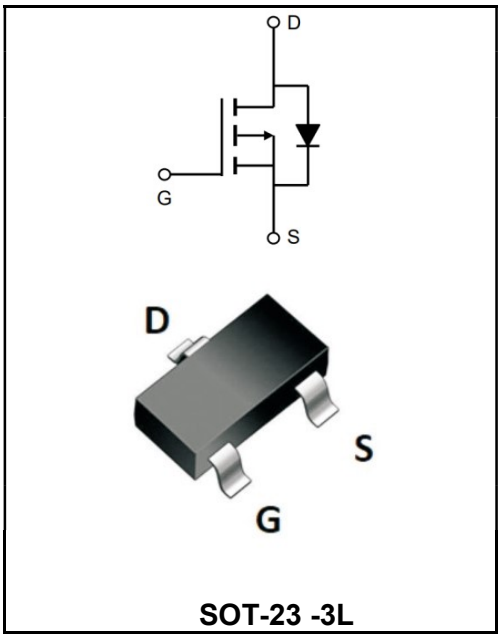
-40V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-5A
V_{DSS}	-40V
R_{DSON}-typ(@V_{GS}=-10V)	< 70mΩ(Type:65 mΩ)



lead-free ROHS

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW5P04MI	SOT23-3L	5P04	3000PCS/Tape

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_A=25℃	I_D	-5	A
Continuous Drain Current, V_{GS} @ -10V[1] @T_A=70℃	I_D	-3.8	A
Pulsed Drain Current [2]	I_{DM}	-18	A
Single Pulse Avalanche Energy[3]	E_{AS}	21	mJ
Avalanche Current	I_{AS}	-20.5	A
Total Power Dissipation[4] @T_A=25℃	P_D	1.5	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]	$R_{\theta JA}$	85	°C/W
Thermal Resistance Junction to Case[1]	$R_{\theta JC}$	50	°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}	-40	-46	-	V
BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	$\Delta BV_{DSS/\Delta TJ}$	-	-0.018	-	V/°C
Static Drain-Source On-Resistance [2]	V_{GS}=-10V, I_D=-3A	$R_{DS(ON)}$	-	65	70	mΩ
	V_{GS}=-4.5V, I_D=-2A		-	85	100	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	$V_{GS(th)}$	-1.0	-1.5	-2.5	V
V_{GS}(th) Temperature Coefficient		$\Delta V_{GS(th)}$	-	2.5	-	mV/°C
Drain-Source Leakage Current	V_{DS}=-24V , V_{GS}=0V , T_J=25℃	I_{DSS}	-	-	-1	μA
	V_{DS}=-24V , V_{GS}=0V , T_J=55℃		-	-	-5	
Gate –Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transconductance	V_{DS}=-5V , I_D =-3A	g_{fs}	-	5.8	-	S
Total Gate Charge(-4.5V)	V_{DS}=-32V V_{GS}=-4.5V I_D=-3A	Q_g	-	6.4	-	nC
Gate-Source Charge		Q_{gs}	-	2.1	-	
Gate-Drain Charge		Q_{gd}	-	2.5	-	
Turn-on delay time	V_{DD} =-20V V_{GS}=-4.5V I_D= -3A R_G=3.3Ω	$t_{d(on)}$	-	4.2	-	ns
Rise Time		T_r	-	23	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	26.8	-	
Fall Time		t_f	-	20.6	-	
Input Capacitance	V_{DS}=-15V V_{GS}=0V f=1MHz	C_{iss}	-	620	-	pF
Output Capacitance		C_{oss}	-	65	-	
Reverse Transfer Capacitance		C_{rss}	-	53	-	
Continuous Source Current[1.4]	V_G=V_D=0V , Force Current	I_S	-	-	-3.2	A
Pulsed Source Current[2.4]		I_{SM}	-	-	-16.1	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	V_{SD}	-	-	-1	V

Note :
1、The data tested by surface mounted on a 1 inch 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

