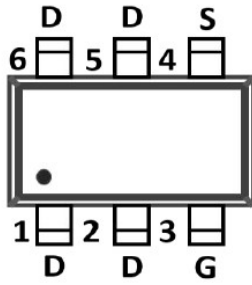
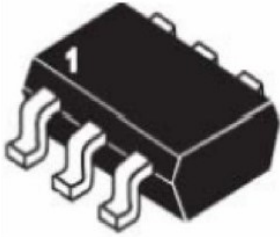
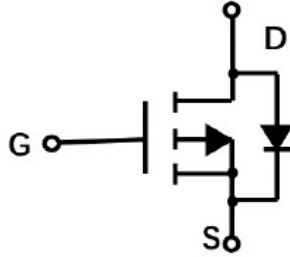


P-Channel Enhancement Mode Field Effect Transistor



SOT-23-6L



Product Summary

- V_{DS} -20V
- I_D -5.4A
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <39mohm
- $R_{DS(ON)}$ (at $V_{GS}=-2.5V$) <49mohm
- $R_{DS(ON)}$ (at $V_{GS}=-1.8V$) <63mohm
- 100% ∇V_{DS} Tested

General Description

- Trench Power LV MOSFET technology
- High Power and Current handling capability
- Low Gate Charge

Applications

- Battery protection
- Power management
- Load switch

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	± 10	V
Drain Current	$T_A=25^\circ C$	I_D	-5.4	A
	$T_A=70^\circ C$		-4.4	
Pulsed Drain Current ^A		I_{DM}	-22	A
Total Power Dissipation	$T_A=25^\circ C$	P_D	1.2	W
	$T_A=70^\circ C$		0.8	W
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	104	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJS2305A	F2	2305	3000	30000	120000	7" reel



YJS2305A

■ Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-5.4A$		27	39	m Ω
		$V_{GS}=-2.5V, I_D=-4A$		36	49	
		$V_{GS}=-1.8V, I_D=-3A$		48	63	
Diode Forward Voltage	V_{SD}	$I_S=-5.4A, V_{GS}=0V$			-1.2	V
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1\text{MHz}$		1010		pF
Output Capacitance	C_{oss}			130		
Reverse Transfer Capacitance	C_{rss}			109		
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=-4.5V, V_{DS}=-10V, I_D=-4A$		10.98		nC
Gate-Source Charge	Q_{gs}			2.17		
Gate-Drain Charge	Q_{gd}			2.54		
Reverse Recovery Charge	Q_{rr}	$I_F=-4A, di/dt=100A/\mu s$		4.38		ns
Reverse Recovery Time	t_{rr}			24.8		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-4.5V, V_{DS}=-10V, R_L=2.5\Omega$ $R_{GEN}=3\Omega$		8.4		ns
Turn-on Rise Time	t_r			36.2		
Turn-off Delay Time	$t_{D(off)}$			76.8		
Turn-off fall Time	t_f			56.2		

A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.



