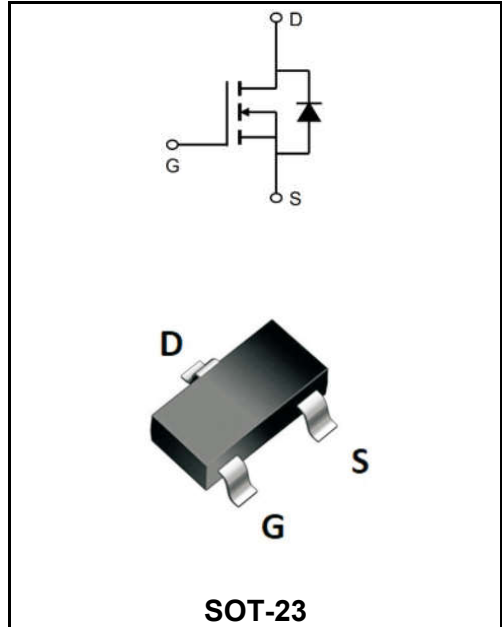


30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	5.8A
V_{DSS}	30V
R_{DS(on)-typ(@V_{GS}=10V)}	< 28mΩ (Type:26 mΩ)



Application

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

Product Specification Classification

Part Number	Package	Marking	Pack
YFW3400B	SOT-23	A09T.	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	± 12	V
Continuous Drain Current, V _{GS} @ 4.5V ¹ @T _A =25°C	I_D	5.8	A
Continuous Drain Current, V _{GS} @ 4.5V ¹ @T _A =70°C	I_D	3.1	A
Pulsed Drain Current ²	I_{DM}	16	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_{θJA}	125	°C/W
Thermal Resistance Junction-Case ¹	R_{θJC}	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}	30	32	-	V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	0.029	-	V/°C
Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=4A$	$R_{DS(ON)}$	-	26	28	mΩ
	$V_{GS}=4.5V, I_D=3A$		-	29	32	
	$V_{GS}=2.5V, I_D=2A$		-	38	47	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	0.5	0.95	1.2	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	-2.82	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
	$V_{DS}=24V, V_{GS}=0V, T_J=55^\circ C$		-	-	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}	-	19	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	R_g	-	1.5	3	Ω
Total Gate Charge(4.5V)	$V_{DS}=15V$ $V_{GS}=4.5V$ $I_D=3A$	Q_g	-	8.34	11.7	nC
Gate-Source Charge		Q_{gs}	-	1.26	1.8	
Gate-Drain Charge		Q_{gd}	-	1.88	2.6	
Turn-on delay time	$V_{DD}=15V$ $V_{GS}=4.5V$ $R_G=3.3\Omega$ $I_D=3A$	$t_{d(on)}$	-	3.2	6.4	ns
Rise Time		T_r	-	41.8	75	
Turn-Off Delay Time		$t_{d(OFF)}$	-	21.2	42	
Fall Time		t_f	-	6.4	12.8	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	662	927	pF
Output Capacitance		C_{oss}	-	51.3	72	
Reverse Transfer Capacitance		C_{rss}	-	43.6	61	
Continuous Source Current ^{1,4}	$V_G=V_D=0V$, Force Current	I_S	-	-	3.9	A
Pulsed Source Current ^{2,4}	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	I_{SM}	-	-	16	A
Diode Forward Voltage ²		V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_f=3A, di/dt=100A/\mu s,$ $T_J=25^\circ C$	t_{rr}	-	6.8	-	ns
Reverse Recovery Charge		Q_{rr}	-	2.3	-	nC

Note :

- 1、The data tested by surface mounted on a 1 inch2 FR-4 board with 20Z 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

