60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	4A
V_{DSS}	60V
R_{DSON}-typ(@V_{GS}=10V)	< 85mΩ(Type:62 mΩ)

Application

♦Battery protection
♦Load switch
♦Uninterruptible power supply

SOT-23

Product Specification Classification

Part Number	Package	Marking	Pack
YFW4N06A	SOT-23	A36	3000PCS/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}	$\pm$20	V
Continuous Drain Current, V_{GS} @ 10V[1] @T_C=25℃	I_D[1]	4	A
Continuous Drain Current, V_{GS} @ 10V[1] @T_C=100℃	I_D[1]	2.1	A
Pulsed Drain Current[2]	I_{DM}	20	A
Single Pulse Avalanche Energy[3]	E_{AS}	11	mJ
Avalanche Current	I_{AS}	15	A
Total Power Dissipation[4] @T_C=25℃	P_D	42	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-Case[1]	$R_{\theta JC}$	3	°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	BV_{DSS}	60	66	-	V
Zero Gate Voltage Drain Current	V_{DS}=60V , V_{GS}=0V	I_{DSS}	-	-	1	µA
Gate Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
	V_{GS}=±10V, V_{DS}=0V		-	-	±50	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	0.9	1.3	2.0	V
Drain-Source on-Resistance	V_{GS}=10V, I_D=3A	$R_{DS(ON)}$	-	62	85	mΩ
	V_{GS}=4.5V, I_D=2A		-	85	120	
Input Capacitance	V_{DS}=10V V_{GS}=0V f=1.0MHz	C_{iss}	-	409	-	pF
Output Capacitance		C_{oss}	-	50	-	
Reverse Transfer Capacitance		C_{rss}	-	41	-	
Total Gate Charge	V_{GS}=10V V_{DS}=30V I_D=3A	Q_g	-	10.27	-	nC
Gate-Source Charge		Q_{gs}	-	1.65	-	
Gate-Drain Charge		Q_{gd}	-	2.11	-	
Reverse Recovery Charge	I_F=3A , dI/dt=100A/µs	Q_{rr}	-	6.99	-	nC
Reverse Recovery Time		t_{rr}	-	32.6	-	ns
Turn-on delay time	V_{GS}=10V V_{DD}=30V R_L=20Ω R_{GEN}=3Ω	$t_{d(on)}$	-	3.6	-	ns
Turn-on Rise Time		T_r	-	17.6	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	13	-	
Turn-Off Fall Time		t_f	-	23	-	
Diode Forward Voltage	V_{GS}=0V , I_S=4A	V_{SD}	-	-	1.2	V

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 power dissipation is limited by 150℃ junction temperature
4、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
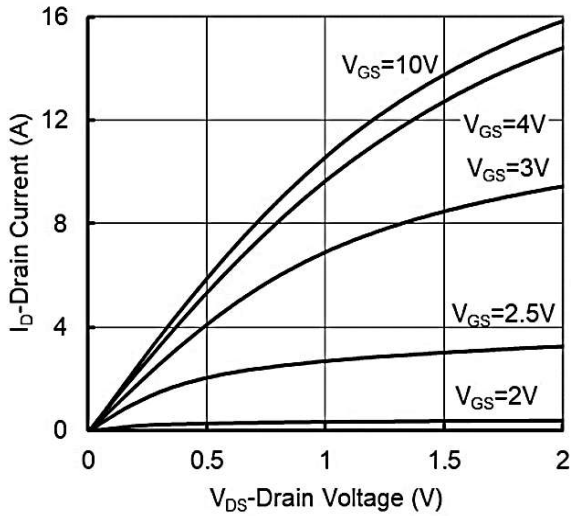
Typical Characteristics

