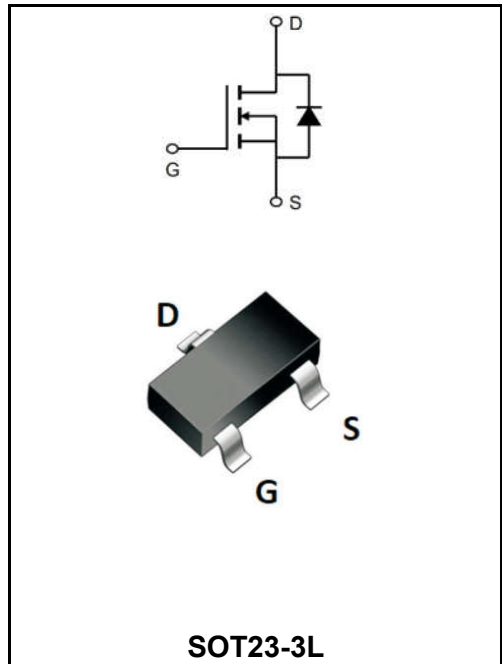


20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	3.3A
V_{DSS}	20V
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	< 32mΩ (Type:23 mΩ)



Application

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

Product Specification Classification

Part Number	Package	Marking	Pack
YFW2300MI	SOT23-3L	A0SHB	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 $V_{GS} @ 4.5V^1 @ T_A=25^\circ C$	I_D	3.3	A
Continuous Drain Current $V_{GS} @ 4.5V^1 @ T_A=70^\circ C$	I_D	2.8	A
Pulsed Drain Current ²	I_{DM}	14.4	A
Total Power Dissipation ³ @T _A =25°C	P_D	1	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-Case ¹	$R_{\theta JC}$	80	°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}	20	22	-	V
Static Drain-Source On-Resistance ²	$V_{GS}=4.5V, I_D=3A$	$R_{DS(ON)}$	-	23	32	mΩ
	$V_{GS}=2.5V, I_D=2A$		-	29	35	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.5	0.75	1.2	V
Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
	$V_{DS}=16V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate- Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Forward Transconductance	$V_{DS}=5V, I_D=3A$	g_{fs}	-	10.5	-	S
Total Gate Charge(4.5V)	$V_{DS}=15V$ $V_{GS}=4.5V$ $I_D=3A$	Q_g	-	4.6	-	nC
Gate-Source Charge		Q_{gs}	-	0.7	-	
Gate-Drain Charge		Q_{gd}	-	1.5	-	
Turn-on delay time	$V_{DD}=10V$ $V_{GS}=4.5V$ $R_G=3.3\Omega$ $I_D=3A$	$t_{d(on)}$	-	1.6	-	ns
Rise Time		T_r	-	42	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	14	-	
Fall Time		t_f	-	7	-	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	310	-	μF
Output Capacitance		C_{oss}	-	49	-	
Reverse Transfer Capacitance		C_{rss}	-	35	-	
Continuous Source Current ^{1,4}	$V_G=V_D=0V$, Force Current	I_S	-	-	3.6	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	V_{SD}	-	-	1.2	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 $\cong 300\mu s$, duty cycle $\cong 2\%$
- 3、 The power dissipation is limited by 150°C 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

