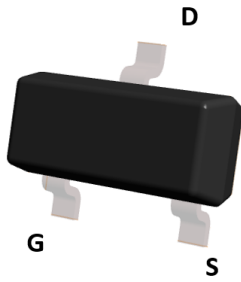
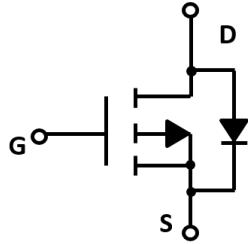
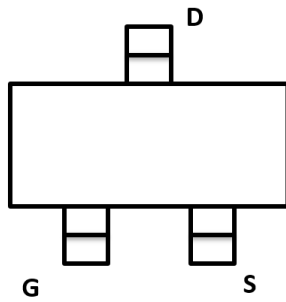


## P-Channel Enhancement Mode Field Effect Transistor



Top View

**SOT-23**



### Product Summary

- $V_{DS}$  -20V
- $I_D$  -5.4A
- $R_{DS(ON)}$  ( at  $V_{GS}=-4.5V$  ) <42 mohm
- $R_{DS(ON)}$  ( at  $V_{GS}=-2.5V$  ) <55 mohm
- $R_{DS(ON)}$  ( at  $V_{GS}=-1.8V$  ) <75 mohm

### General Description

- Trench Power LV MOSFET technology
- High Density Cell Design for Low  $R_{DS(ON)}$
- High Speed switching

### Applications

- Battery protection
- Load switch
- Power management

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

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	$V_{DS}$	-20	V
Gate-source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current	$I_D$	$T_A=25^\circ C$ Steady State	-5.4
		$T_A=70^\circ C$ Steady State	-4.4
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	-22	A
Total Power Dissipation @ $T_A=25^\circ C$ Steady State	$P_D$	1.2	W
Thermal Resistance Junction-to-Ambient @ Steady State <sup>B</sup>	$R_{\theta JA}$	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
YJL2305B	F2	S5B.	3000	30000	120000	7" reel



# YJL2305B

## ■ Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V, T <sub>C</sub> =25°C			-1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±10V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> =-5.4A		33	42	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> =-4.0A		39	55	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> =-3.0A		49	75	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-5.4A, V <sub>GS</sub> =0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-5.4	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHZ		830		pF
Output Capacitance	C <sub>oss</sub>			132		
Reverse Transfer Capacitance	C <sub>rss</sub>			85		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-4A		7.2		nC
Gate Source Charge	Q <sub>gs</sub>			1.2		
Gate Drain Charge	Q <sub>gd</sub>			1.6		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DD</sub> =-10V, R <sub>L</sub> =2.5Ω, R <sub>GEN</sub> =3Ω		15		ns
Turn-on Rise Time	t <sub>r</sub>			63		
Turn-off Delay Time	t <sub>D(off)</sub>			21		
Turn-off Fall Time	t <sub>f</sub>			12		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.