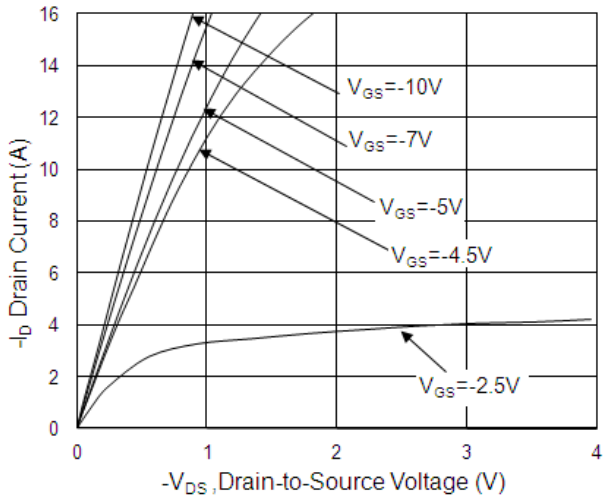


Fig.1 Typical Output Characteristics

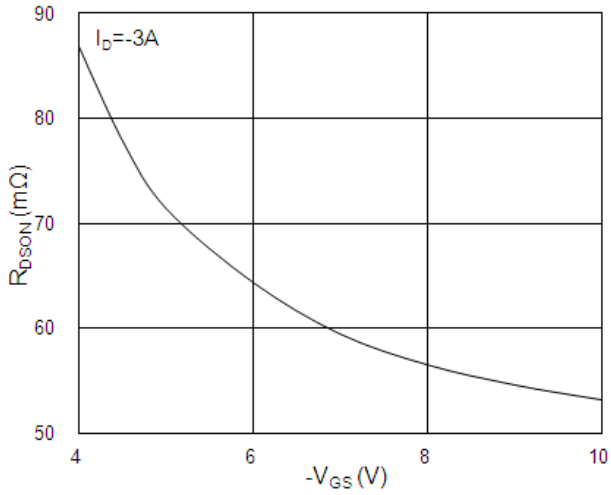


Fig.2 On-Resistance vs. G-S Voltage

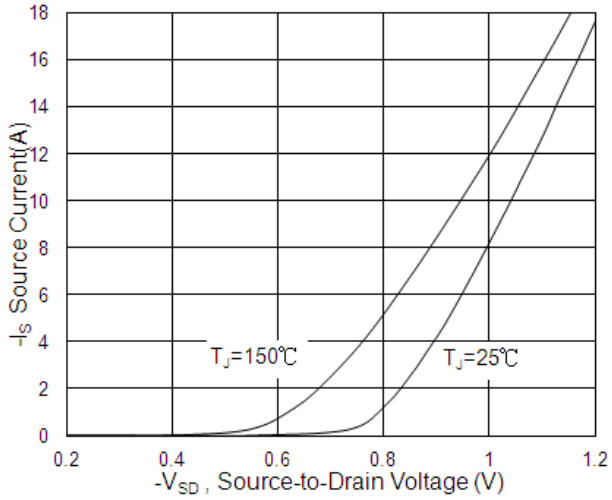


Fig.3 Forward Characteristics Of Reverse

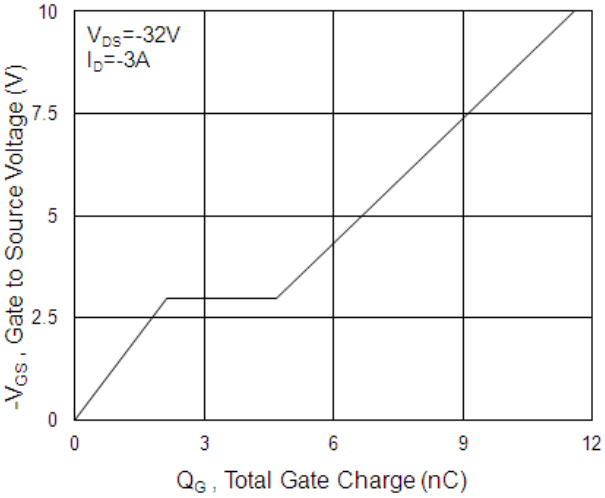