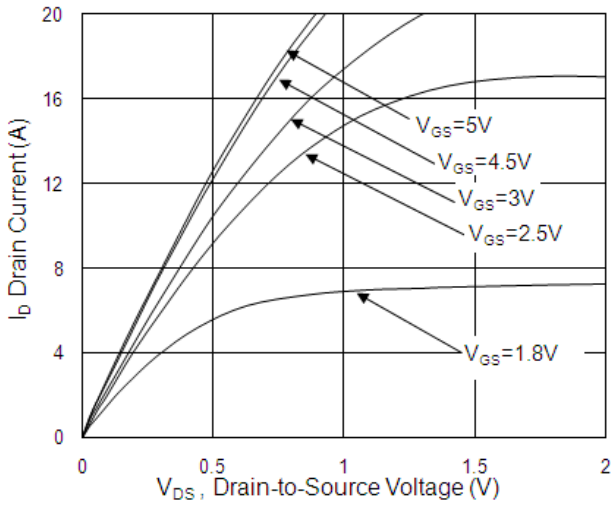


Fig.1 Typical Output Characteristics

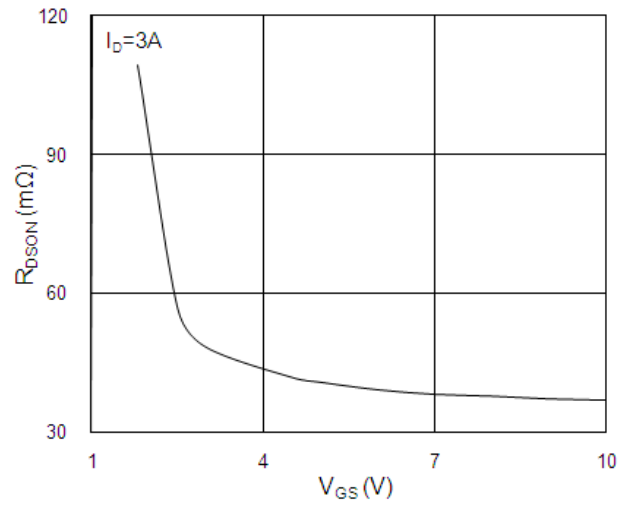


Fig.2 On-Resistance vs. G-S Voltage

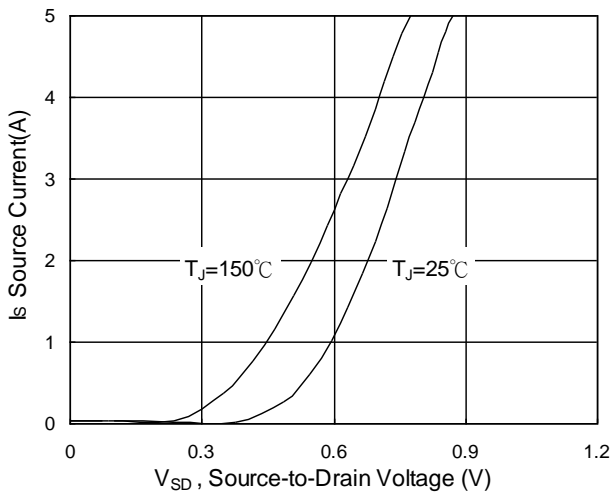


Fig.3 Source Drain Forward Characteristics

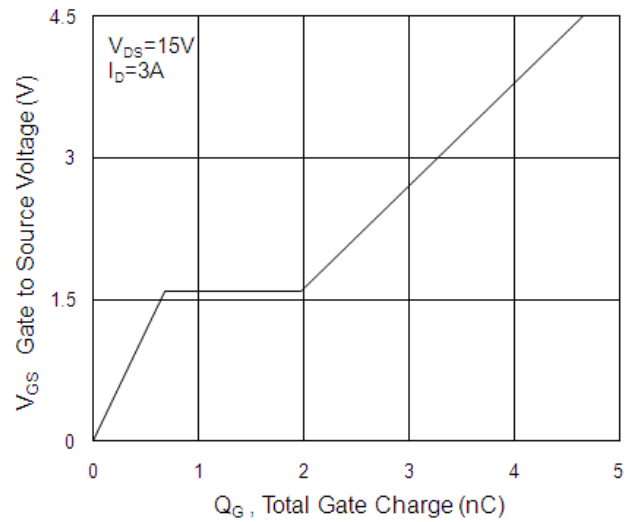


Fig.4 Gate-Charge Characteristics