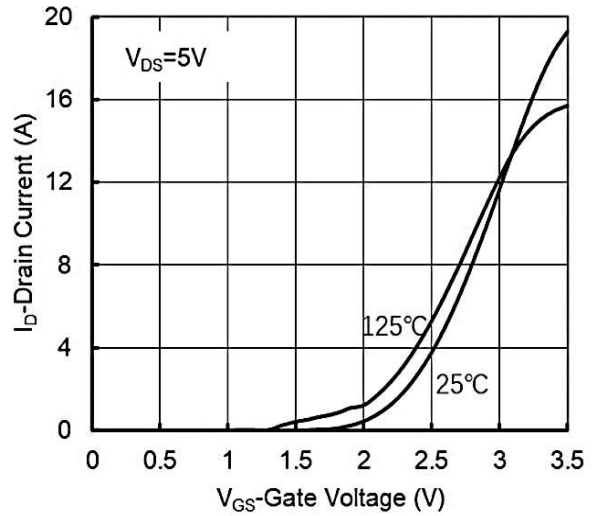Figure1. Output Characteristics

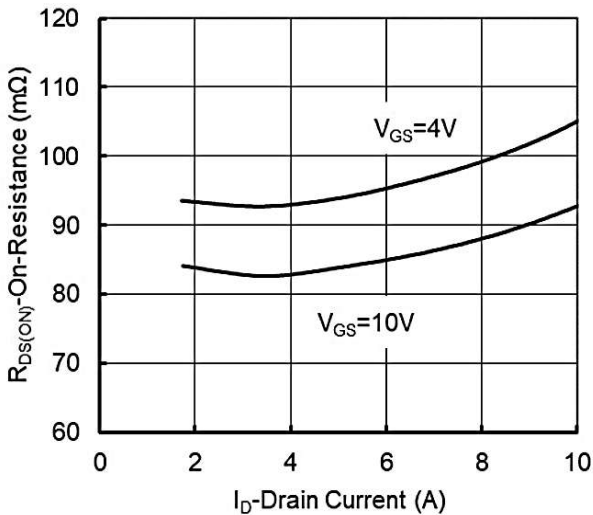Figure2. Transfer Characteristics

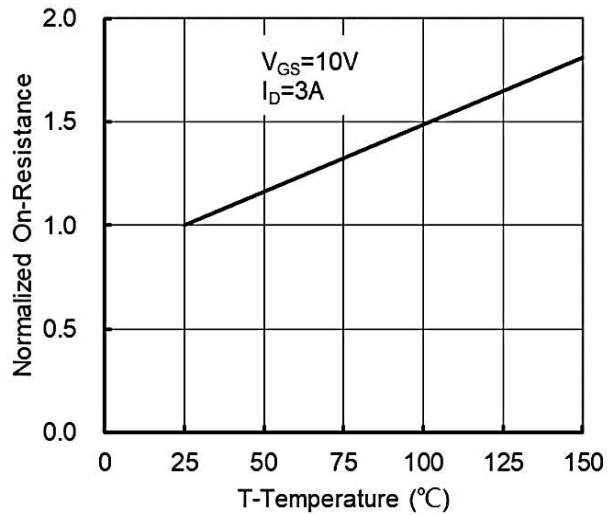Figure 3: On-Resistance vs. Drain Current and Gate Voltage

Figure 4: On-Resistance vs. Junction Temperature
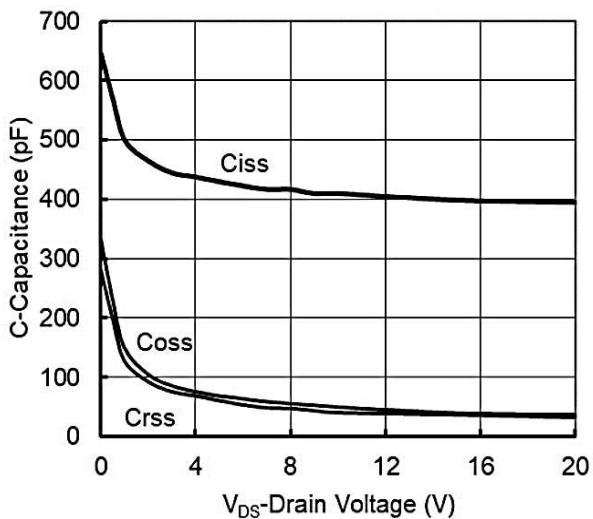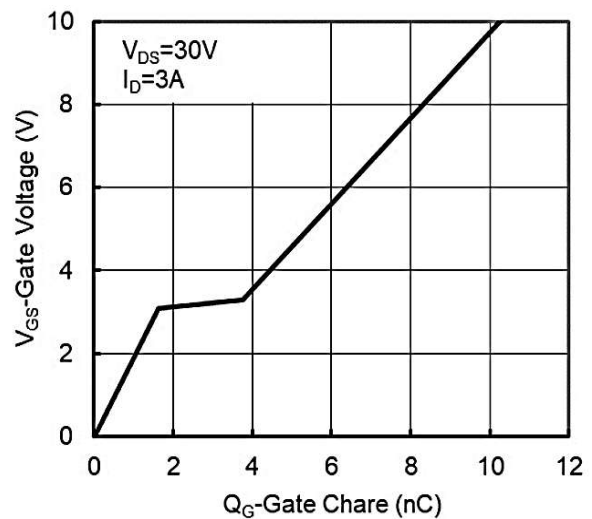

