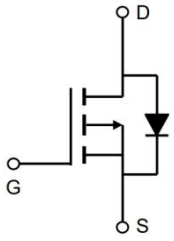
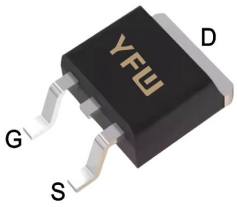
-100V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-40A
V_{DSS}	-100V
R_{DSON}-typ(@V_{GS}=-10V)	＜55mΩ(Typ:42 mΩ)





TO-263

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-100	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ -10V[1] @T_C=25℃	I_D	-40	A
Continuous Drain Current, V_{GS} @ -10V[1] @T_C=100℃	I_D	-22	A
Pulsed Drain Current [2]	I_{DM}	-140	A
Single Pulse Avalanche Energy[3]	E_{AS}	87	mJ
Avalanche Current	I_{AS}	-24.5	A
Total Power Dissipation[4] @T_C=25℃	P_D	125	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]	$R_{\theta JC}$	1.0	°C/W

P-Channel Electrical Characteristics (TJ =25 ℃, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	BV_{DSS}	-100	-110	-	V
Drain-Source Leakage Current	V_{DS}=-100V , 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	-1.8	-2.5	V
Static Drain-Source On-Resistance [2]	V_{GS}=-10V, I_D=-15A	$R_{DS(ON)}$	-	42	55	mΩ
	V_{GS}=-4.5V, I_D=-10A		-	45	65	
Input Capacitance	V_{DS}=-25V V_{GS}=0V f=1MHz	C_{iss}	-	9023	-	pF
Output Capacitance		C_{oss}	-	210	-	
Reverse Transfer Capacitance		C_{rss}	-	180	-	
Total Gate Charge	V_{DS}=-50V V_{GS}=-10V I_D=-15A	Q_g	-	125	-	nC
Gate-Source Charge		Q_{gs}	-	21	-	
Gate-Drain Charge		Q_{gd}	-	25	-	
Turn-on delay time	V_{DD}=-50V V_{GS}=-10V R_G=9Ω, I_D=-15A	$t_{d(on)}$	-	20	-	ns
Rise Time		T_r	-	78	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	43	-	
Fall Time		t_f	-	64	-	
Maximum Pulsed Drain to Source Diode Forward Current		I_S	-	-	-40	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	-140	A
Drain to Source Diode Forward Voltage	V_{GS}=0V , I_S=-30A	V_{SD}	-	-	1.2	V
Reverse Recovery Time	IF=-15A , di/dt=-100A/μs , TJ=25℃	t_{rr}	-	95	-	ns
Reverse Recovery Charge		Q_{rr}	-	145	-	nC

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 V DD =-50V,V GS =-10V,L=0.5mH,IAS =-24.5A
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