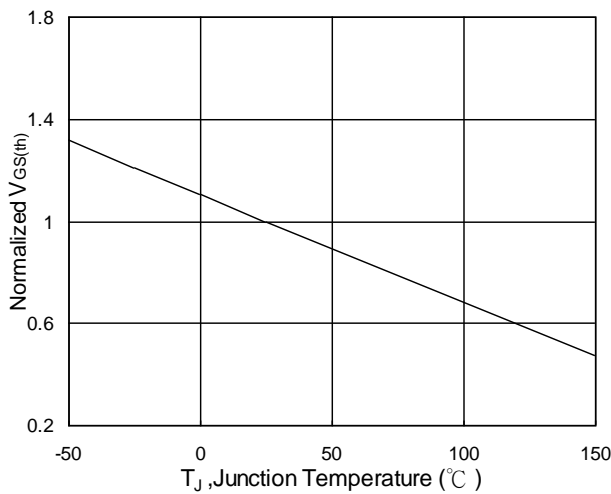


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

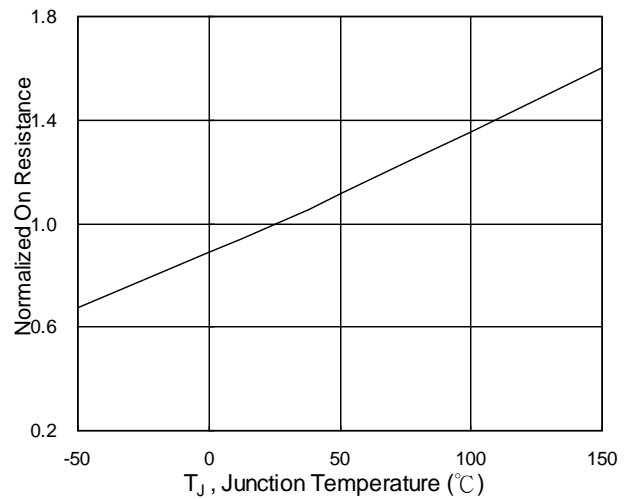


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

Ratings and Characteristic Curves

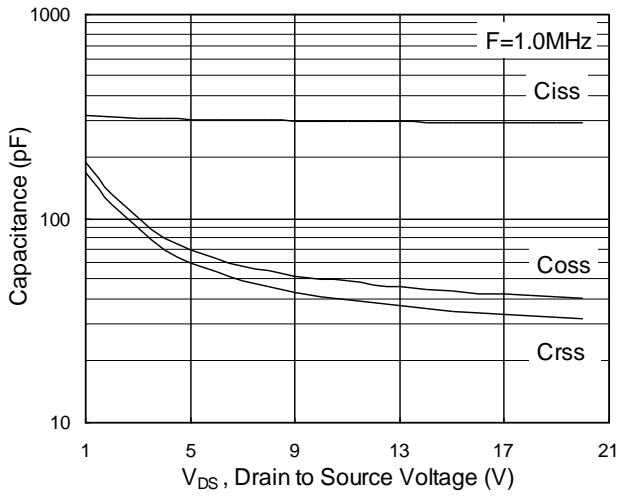


Fig.7 Capacitance

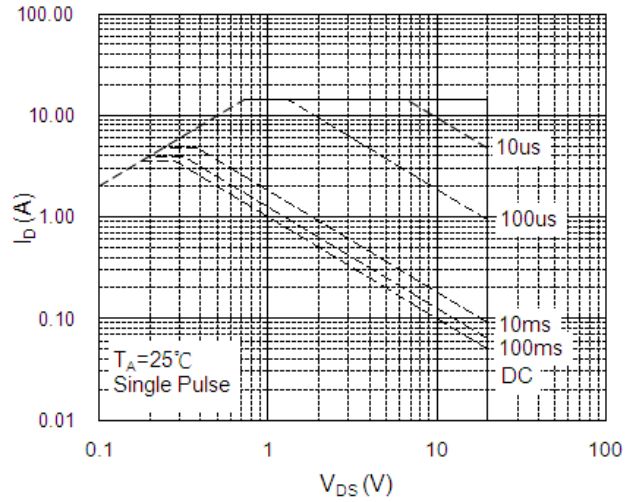


Fig.8 Safe Operating Area