■ Typical Performance Characteristics

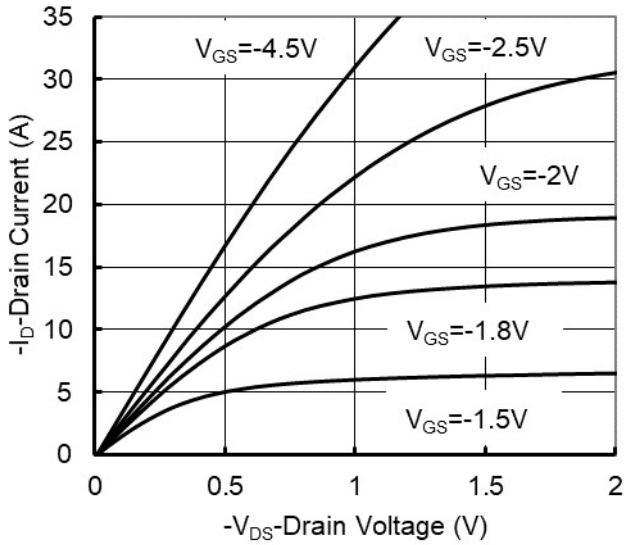


Figure1. Output Characteristics

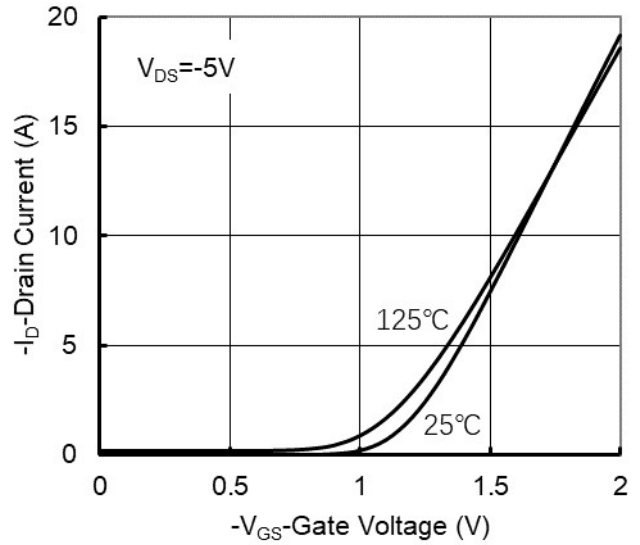


Figure2. Transfer Characteristics

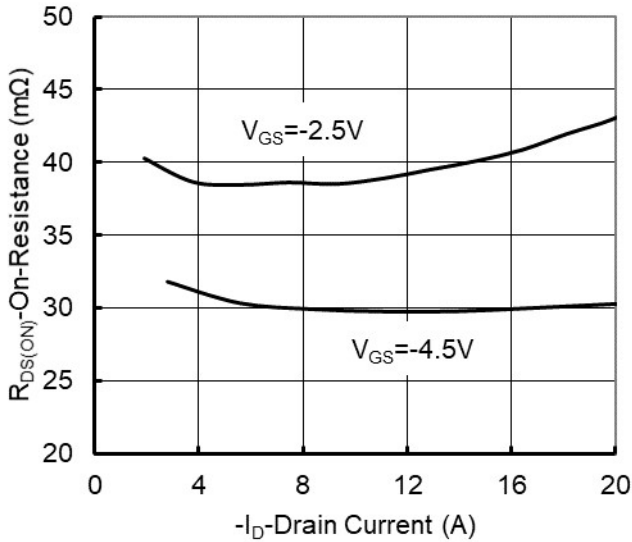


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

