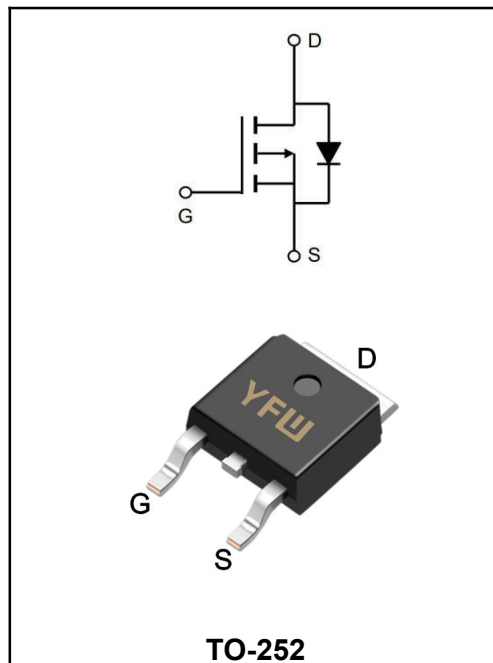


-40V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-40A
V_{DSS}	-40V
$R_{DS(on)-typ}(@V_{GS}=-10V)$	< 18mΩ (Type: .15 mΩ)



Application

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

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-40	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ -10V ¹ @T _C =25°C	I_D	-40	A
Continuous Drain Current, V_{GS} @ -10V ¹ @T _C =100°C	I_D	-23	A
Pulsed Drain Current ²	I_{DM}	-120	A
Single Pulse Avalanche Energy ³	E_{AS}	125	mJ
Total Power Dissipation ⁴ @T _C =25°C	P_D	25	W
Total Power Dissipation ⁴ @T _A =25°C	P_D	16	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	°C/W
Thermal Resistance Junction to Case ¹	$R_{\theta JC}$	5	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-40	-44	-	V
BV_{DSS} Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.023	-	V/°C
Static Drain-Source On-Resistance ²	$V_{GS}=-10V, I_D=-30A$	$R_{DS(ON)}$	-	15	18	mΩ
	$V_{GS}=-4.5V, I_D=-20A$		-	18	25	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.0	-1.6	-2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	4.74	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=-40V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
	$V_{DS}=-40V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate -Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Total Gate Charge(-4.5V)	$V_{DS}=-20V$ $V_{GS}=-4.5V$ $I_D=-12A$	Q_g	-	25	-	nC
Gate-Source Charge		Q_{gs}	-	11	-	
Gate-Drain Charge		Q_{gd}	-	9.5	-	
Turn-on delay time	$V_{DD}=-15V$ $R_L=15\Omega$ $I_D=-1A$ $V_{GEN}=-10V$ $R_G=6\Omega$	$t_{d(on)}$	-	48	-	ns
Rise Time		T_r	-	24	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	88	-	
Fall Time		t_f	-	9.6	-	
Input Capacitance	$V_{DS}=-20V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	2760	-	pF
Output Capacitance		C_{oss}	-	260	-	
Reverse Transfer Capacitance		C_{rss}	-	85	-	
Continuous Source Current ^{1,5}	$V_G=V_D=0V$, Force Current	I_S	-	-	-40	A
Pulsed Source Current ^{2,5}		I_{SM}	-	-	-90	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	V_{SD}	-	-	-1.3	V

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 $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The EAS data shows Max. rating . The test condition is $V_{DD}=-32V, V_{GS}=-10V, L=0.1mH, I_{AS}=-30A$
- 4、The power dissipation is limited by 150°C 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