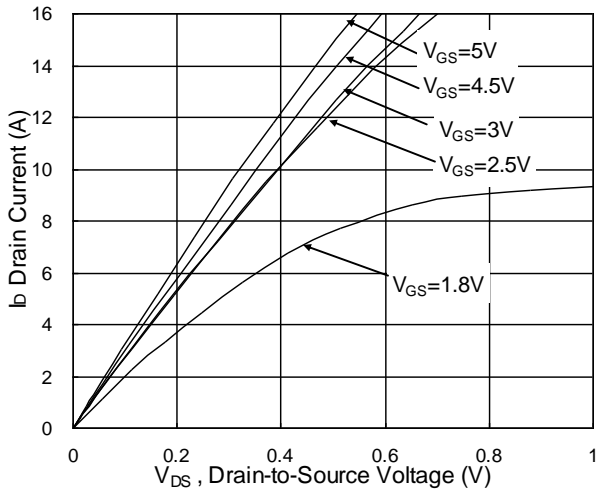


Fig.1 Typical Output Characteristics

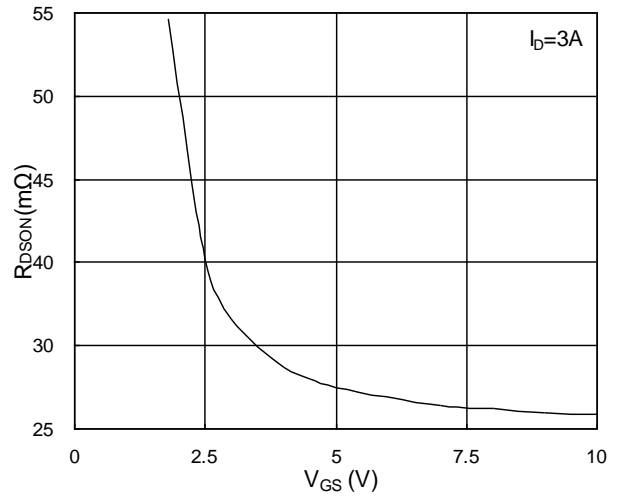


Fig.2 On-Resistance vs G-S Voltage

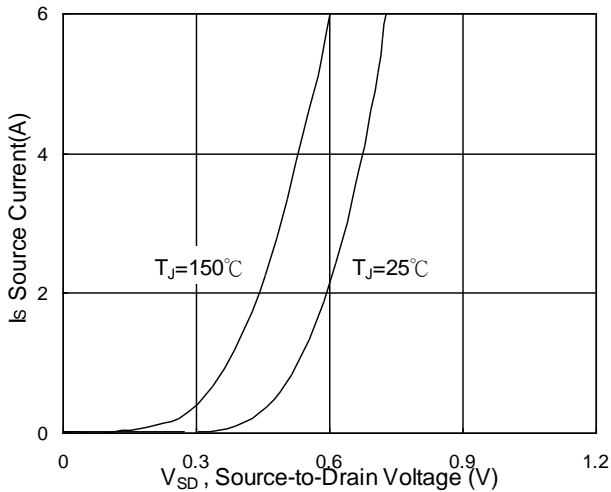


Fig.3 Source Drain Forward Characteristics

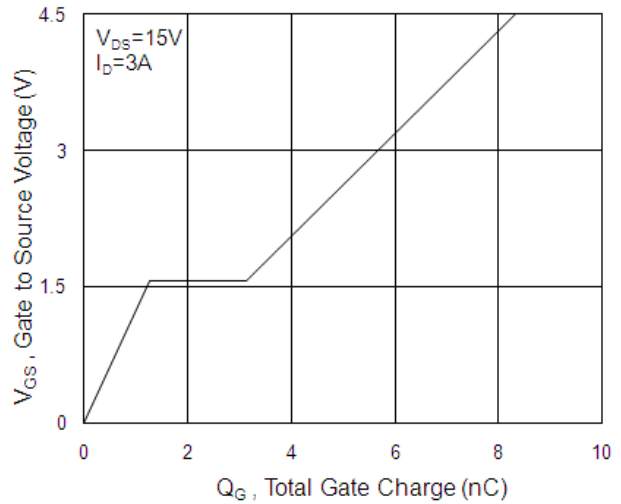


Fig.4 Gate-Charge Characteristics