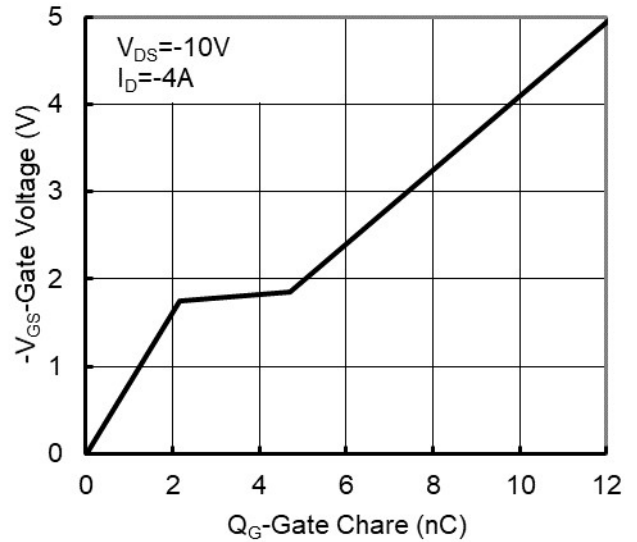


Figure 4: On-Resistance vs. Junction Temperature

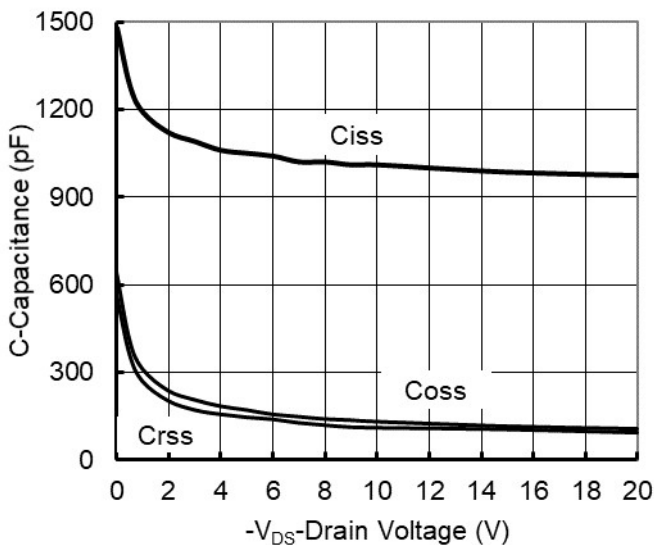


Figure5. Capacitance Characteristics

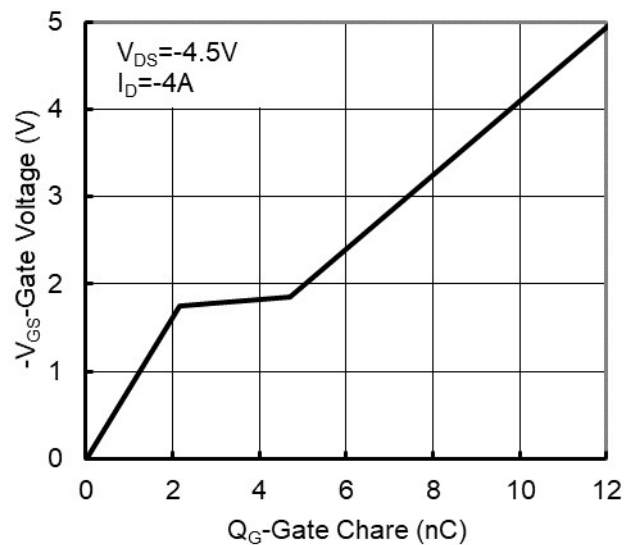


Figure6. Gate Charge



YJS2305A

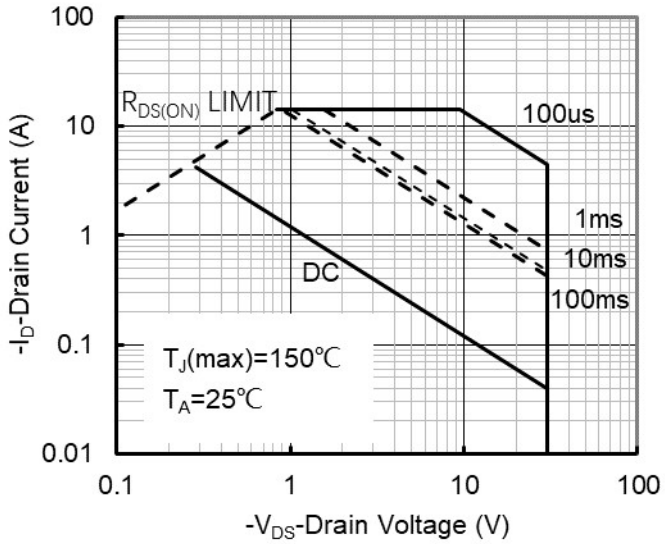


Figure7. Safe Operation Area