Fig.4 Gate-Charge Characteristics

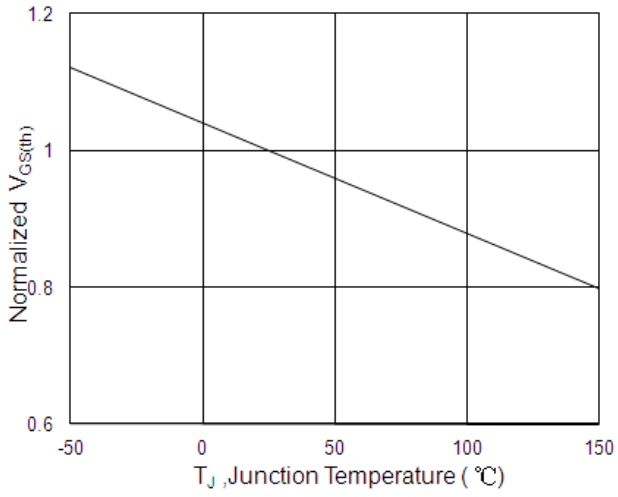


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

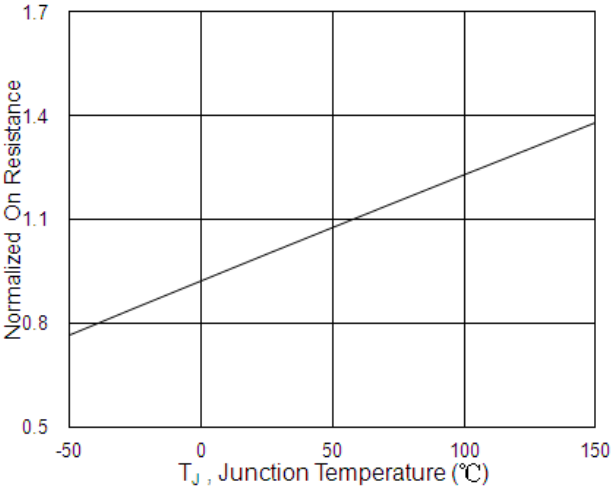


Fig.6 Normalized R_{DSON} vs. T_J

Ratings and Characteristic Curves

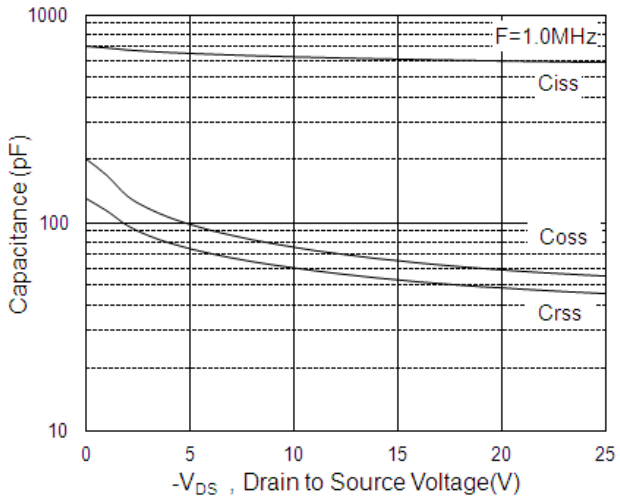