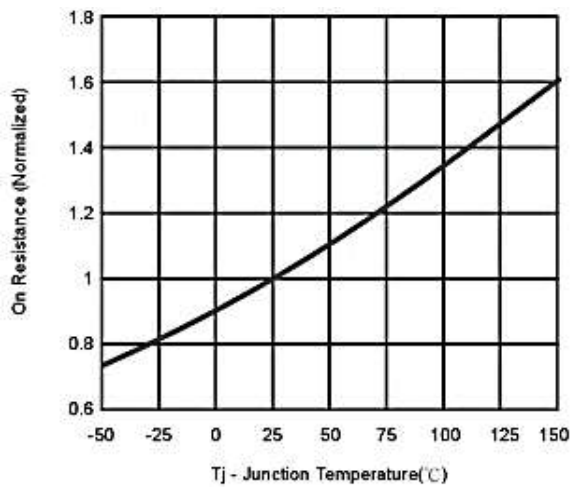


Fig.1 On Resistance Vs Junction Temperature

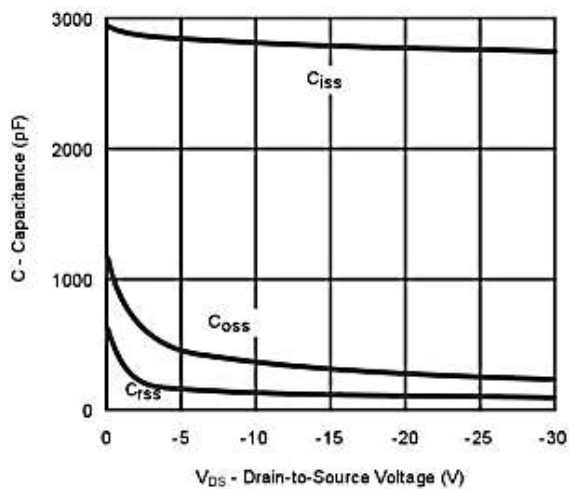


Fig.3 Capacitance

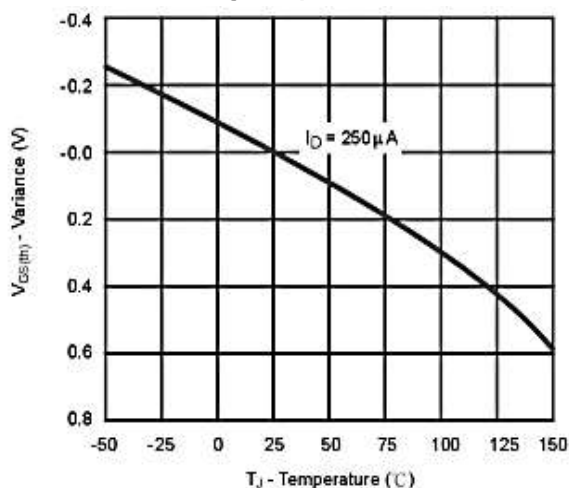


Fig.5 Threshold Voltage

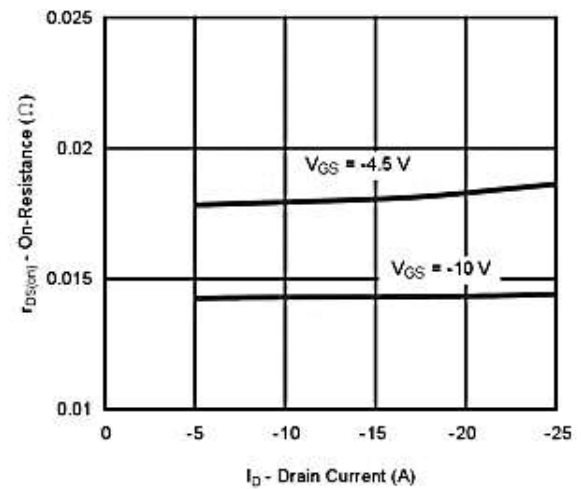


Fig.2 On-Resistance Vs. Drain Current