■ Typical Performance Characteristics

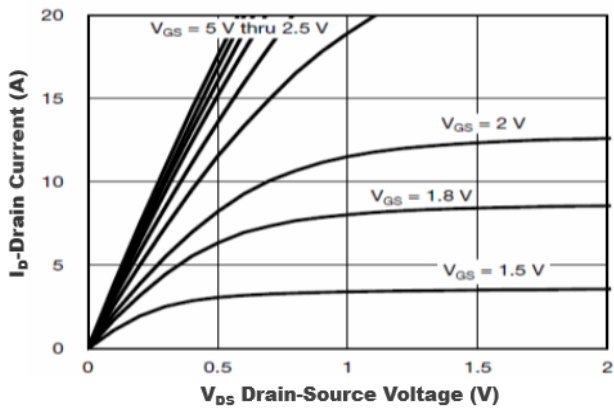


Figure1. Output Characteristics

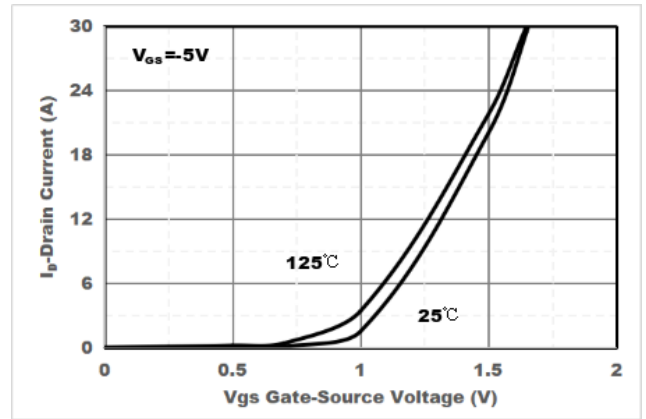


Figure2. Transfer Characteristics

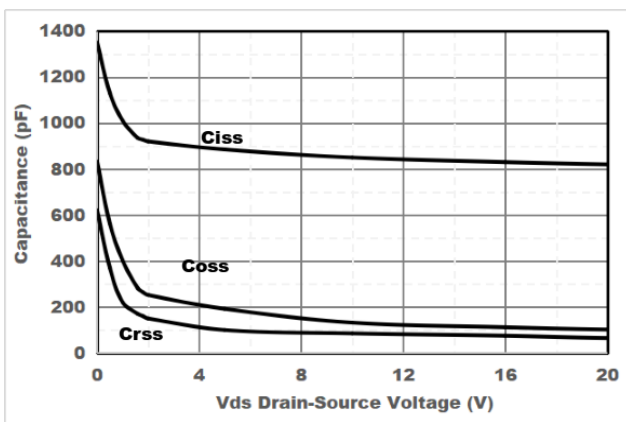


Figure3. Capacitance Characteristics