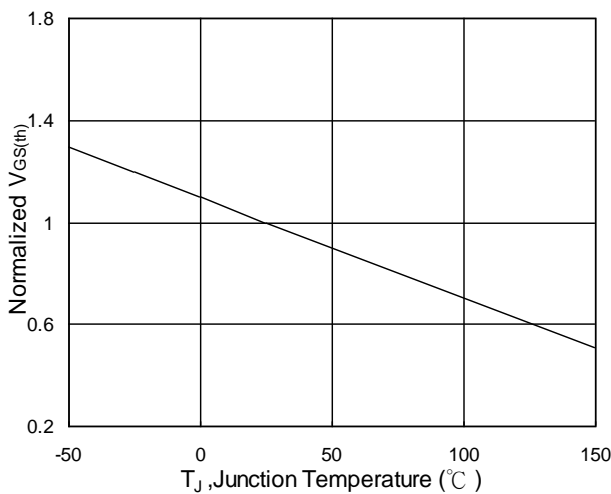


Fig.5 Normalized V_{GS(th)} vs T_J

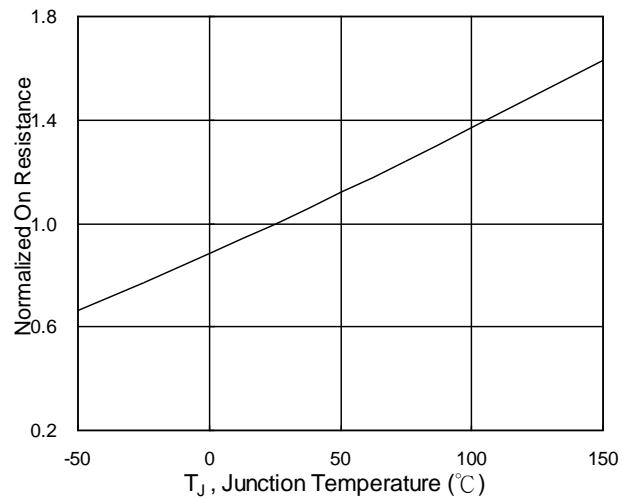


Fig.6 Normalized R_{DS(on)} vs T_J

Ratings and Characteristic Curves

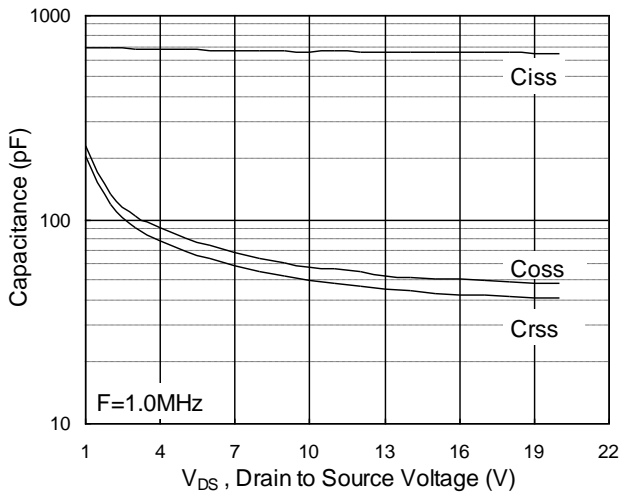


Fig.7 Capacitance

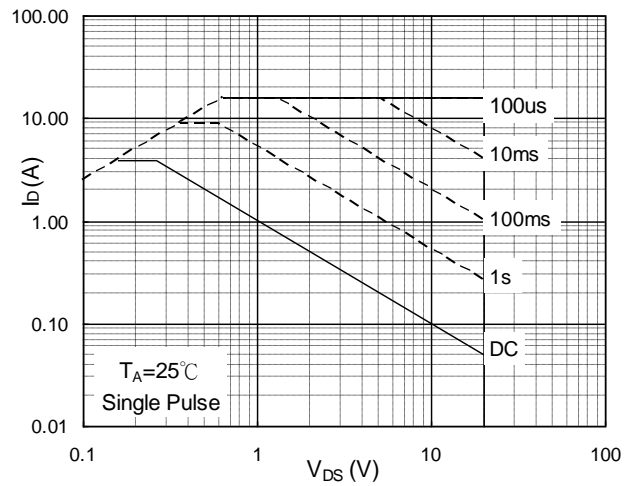


Fig.8 Safe Operating Area