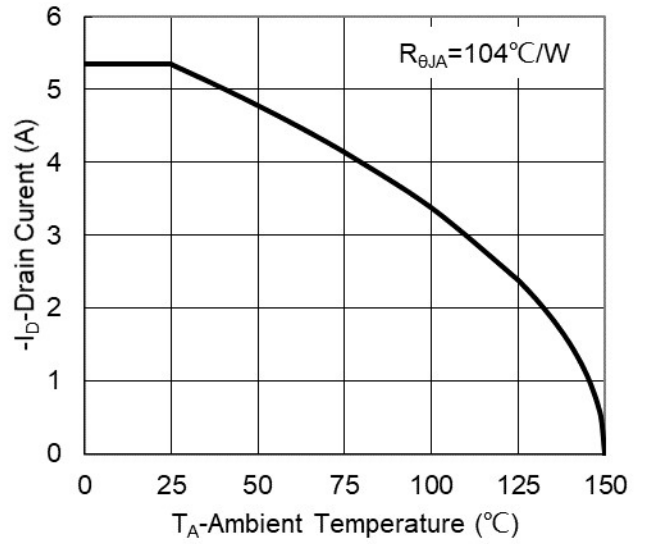


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

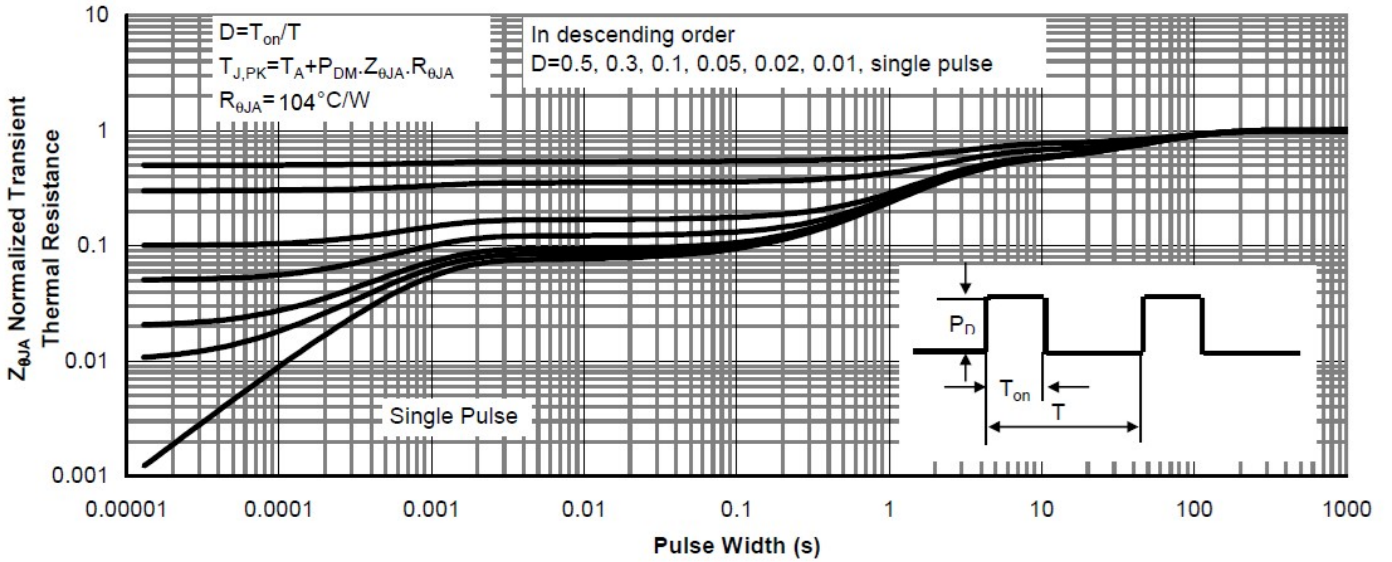
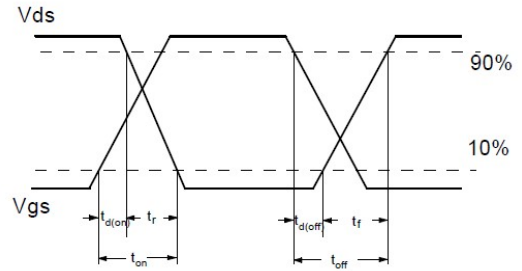
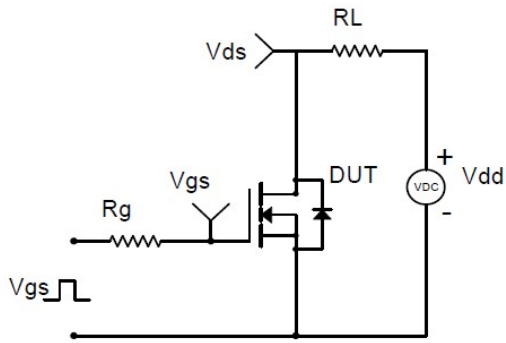
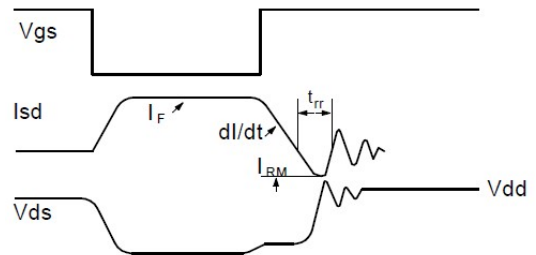
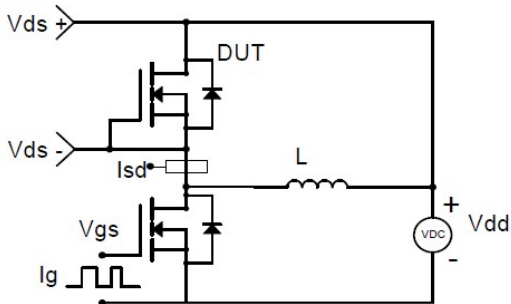


