

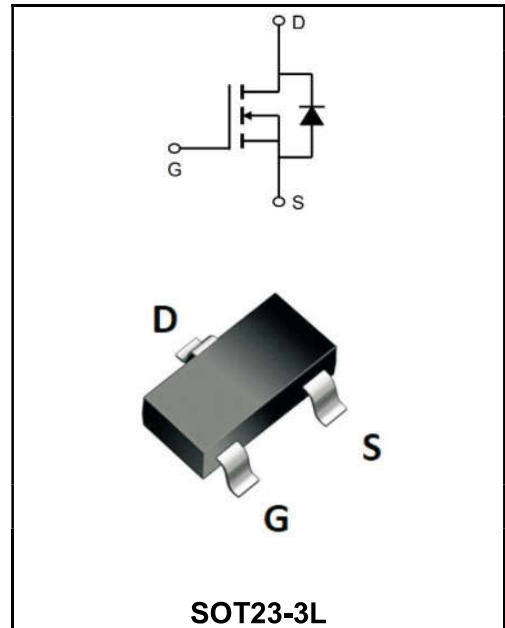
150V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	4A
V_{DSS}	150V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 300mΩ (Type:230 mΩ)

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFW4N15MI	SOT23-3L	MAB5	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	150	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, $V_{GS} @ 10V^1 @ T_A=25^\circ C$	I_D	4	A
Continuous Drain Current, $V_{GS} @ 10V^1 @ T_A=100^\circ C$	I_D	1.5	A
Pulsed Drain Current ²	I_{DM}	9	A
Total Power Dissipation ³ @ $T_A=25^\circ C$	P_D	2	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating 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}	150	165	-	V
Zero Gate Voltage Drain Current	$V_{DS}=150V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.0	1.8	3.0	V
Drain-Source On-State Resistance	$V_{GS}=10V, I_D=1.5A$	$R_{DS(ON)}$	-	220	280	m Ω
	$V_{GS}=4.5V, I_D=1.5A$		-	230	300	
Forward Transconductance	$V_{DS}=15V, I_D=1.5A$	g_{fs}	-	3	-	S
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	235	-	pF
Output Capacitance		C_{oss}	-	36	-	
Reverse Transfer Capacitance		C_{rss}	-	20	-	
Turn-on delay time	$V_{DD}=75V$ $I_D=1A$ $R_L=75\Omega$ $V_{GS}=10V$ $R_G=6\Omega$	$t_{d(on)}$	-	8	-	nS
Turn-on Rise Time		T_r	-	10	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	20	-	
Turn-Off Fall Time		t_f	-	15	-	
Total Gate Charge	$V_{DS}=75V$ $I_D=1.5A$ $V_{GS}=10V$	Q_g	-	8	-	nC
Gate-Source Charge		Q_{gs}	-	1.4	-	
Gate-Drain Charge		Q_{gd}	-	2.1	-	
Diode Forward Voltage ^(Note 3)	$V_{GS}=0V, I_S=2A$	V_{SD}	-	-	1.2	V
Diode Forward Current ^(Note 2)		I_S	-	-	2	A

