

20V N+N-CHANNEL ENHANCEMENT MODE MOSFET

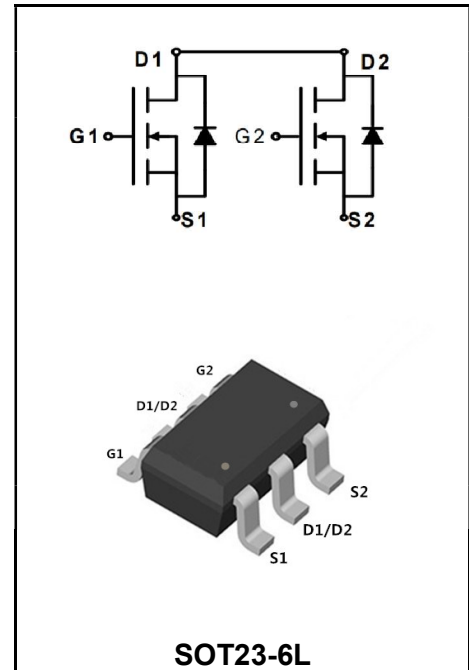
MAIN CHARACTERISTICS

I_D	6.0A
V_{DSS}	20V
$R_{DSON-typ}(@V_{GS}=10V)$	<25mΩ (Type:21 mΩ)



Application

- ◆Lithium battery protection
- ◆Mobile phone fast charging



Product Specification Classification

Part Number	Package	Marking	Pack
YFW8205SLI	SOT23-6L	8205S	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 Current1 @TA=25°C	I_D	6.0	A
Continuous Drain Current1 @TA=70°C	I_D	4.8	A
Pulsed Drain Current2	I_{DM}	24	A
Total Power Dissipation3 @TA=25°C	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

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	BV_{DSS}	20	22	-	V
Static Drain-Source On-Resistance ²	$V_{GS} = 4.5V, I_D = 5A$	$R_{DS(on)}$	-	21	25	mΩ
	$V_{GS} = 2.5V, I_D = 4A$		-	28	40	
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	0.5	0.7	1.2	V
Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	uA
Gate-Source Leakage Current	$V_{GS} = \pm 8 V, V_{DS} = 0 V$	I_{GSS}	-	-	±100	nA
Forward Transconductance	$V_{DS}=5V, I_D=3.5A$	g_{fs}	-	20	-	S
Total Gate Charge(4.5V)	$I_D = 7A$ $V_{DS} = 15V$ $V_{GS} = 4.5V$	Q_g	-	11.4	-	nC
Gate-Source Charge		Q_{gs}	-	1.6	-	
Gate-Drain Charge		Q_{gd}	-	2.9	-	
Turn-on Delay time	$V_{DD} = 10V$ $V_{GS} = 4.5V$ $R_G = 3.3$ $I_D = 5A$	$Td(on)$	-	5	-	nS
Rise Time		Tr	-	32.4	-	
Turn-Off Delay Time		$td(OFF)$	-	28	-	
Fall Time		Tf	-	9	-	
Input Capacitance	$V_{GS}=0V$ $V_{DS}=15V$ $f=1MHz$	C_{iss}	-	863	-	pF
Output Capacitance		C_{oss}	-	87	-	
Reverse Transfer Capacitance		C_{rss}	-	71	-	
Continuous Source Current ^{1,4}	$V_G=V_D=0V, \text{ Force Current}$	I_S	-	-	6	A
Diode Forward Voltage ²	$V_{DS}=0V, I_S=1V, T_J=25^\circ C$	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 175°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

