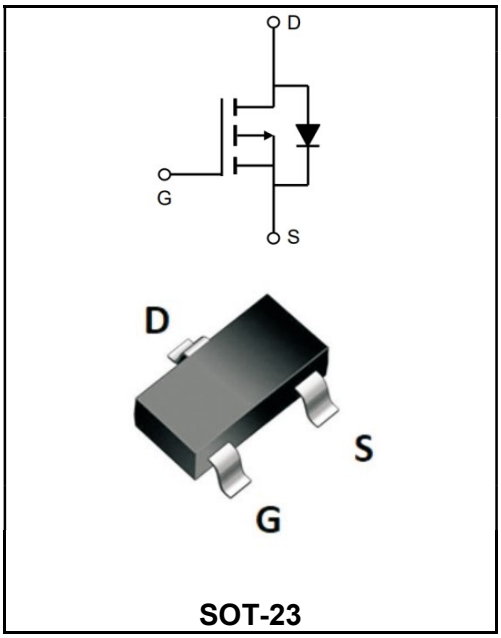
-20V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-3.3A
V_{DSS}	-20V
R_{DSON}-typ(@V_{GS}=-4.5V)	< 80mΩ(Type:55 mΩ)



lead-free ROHS

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW2301A	SOT-23	A1SHB	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate - Source Voltage	V_{GS}	±12	V
Continuous Drain Current, V_{GS} @ -4.5V[1] @T_A=25℃	I_D	-3.3	A
Continuous Drain Current, V_{GS} @ -4.5V[1] @T_A=70℃	I_D	-2.6	A
Pulsed Drain Current[2]	I_{DM}	-13	A
Total Power Dissipation[3] @T_A=25℃	P_D	1.4	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]	$R_{\theta JA}$	125	°C/W
Thermal Resistance Junction-ambient[1] (t≤10s)	$R_{\theta JA}$	90	°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}	-20	-22	-	V
Static Drain-Source on-Resistance [2]	V_{GS}=-4.5V, I_D=-3A	$R_{DS(ON)}$	-	55	80	mΩ
	V_{GS}=-2.5V, I_D=-2A		-	75	100	
Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=-250μA	$V_{GS(th)}$	-0.5	-0.7	-1.2	V
Drain-Source Leakage Current	V_{DS}=-20V , V_{GS}=0V , T_J=25℃	I_{DSS}	-	-	1	μA
	V_{DS}=-20V , V_{GS}=0V , T_J=55℃		-	-	-5	
Gate-Source Leakage Current	V_{GS}=±12V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transconductance	V_{DS}=-5V , I_D=-3A	g_{fs}	-	12.2	-	S
Total Gate Charge(-4.5V)	V_{DS}=-15V V_{GS}=-4.5V I_D=-3A	Q_g	-	10.1	-	nC
Gate-Source Charge		Q_{gs}	-	1.21	-	
Gate-Drain Charge		Q_{gd}	-	2.46	-	
Turn-on delay time	V_{DD}=-10V V_{GS}=-4.5V I_D=-3A R_{GEN}=3.3Ω	$t_{d(on)}$	-	5.6	-	ns
Rise Time		T_r	-	32.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	45.6	-	
Fall Time		t_f	-	29.2	-	
Input Capacitance	V_{DS}=-15V V_{GS}=0V f=1MHz	C_{iss}	-	677	-	pF
Output Capacitance		C_{oss}	-	82	-	
Reverse Transfer Capacitance		C_{rss}	-	73	-	
Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	I_S	-	-	-3	A
Diode Forward Voltage[2]	I_F=-1A, V_{GS}=0V,T_J=25℃	V_{SD}	-	-	-1	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 ≦ 300us , duty cycle ≦ 2%
3、The power dissipation is limited by 150℃ junction temperature
4、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