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

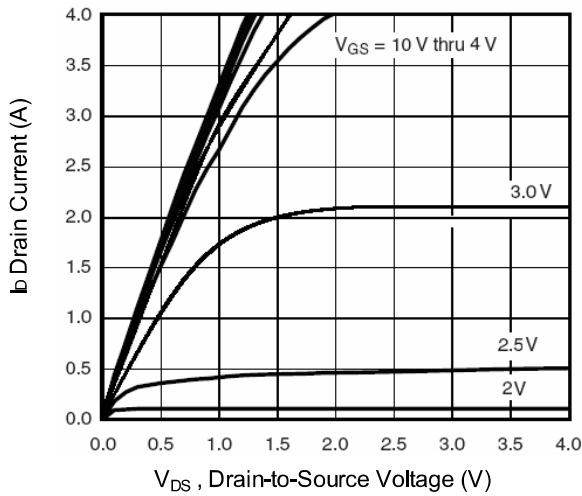


Fig.1 Typical Output Characteristics

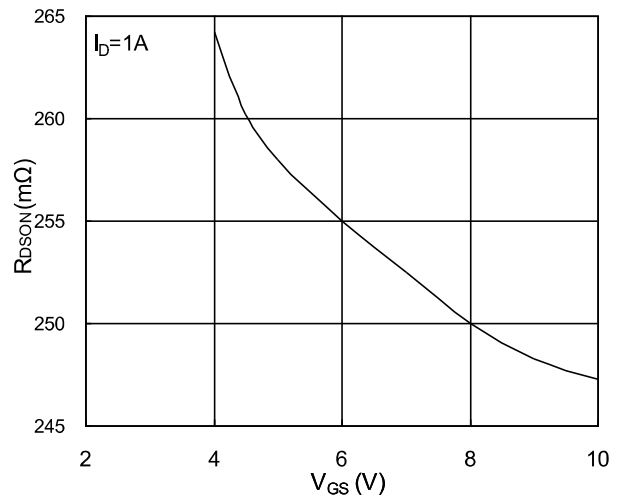


Fig.2 On-Resistance vs. Gate-Source

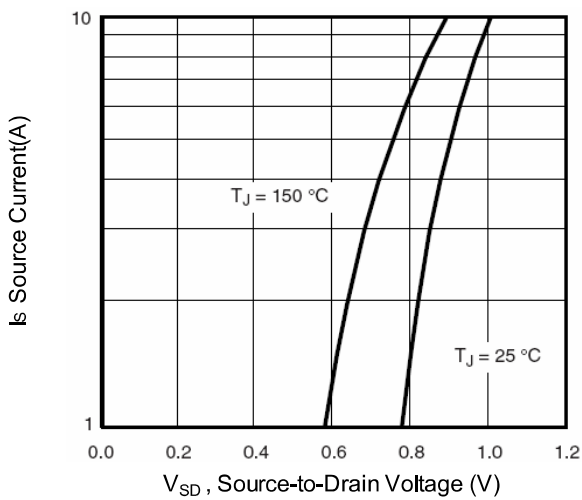


Fig.3 Forward Characteristics of Reverse

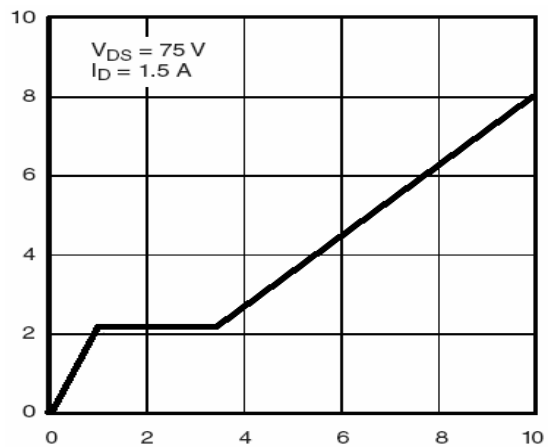


Fig.4 Gate-Charge Characteristics