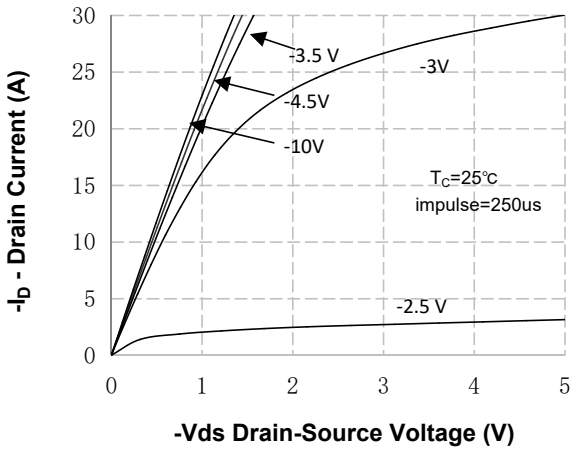


Figure 1. On-Region Characteristics

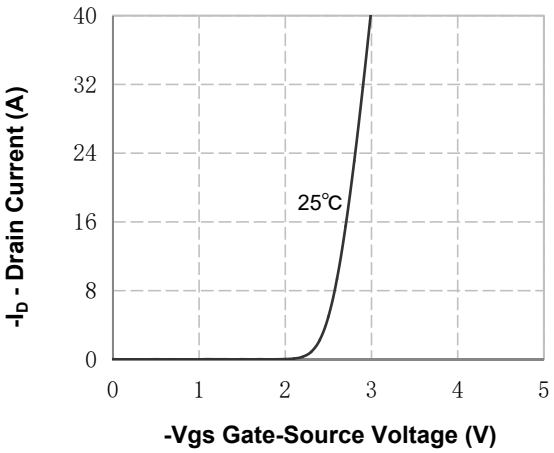


Figure 2. Transfer Characteristics

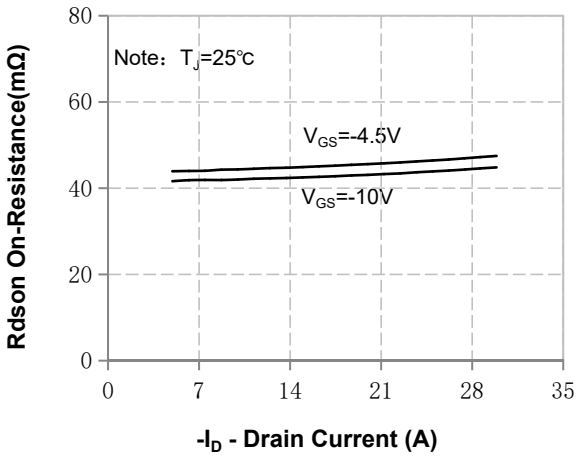


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

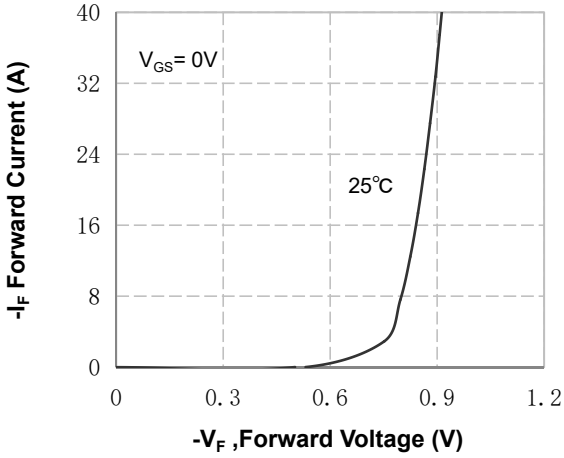


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

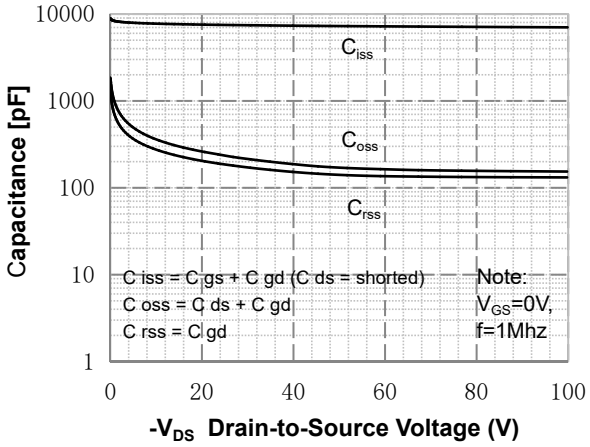


Figure 5. Capacitance Characteristics

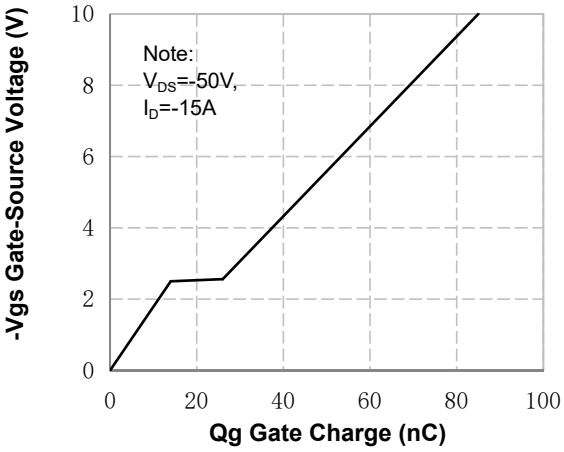


Figure 6. Gate Charge Characteristics

Typical Characteristics

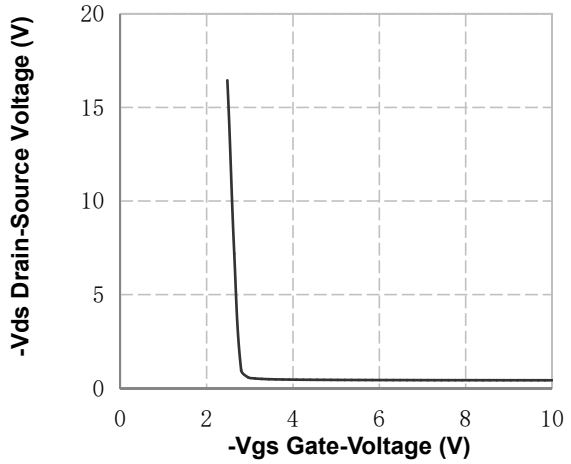