Figure5. Capacitance Characteristics

Figure6. Gate Charge

Ratings and Characteristic Curves
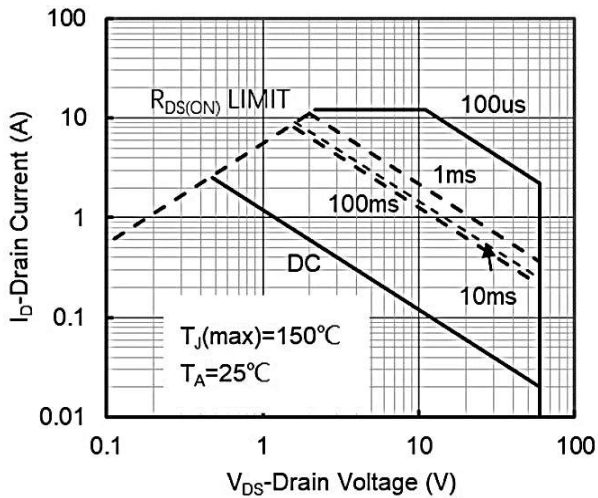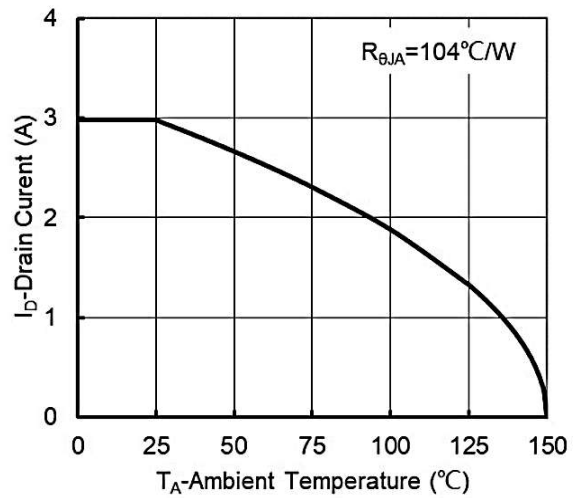
Figure7. Safe Operation Area

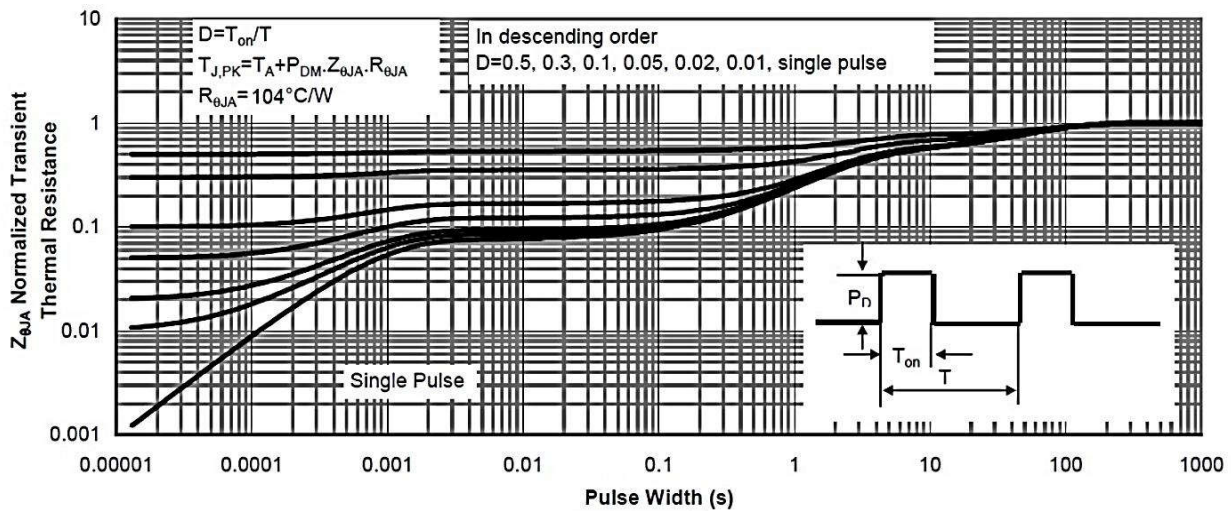Figure8. Maximum Continuous Drain Current vs Ambient Temperature

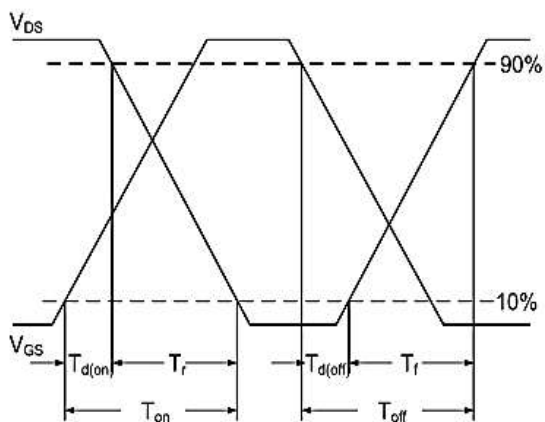Figure9. Normalized Maximum Transient Thermal Impedance
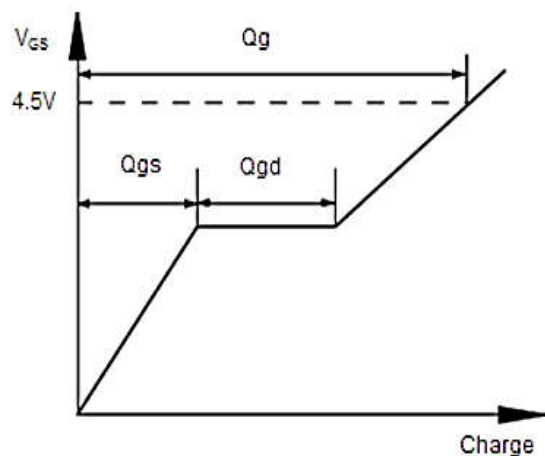
Fig.10 Switching Time Waveform

Fig.11 Gate Charge Waveform

Package Outline Dimensions Millimeters

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Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°