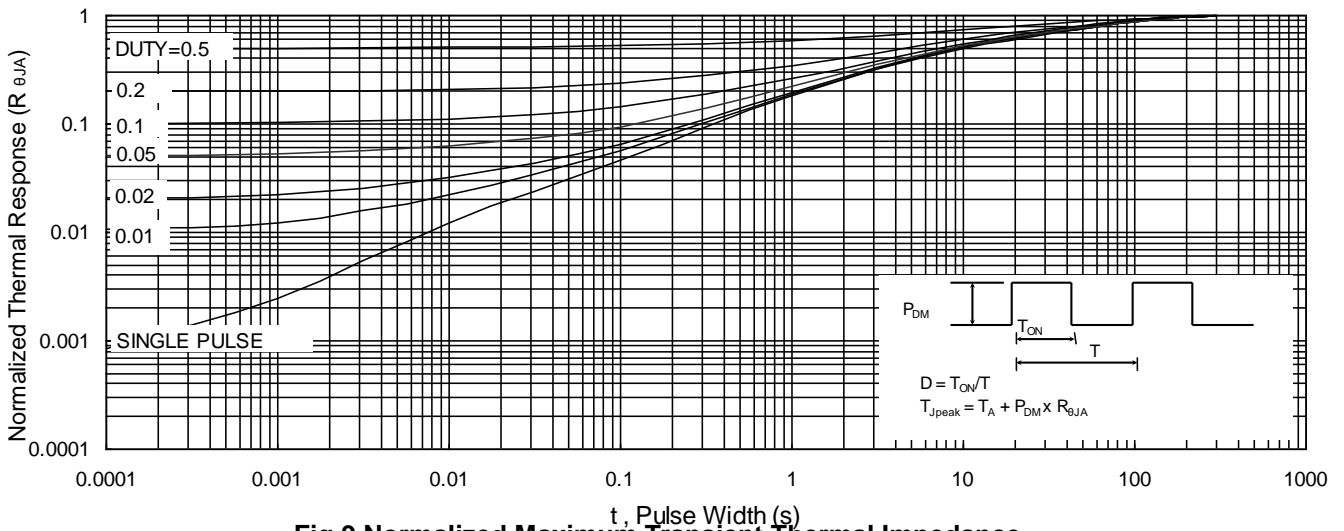


Fig.9 Normalized Maximum Transient Thermal Impedance

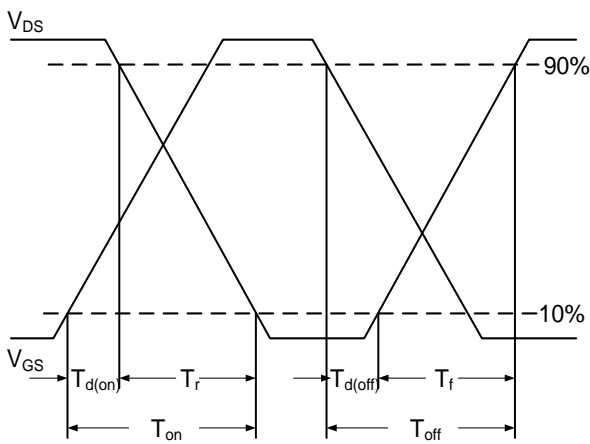


Fig.10 Switching Time Waveform

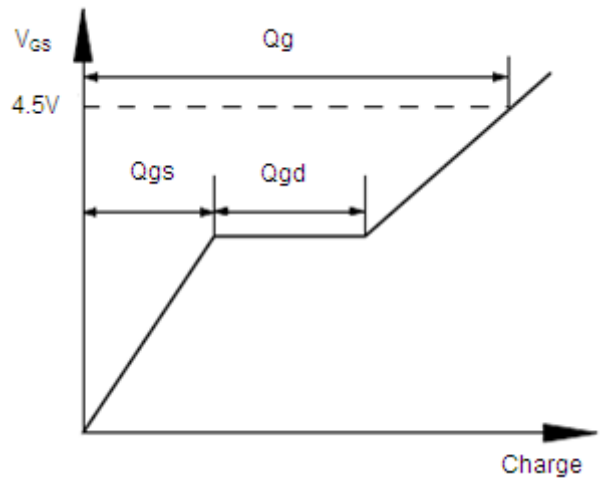
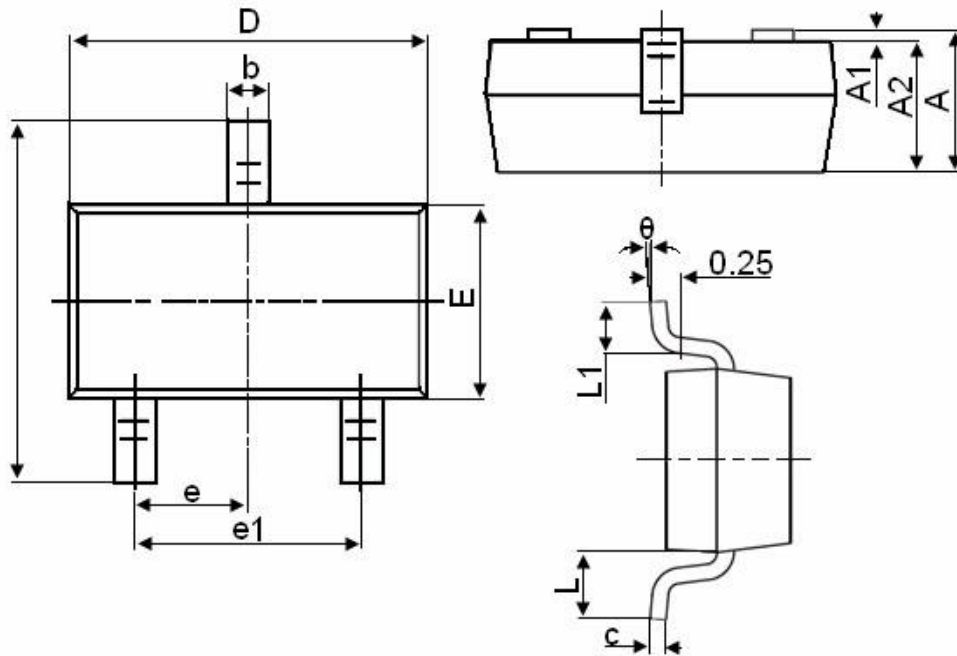


Fig.11 Gate Charge Waveform

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°