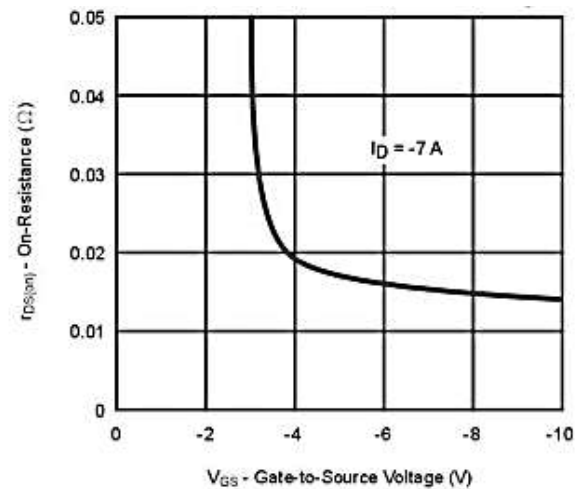


Fig.4 On-Resistance Vs. Gate-to-Source Voltage

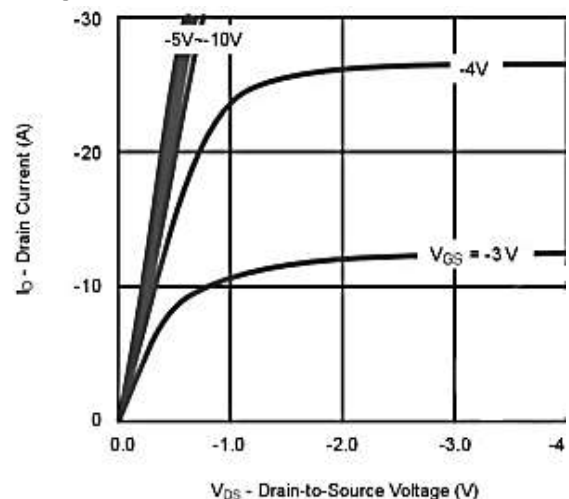
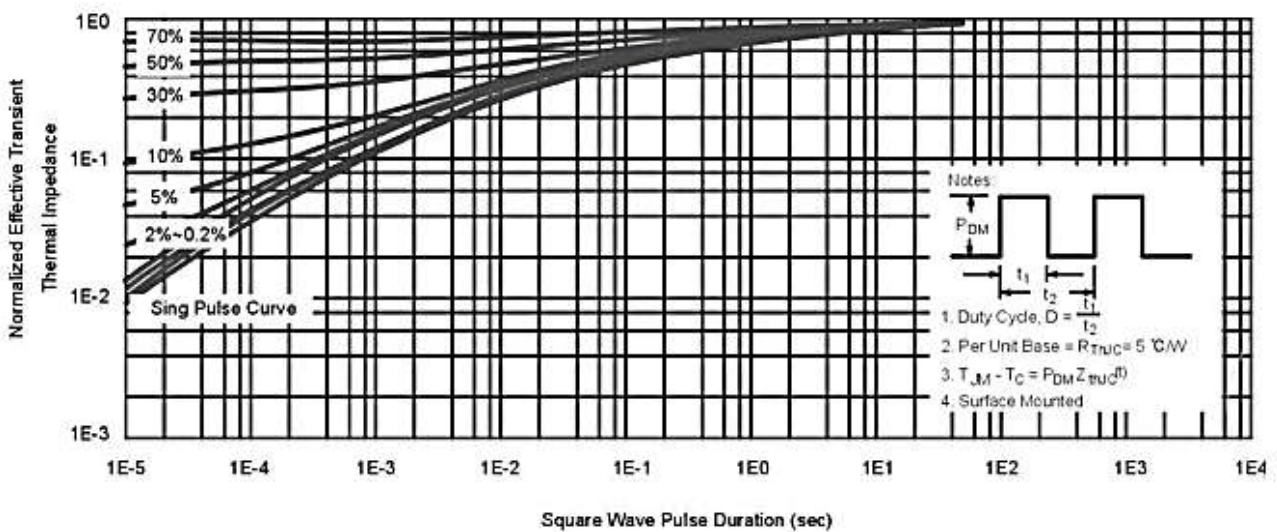
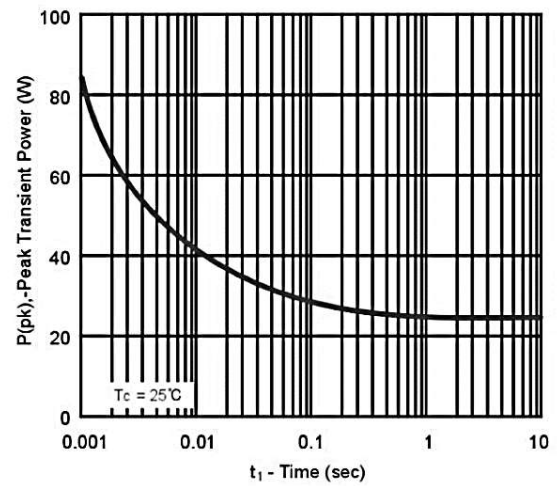
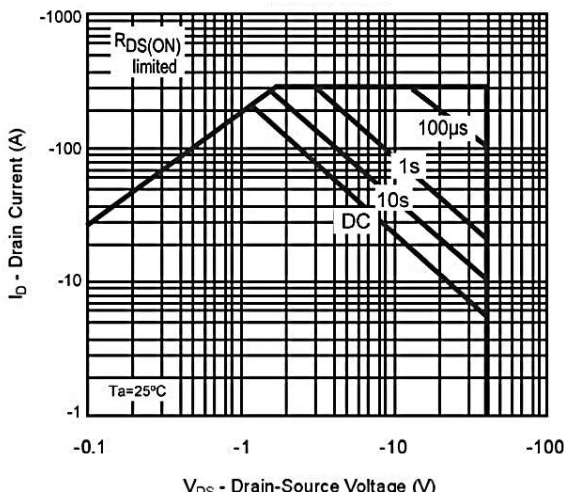
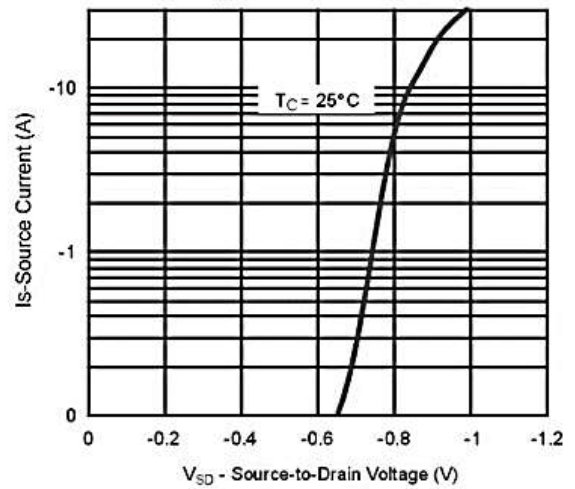