Figure9. Normalized Maximum Transient Thermal Impedance



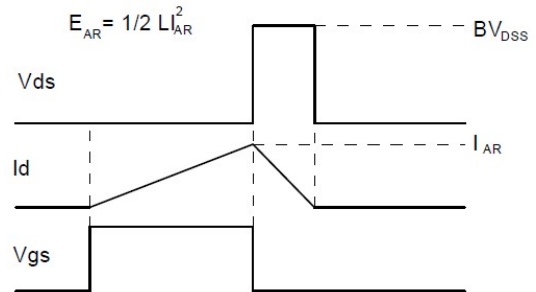
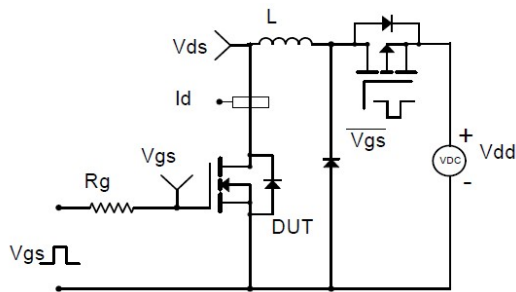
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

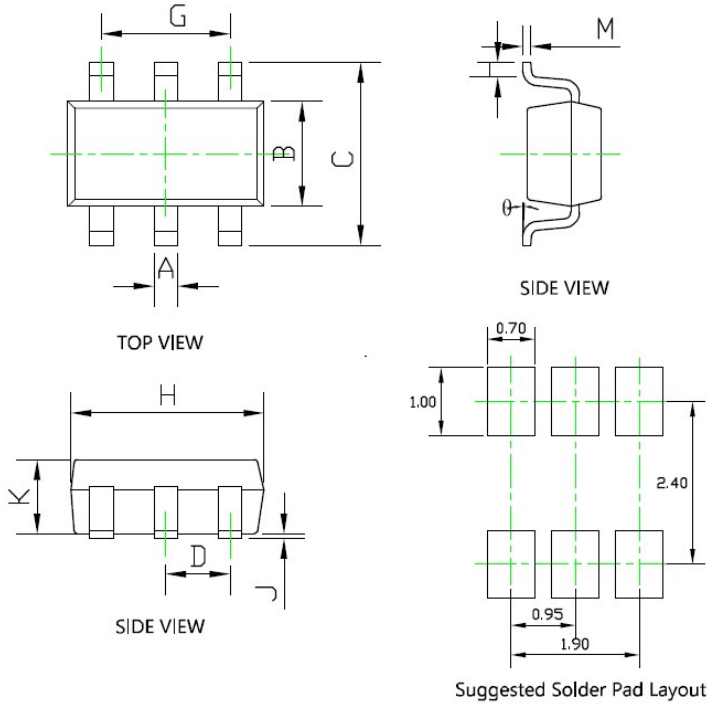


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



YJS2305A

■ SOT-23-6L Package Information



Note:
 1. Controlling dimension in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.012	0.020	0.300	0.500
B	0.059	0.067	1.500	1.700
C	0.104	0.116	2.650	2.950
D	0.037BSC		0.950BSC	
G	0.075BSC		1.900BSC	
H	0.111	0.119	2.820	3.020
J	0.000	0.004	0.000	0.100
K	0.041	0.045	1.050	1.150
L	0.012	0.024	0.300	0.600
M	0.004	0.008	0.100	0.200
θ	0°	8°	0°	8°



YJS2305A

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