Fig.7 Capacitance

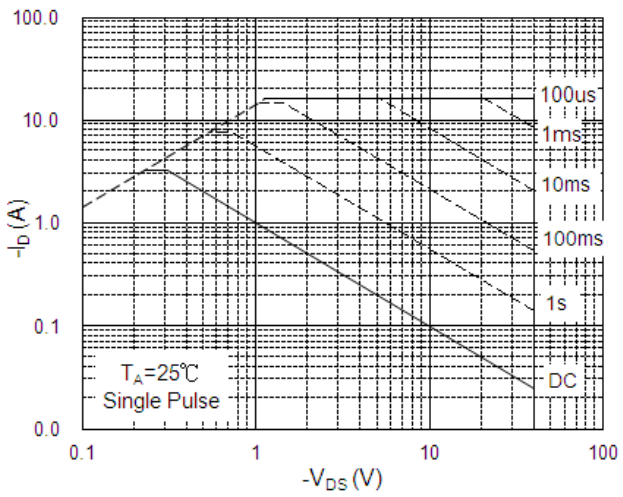


Fig.8 Safe Operating Area

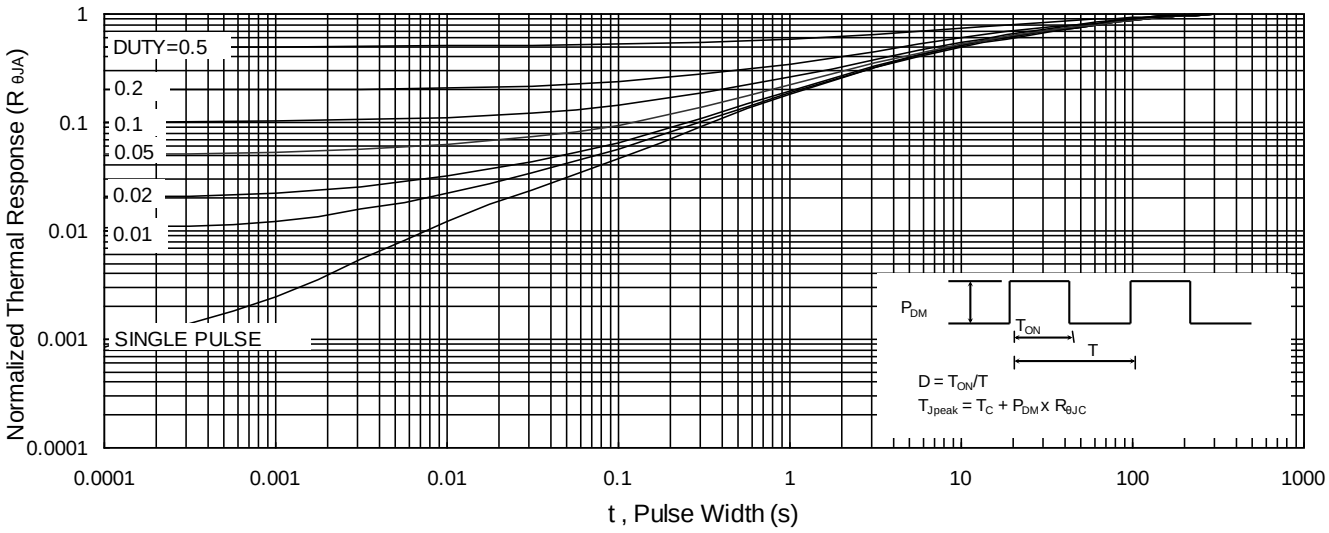


Fig.9 Normalized Maximum Transient Thermal Impedance

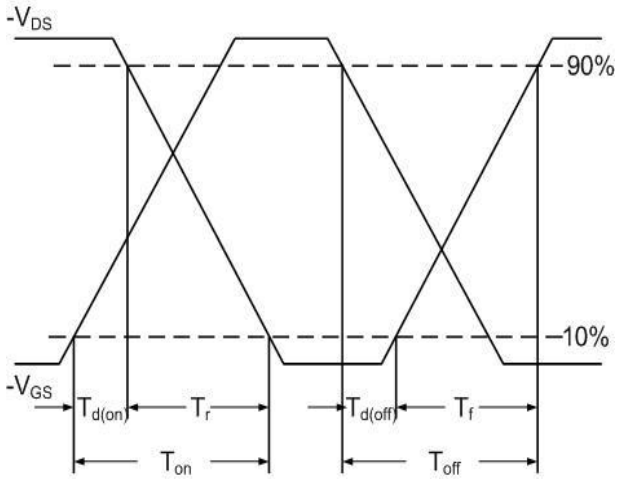


Fig.10 Switching Time Waveform

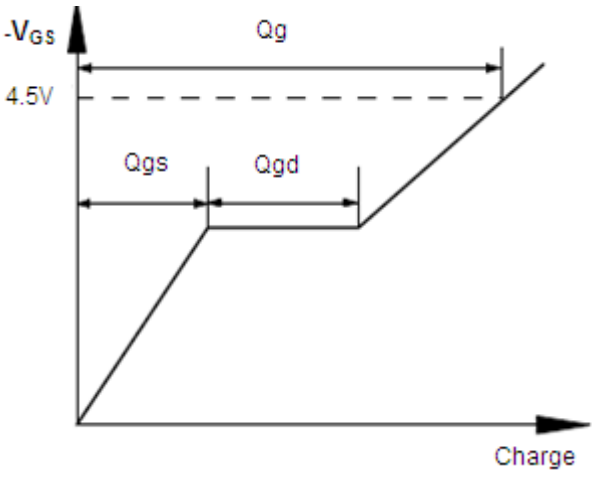