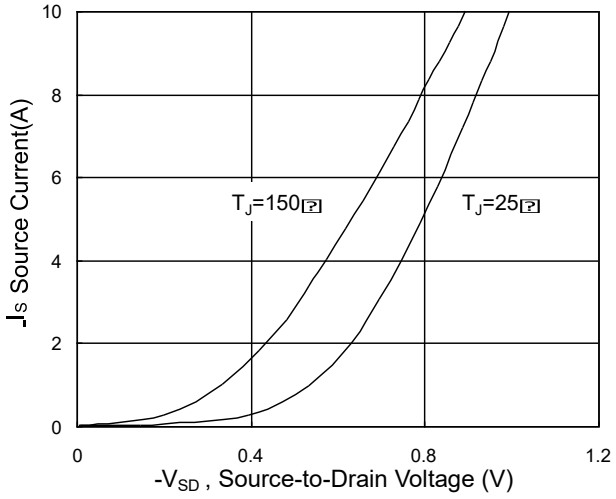


Fig.1 Typical Output Characteristics

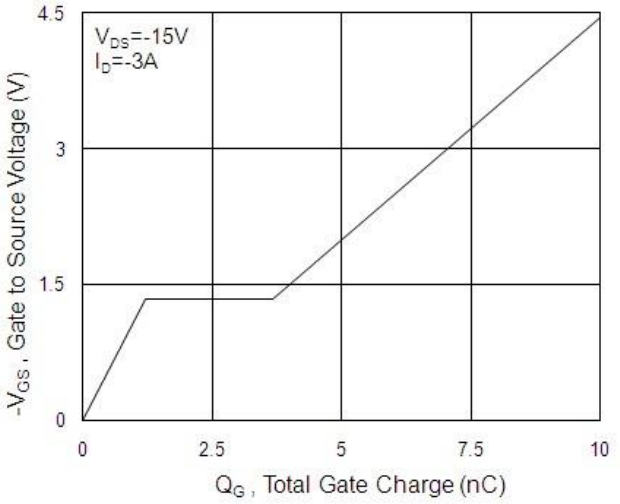
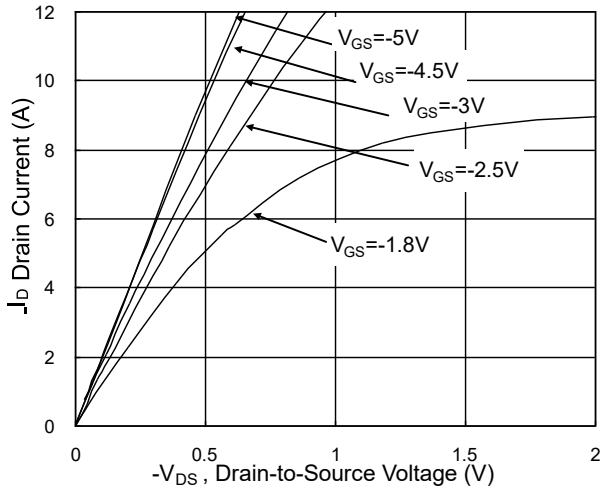
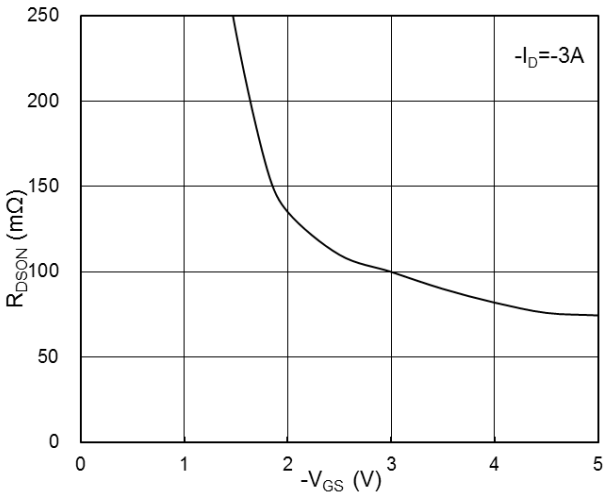


Fig.2 On-Resistance vs. G-S Voltage

Fig.3





Source Drain Forward Characteristics

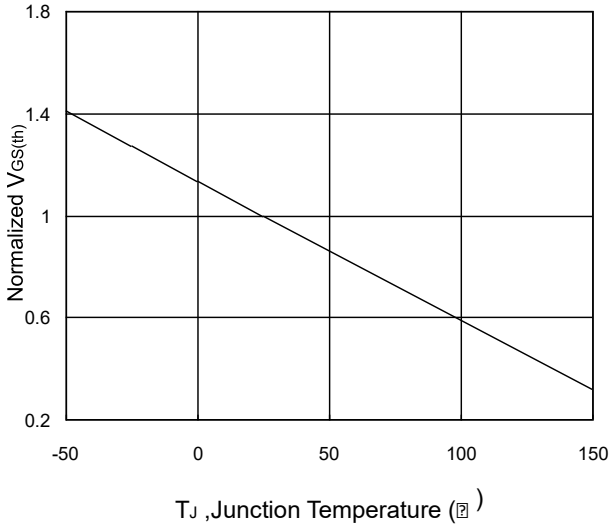
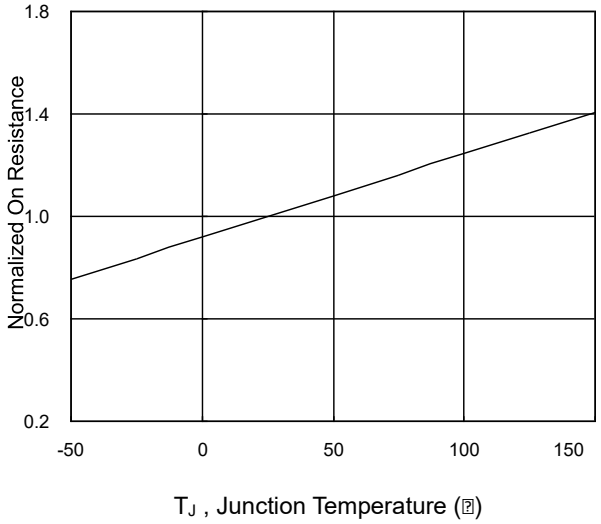