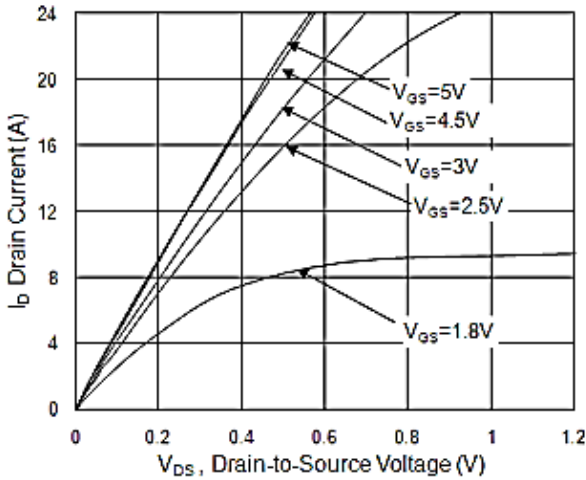


Fig.1 Typical Output Characteristics

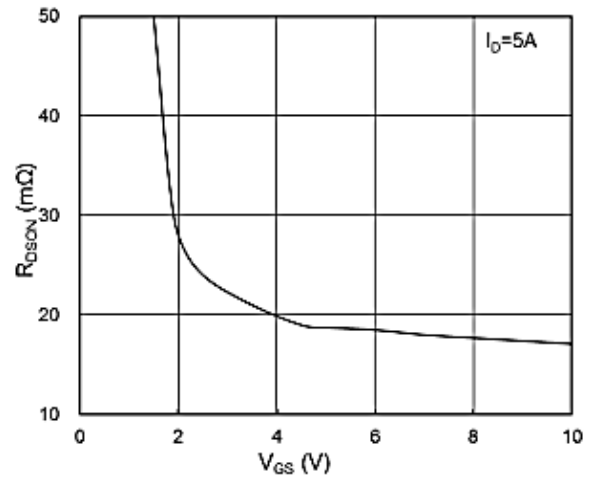


Fig.2 On-Resistance vs. Gate-Source Voltage

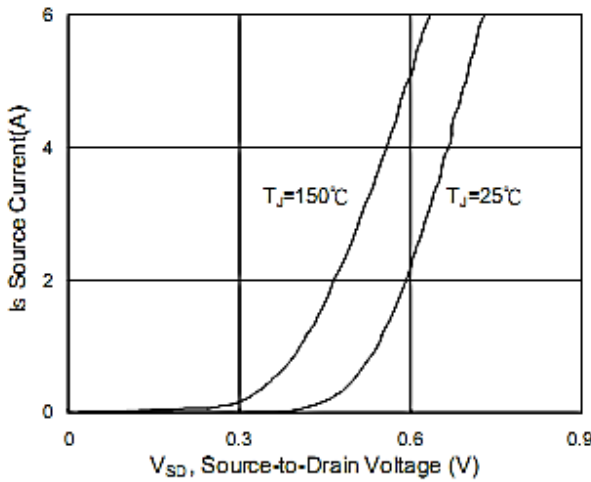


Fig.3 Forward Characteristics of Reverse

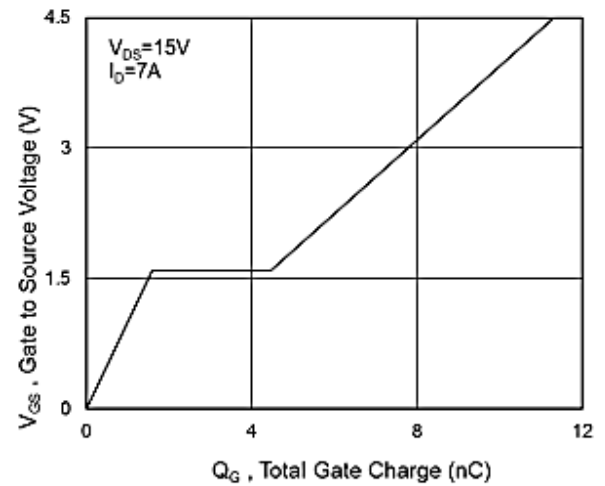


Fig.4 Gate-Charge Characteristics

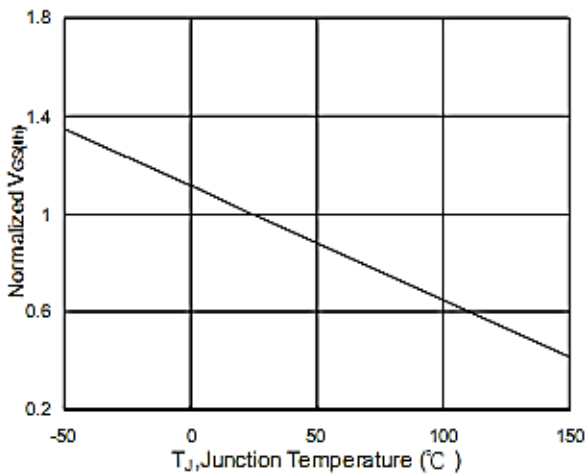