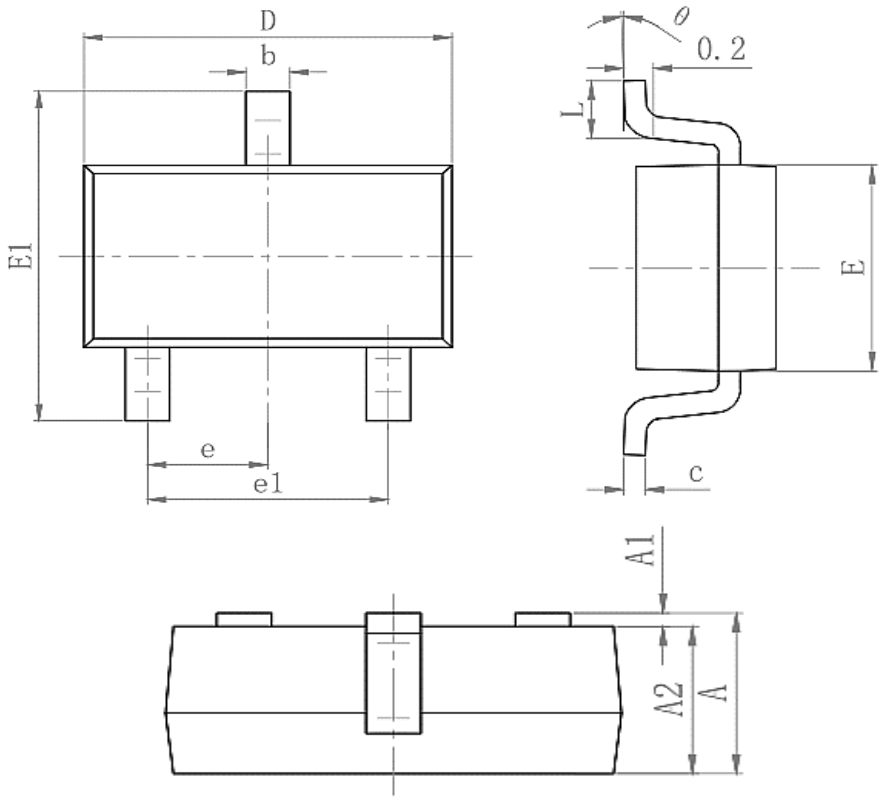


Fig.11 Gate Charge Waveform

Package Outline Dimensions Millimeters

SOT23-3L



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.25	0.45
c	0.100	0.200
D	2.820	3.020
E	1.5	1.7
E1	2.650	2.950
e	0.950(BSC)	
e1	1.800	2.000
L	0.300	0.500
θ	0°	8°