Fig.4 Gate-Charge Characteristics



Ratings and Characteristic Curves

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

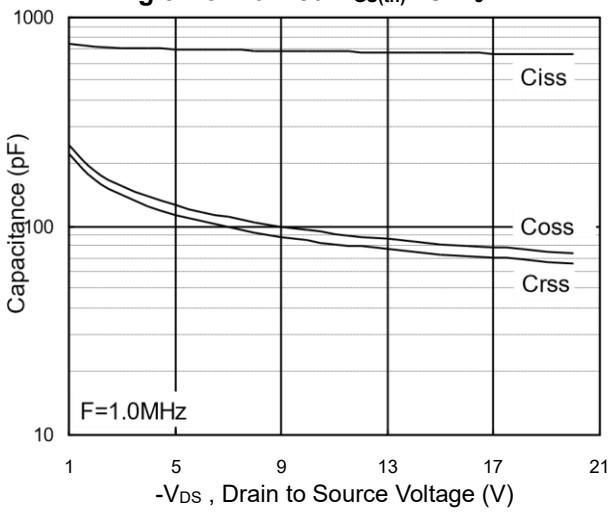


Fig.6 Normalized R_{DSON} vs. T_J

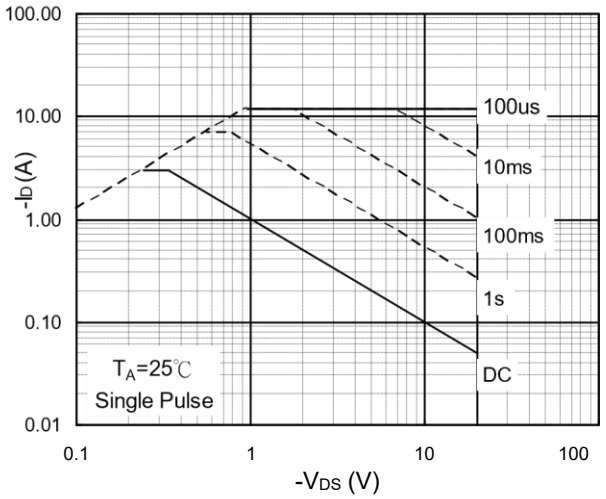


Fig.7 Capacitance

Fig.8 Safe Operating Area

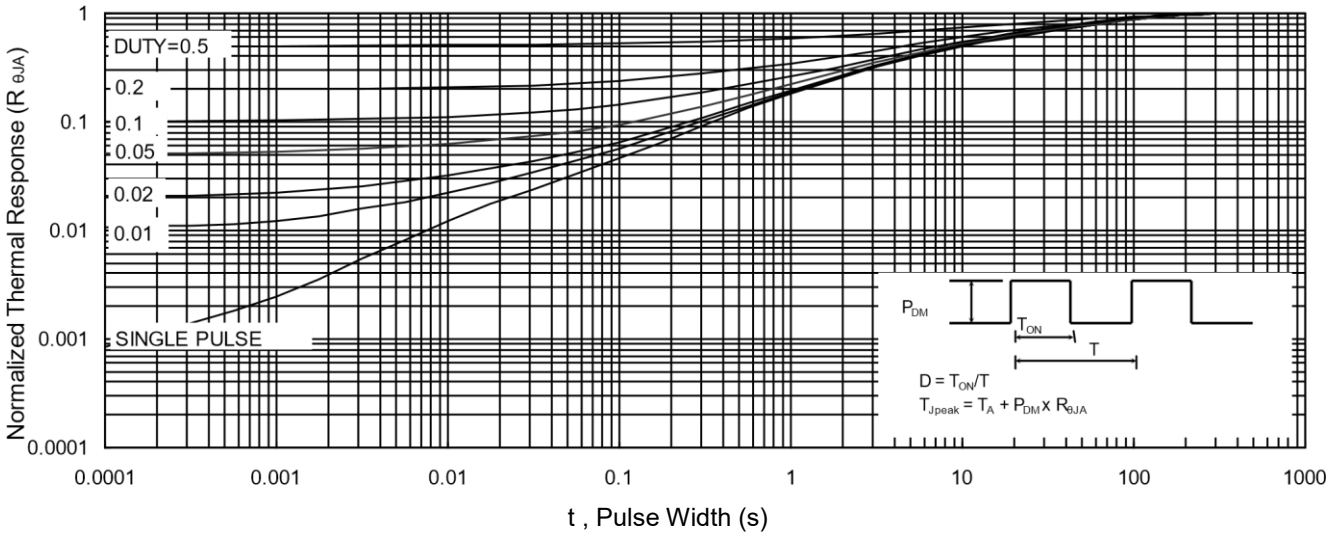
