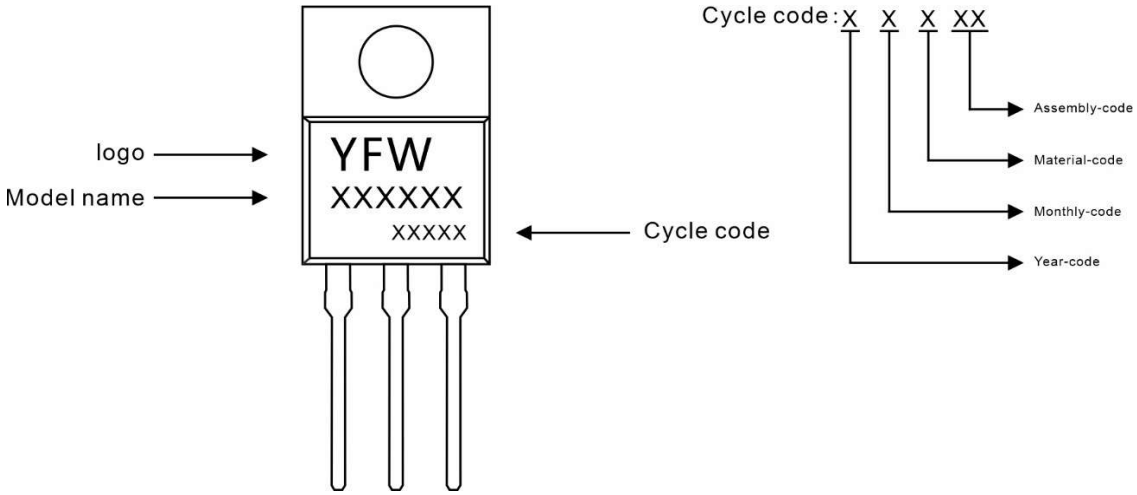


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Marking Diagram

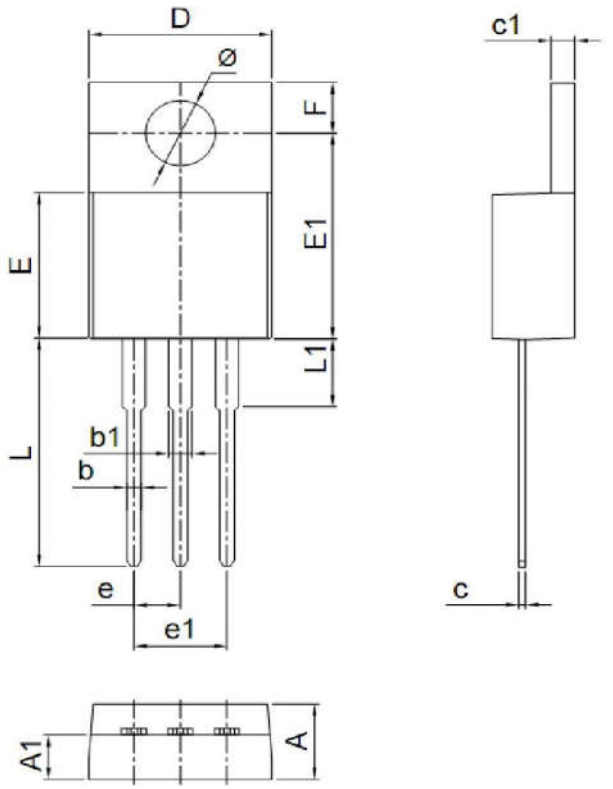


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW90P03AT	TO-220AB	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220AB



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A1	2.52	2.82	0.099	0.111
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
c	0.30	0.50	0.012	0.020
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
E1	12.00	12.50	0.472	0.492
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	2.60	2.80	0.102	0.110
L	13.20	13.80	0.520	0.543
L1	3.80	4.20	0.150	0.165
Φ	3.60	3.96	0.142	0.156

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