Fig.5 $V_{GS(th)}$ vs. T_J

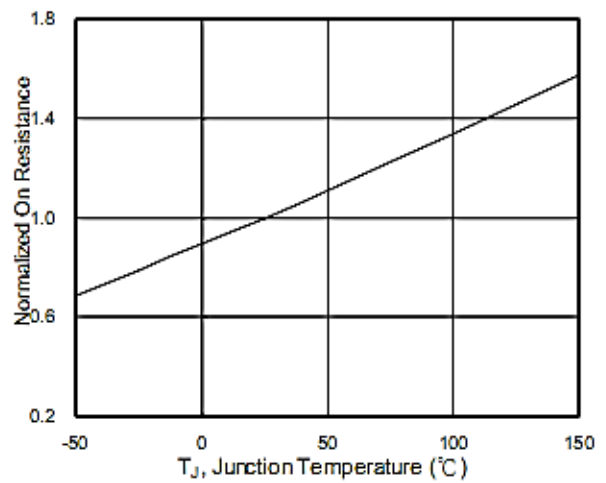


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

Ratings and Characteristic Curves

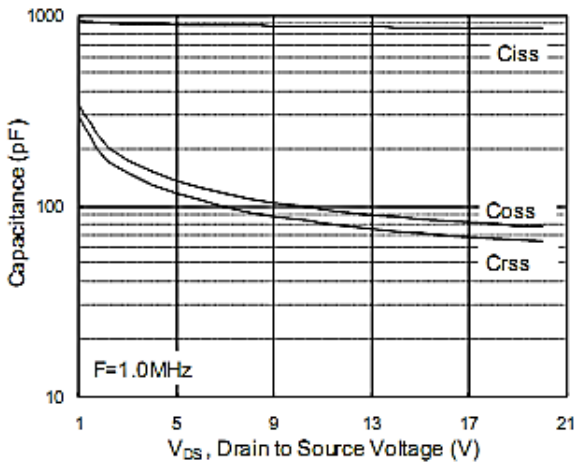


Fig.7 Capacitance

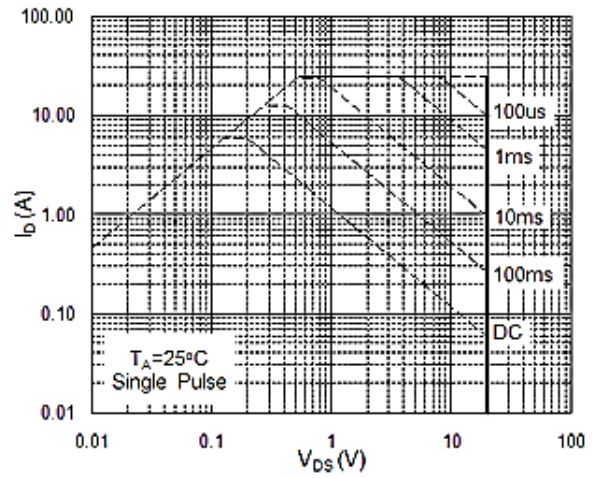


Fig.8 Safe Operating Area

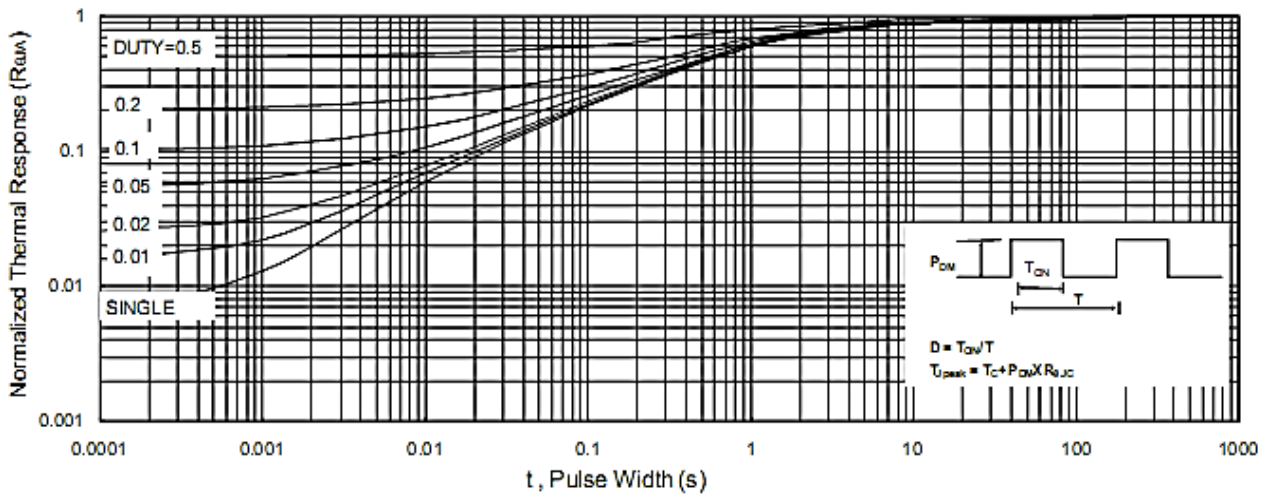