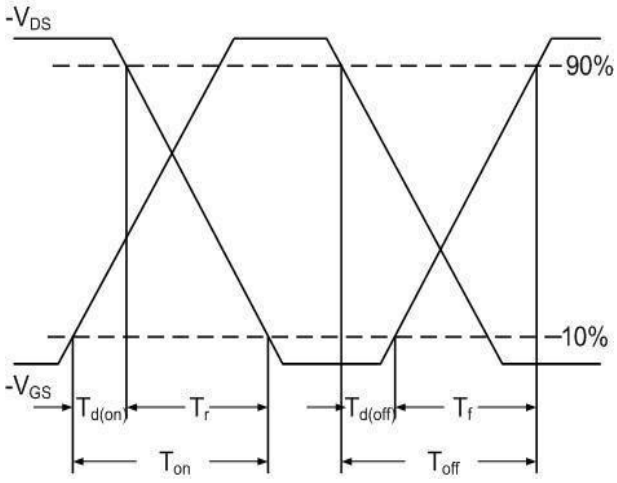


Fig.9 Normalized Maximum Transient Thermal Impedance



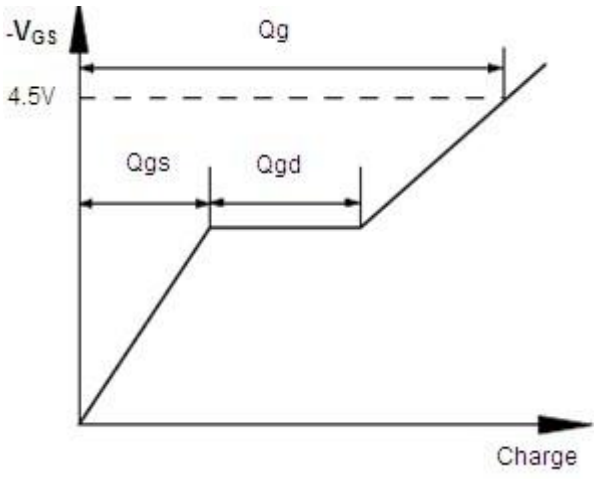
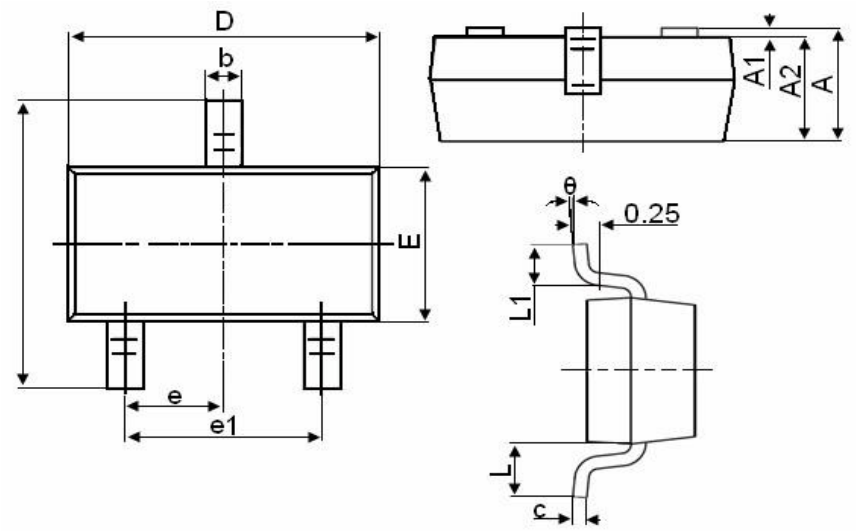


Fig.10 Switching Time Waveform

Fig.11 Gate Charge Waveform

Package Outline Dimensions Millimeters

SOT-23



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°