Figure 7. Vds Drain-Source Voltage vs Gate Voltage

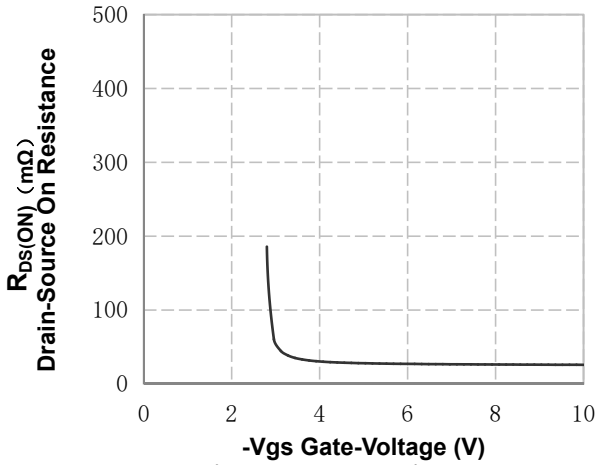


Figure 8. On-Resistance vs Gate Voltage

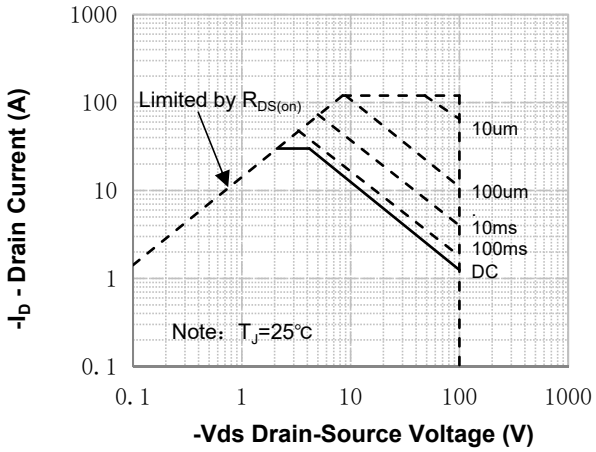


Figure 9. Maximum Safe Operating Area

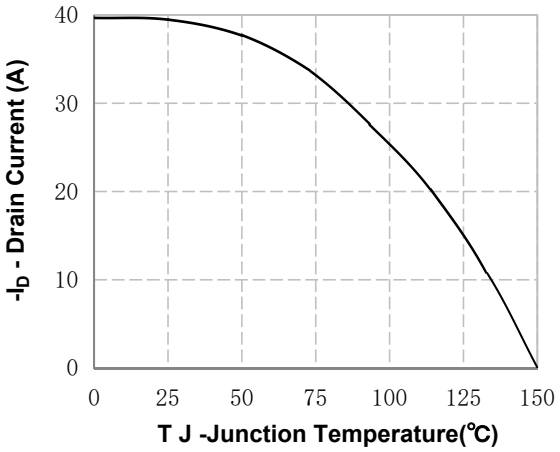


Figure 10. Maximum Continuous Drain Current vs Temperature

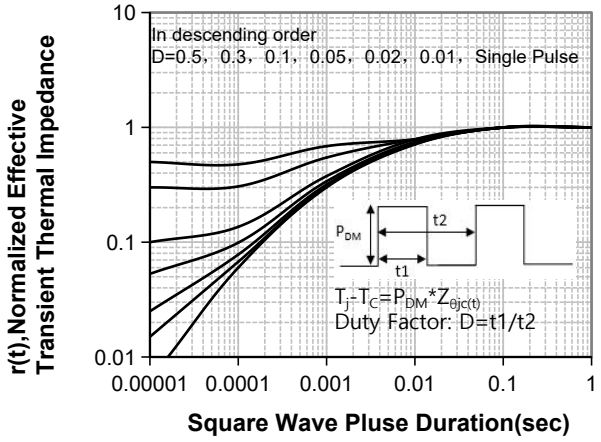
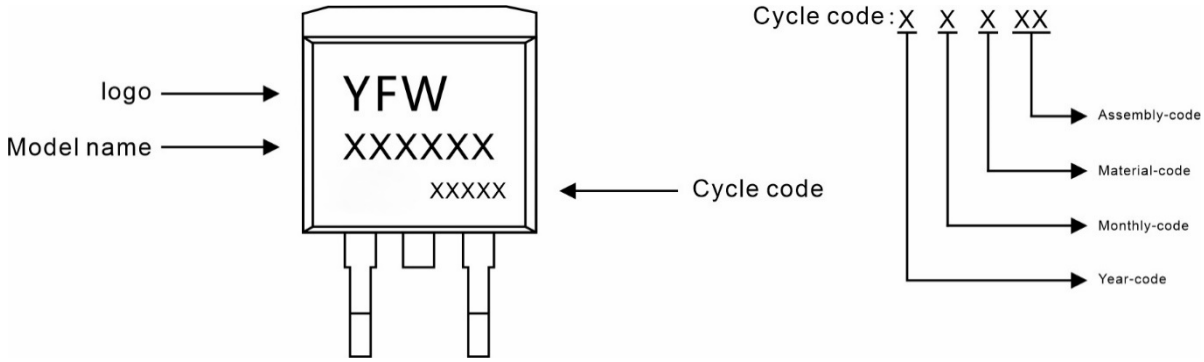


Figure 11. Transient Thermal Response Curve

Marking Diagram

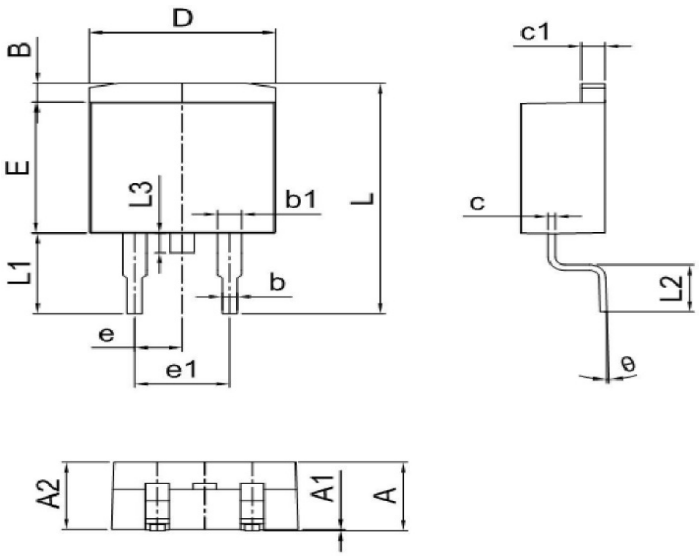


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW40P10AS	TO-263	0.04oz(1.16g)	800pcs/reel	1600pcs/box 8000pcs/Carton

Package Dimensions

TO-263



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A1	0.00	0.15	0.000	0.006
A2	4.30	4.55	0.169	0.179
B	1.10	1.50	0.043	0.059
b	0.70	0.90	0.028	0.035
b1	1.20	1.50	0.047	0.059
c	0.30	0.60	0.012	0.024
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
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
L	15.00	15.30	0.591	0.602
L1	5.20	5.40	0.205	0.213
L2	2.40	2.60	0.094	0.102
L3	1.60	1.80	0.063	0.071

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