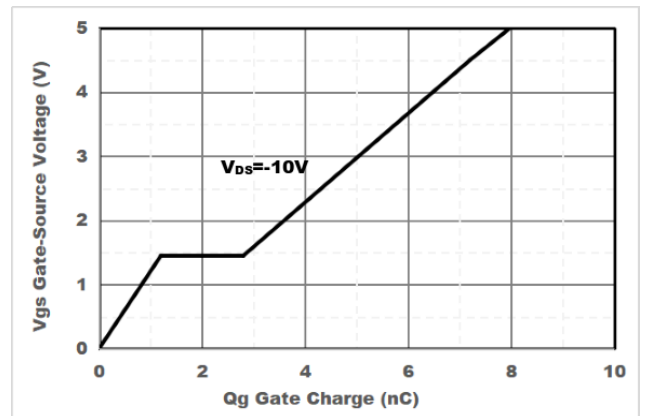


Figure4. Gate Charge

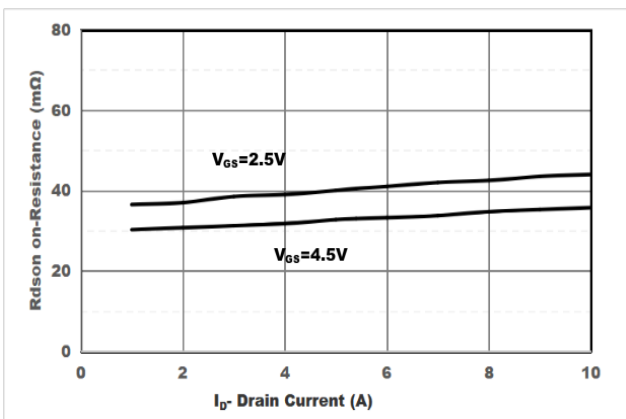


Figure5. Drain-Source on Resistance

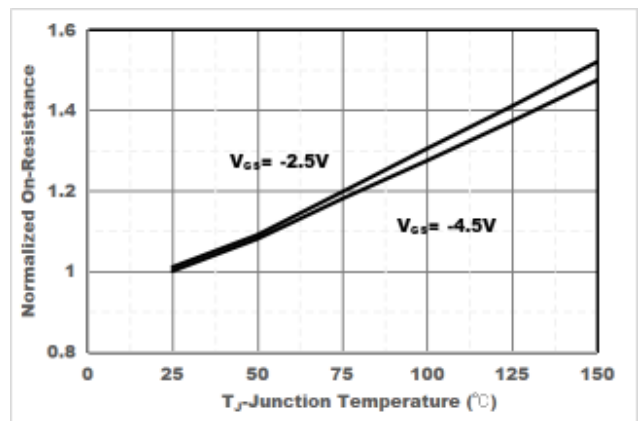


Figure6. Drain-Source on Resistance

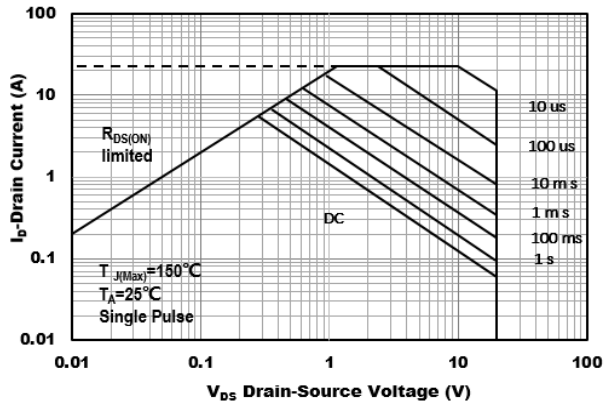


Figure7. Safe Operation Area