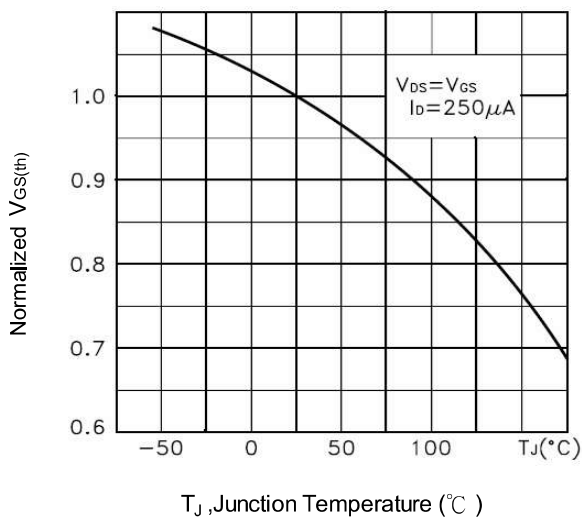


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

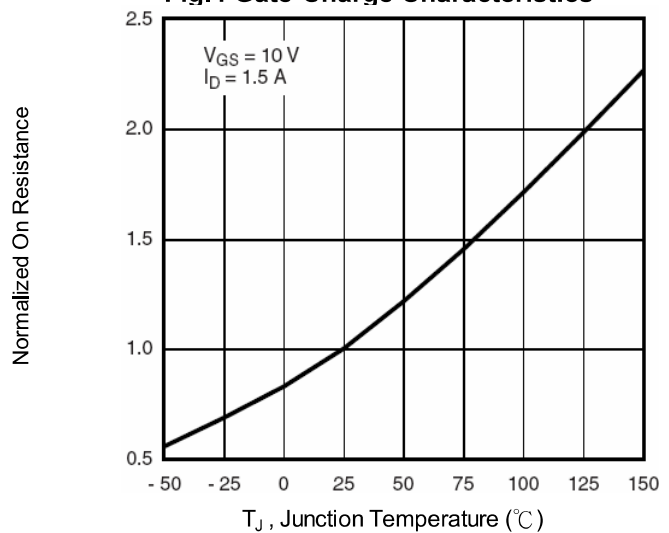


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

Ratings and Characteristic Curves

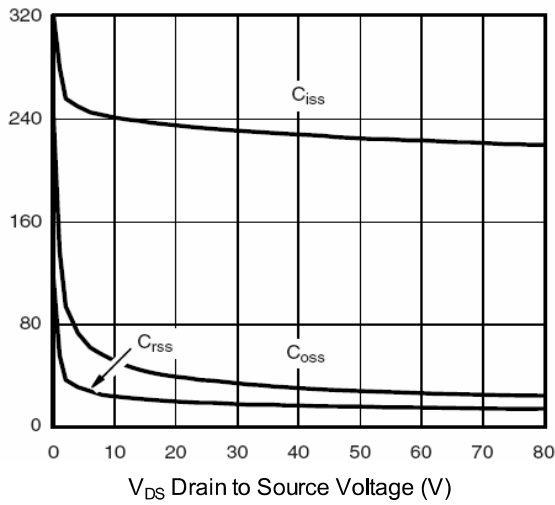


Fig.7 Capacitance

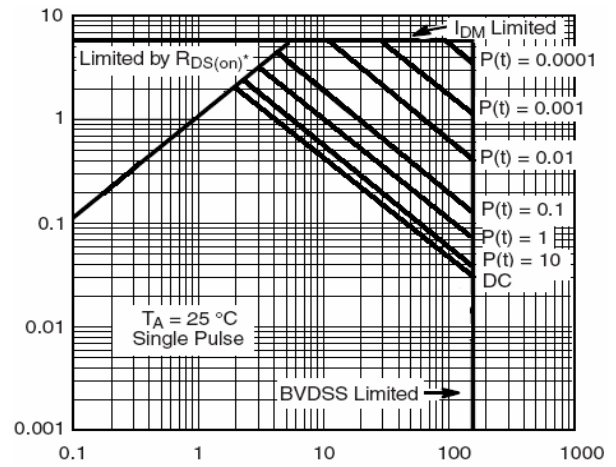


Fig.8 Safe Operating Area