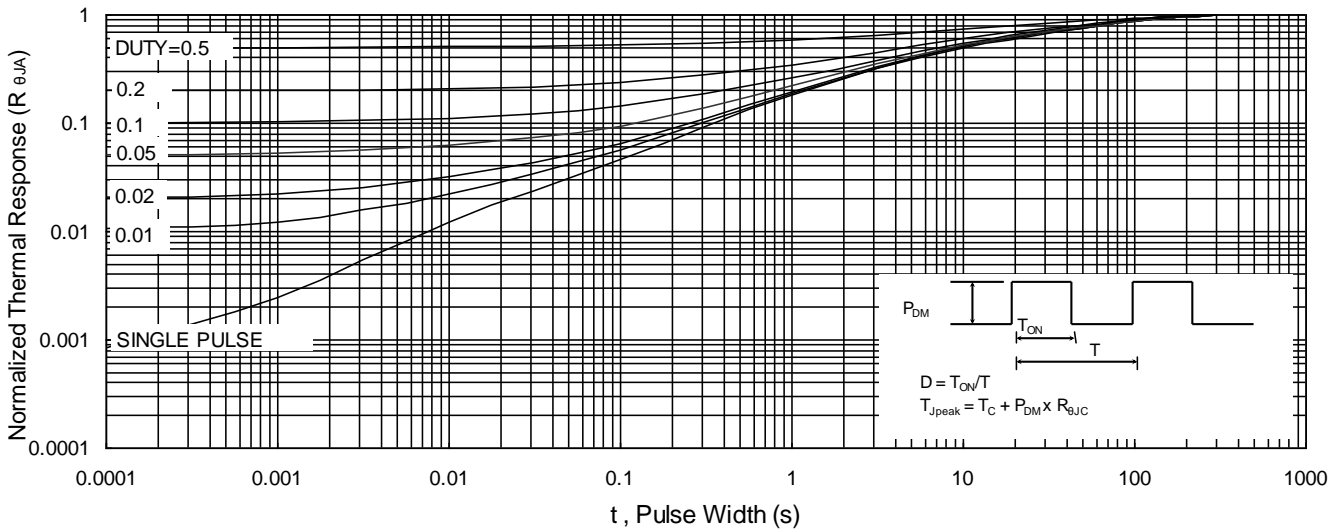


Fig.9 Normalized Maximum Transient Thermal Impedance

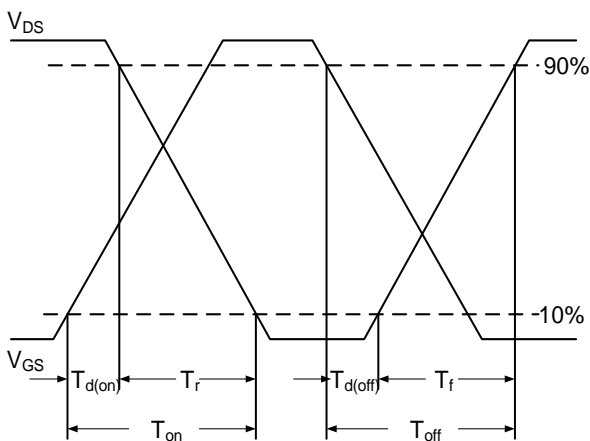


Fig.10 Switching Time Waveform

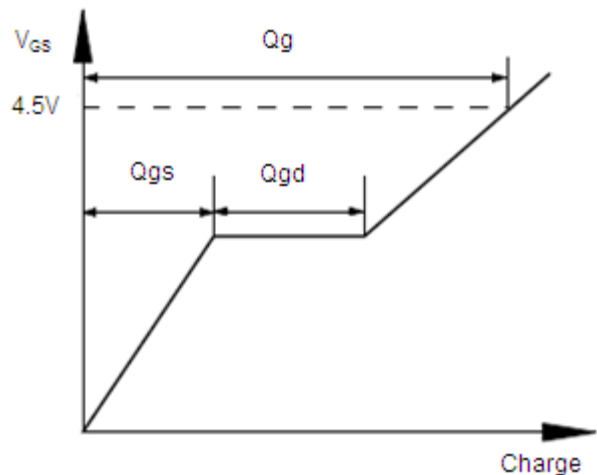
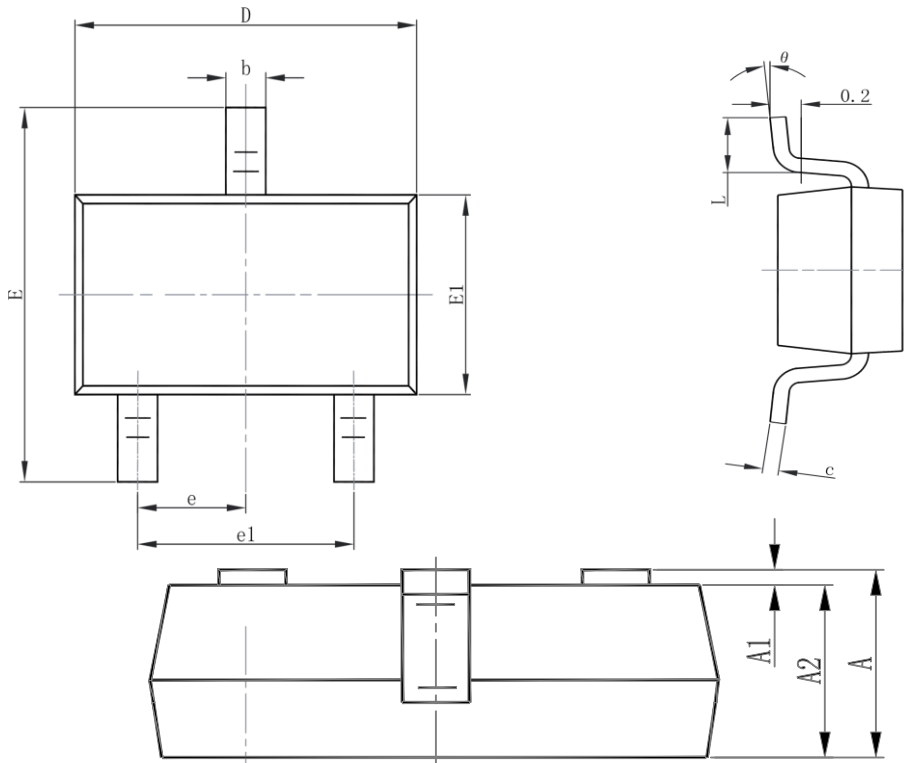


Fig.11 Gate Charge Waveform

SOT23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°