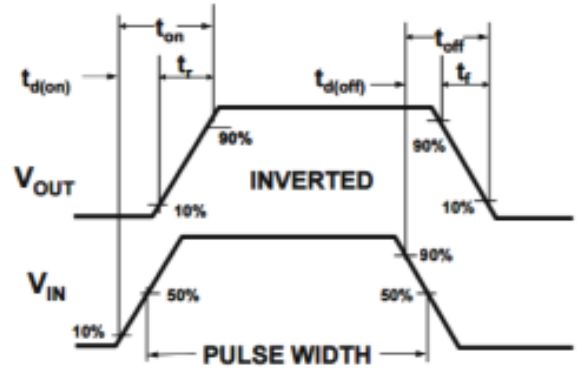
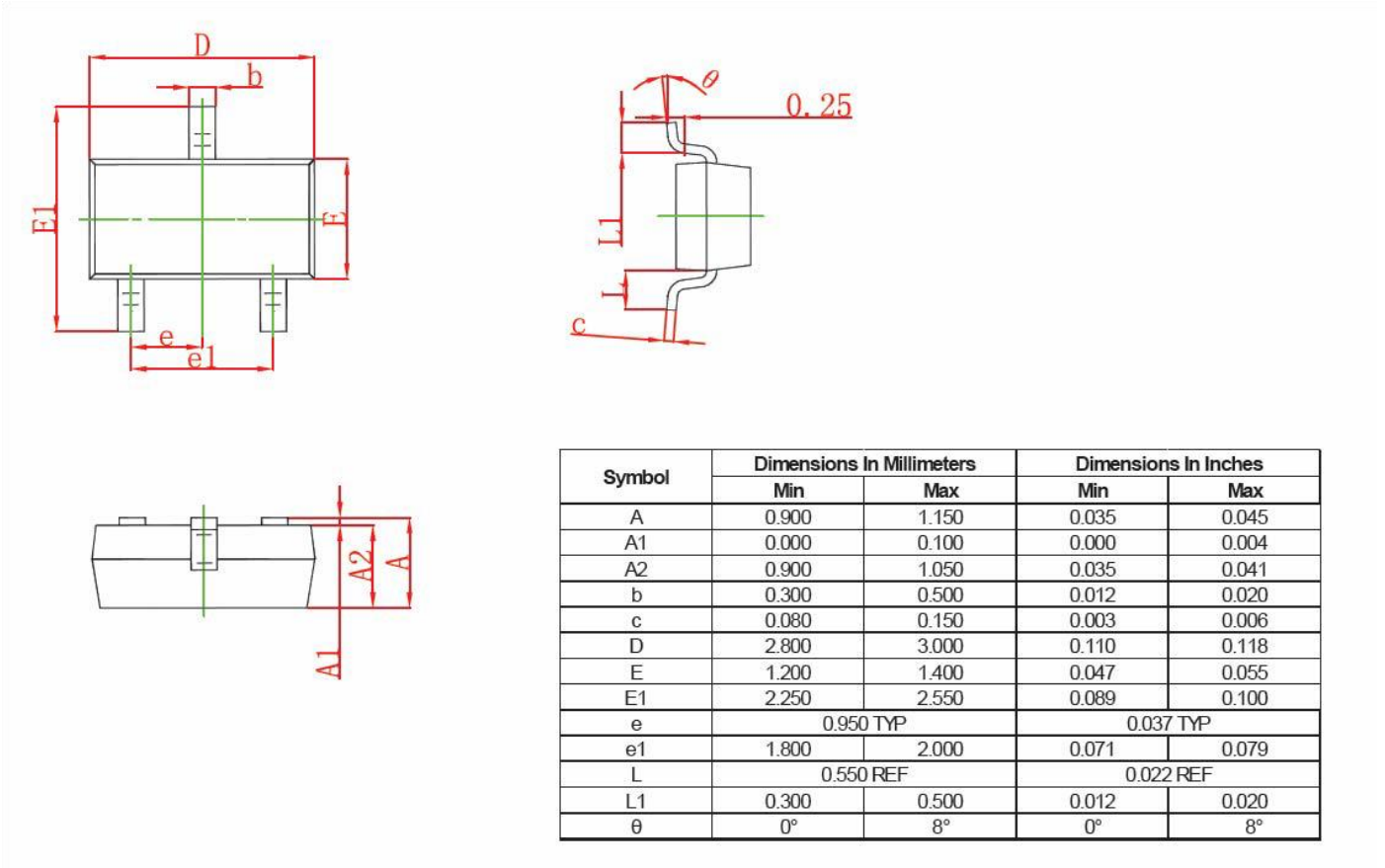
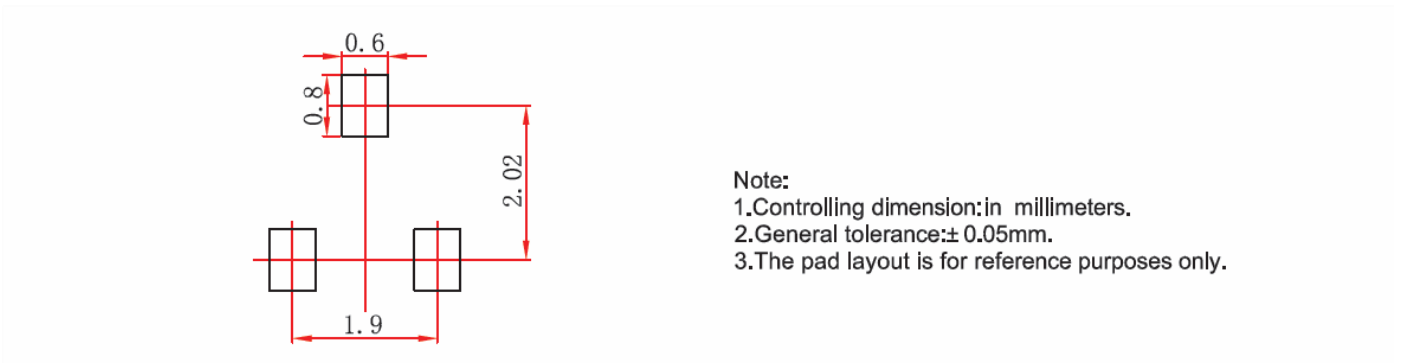


Figure8. Switching wave

## ■ SOT-23 Package information



## ■ SOT-23 Suggested Pad Layout





## YJL2305B

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