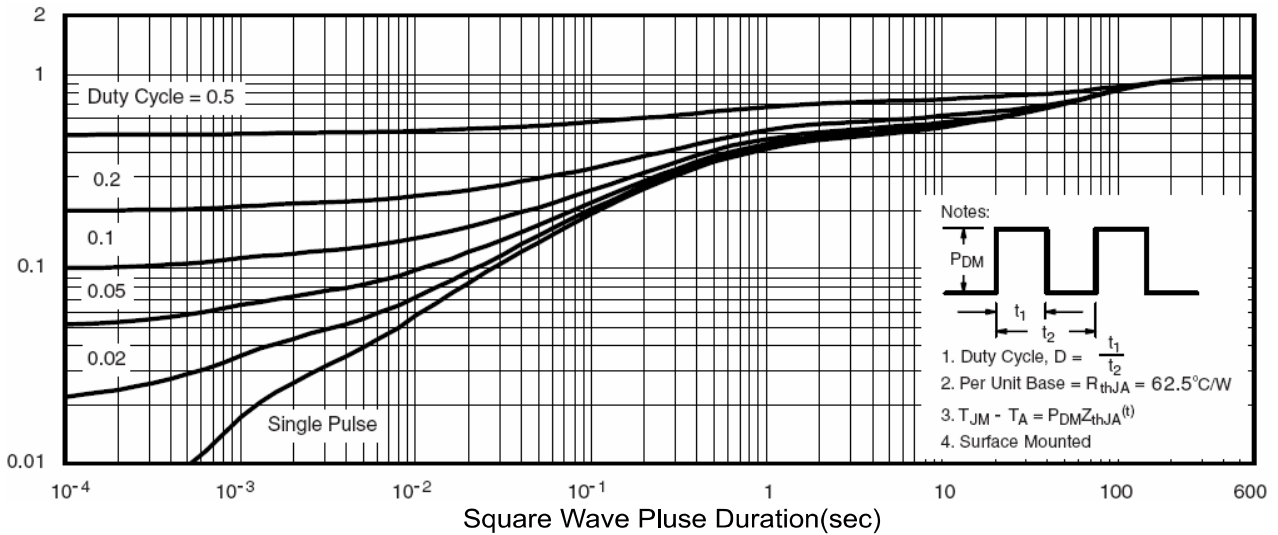


Fig.9 Normalized Maximum Transient Thermal Impedance

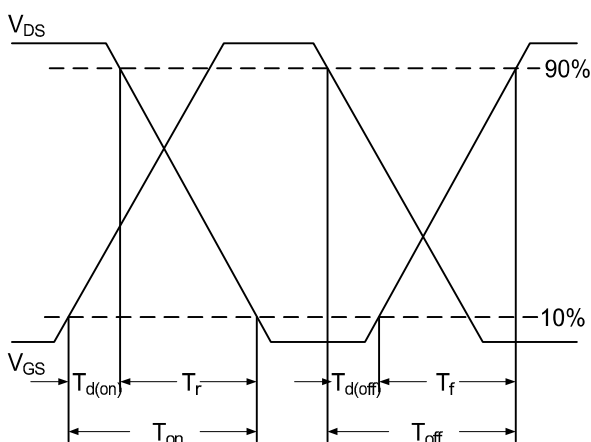


Fig.10 Switching Time Waveform

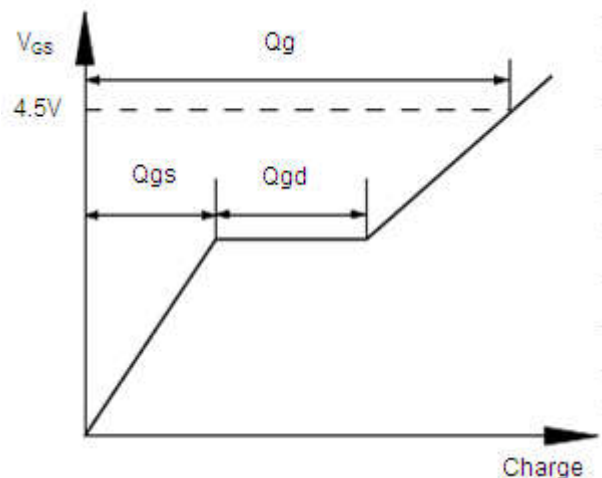
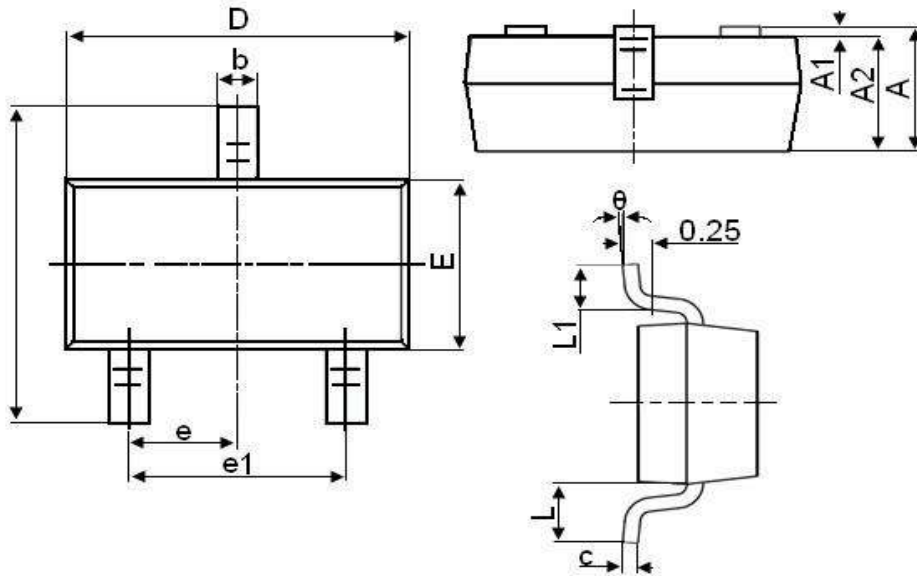


Fig.11 Gate Charge Waveform

SOT23-3L



Symbol	Dimensions in Millimeters	
	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°