Fig.9 Normalized Maximum Transient Thermal Impedance

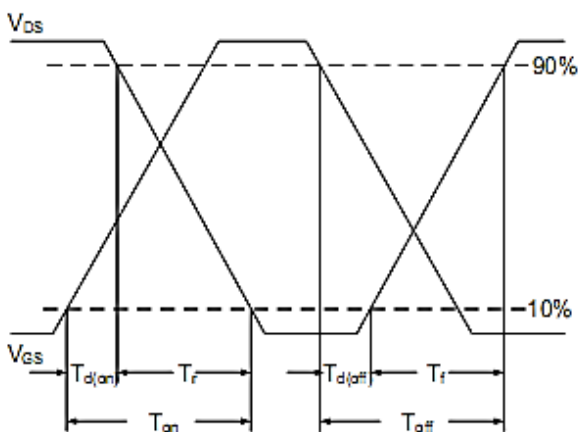


Fig.10 Switching Time Waveform

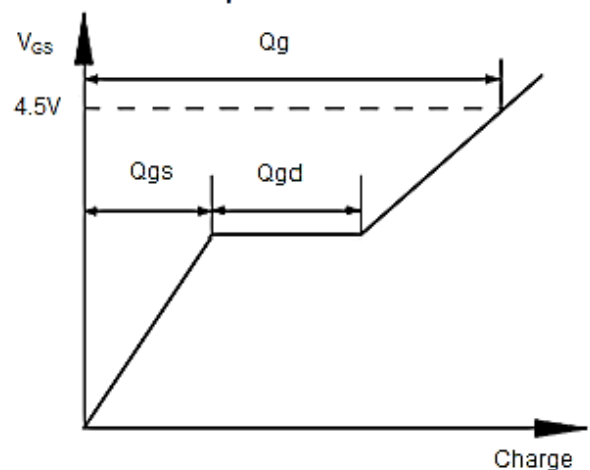
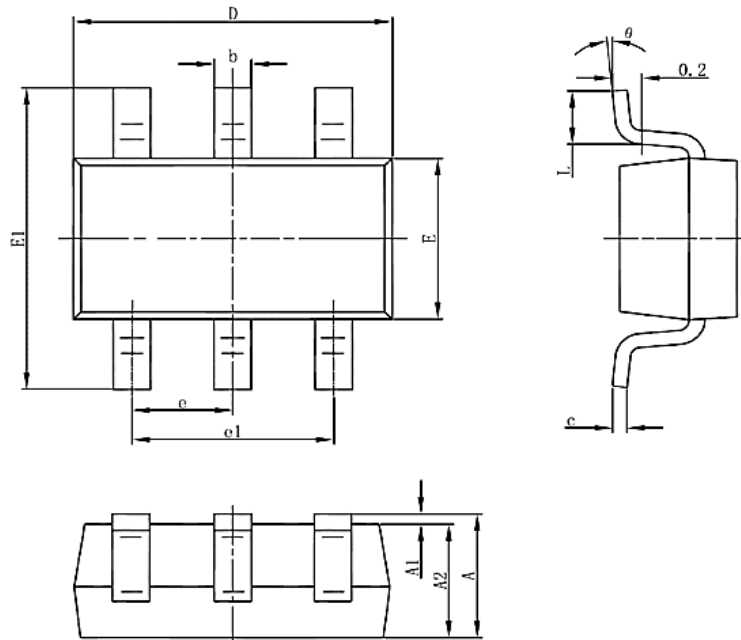


Fig.11 Gate Charge Waveform

SOT23-6L



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
E	1.500	1.700	0.059	0.067
E1	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