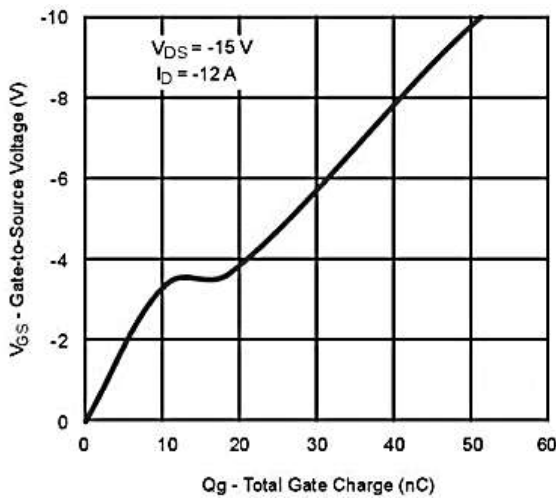
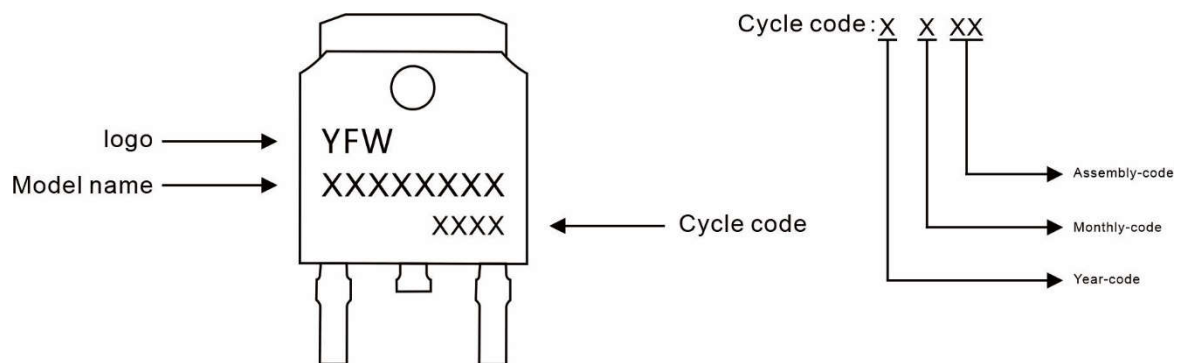


Fig.6 On-Region Characteristics

Ratings and Characteristic Curves



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW40P04AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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