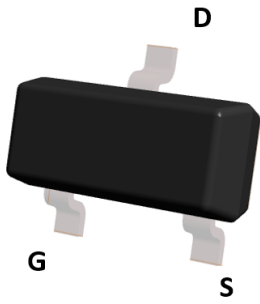
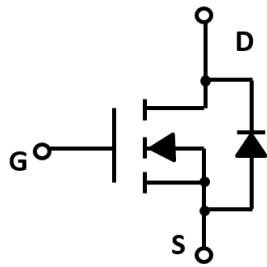
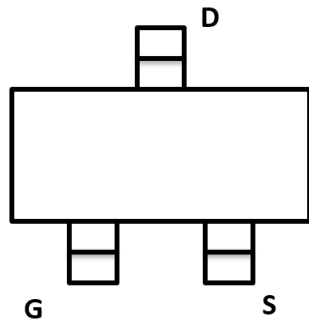


## N-Channel Enhancement Mode Field Effect Transistor



Top View

**SOT-23**



### Product Summary

• $V_{DS}$	30V
• $I_D$	5.6A
• $R_{DS(ON)}$ (at $V_{GS}=10V$ )	<27 mohm
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	<33 mohm
• $R_{DS(ON)}$ (at $V_{GS}=2.5V$ )	<51 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	Limit	Unit
Drain-source Voltage	$V_{DS}$	30	V
Gate-source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current	$I_D$	$T_A=25^\circ C$ @ Steady State	5.6
		$T_A=70^\circ C$ @ Steady State	4.5
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	23	A
Total Power Dissipation @ $T_A=25^\circ C$	$P_D$	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
YJL3400A	F2	3400.	3000	30000	120000	7" reel



# YJL3400A

## ■ 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	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, 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	0.5	0.9	1.4	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =5.6A		21	27	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> =5A		25	33	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3A		33	51	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =5.6A, V <sub>GS</sub> =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				5.6	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHZ		530		pF
Output Capacitance	C <sub>oss</sub>			130		
Reverse Transfer Capacitance	C <sub>rss</sub>			36		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =15V, I <sub>D</sub> =5.6A		4.8		nC
Gate Source Charge	Q <sub>gs</sub>			1.2		
Gate Drain Charge	Q <sub>gd</sub>			1.7		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DD</sub> =15V, I <sub>D</sub> =1A, R <sub>GEN</sub> =2.8Ω		12		ns
Turn-on Rise Time	t <sub>r</sub>			52		
Turn-off Delay Time	t <sub>D(off)</sub>			17		
Turn-off Fall Time	t <sub>f</sub>			10		

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

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

## ■ Typical Performance Characteristics

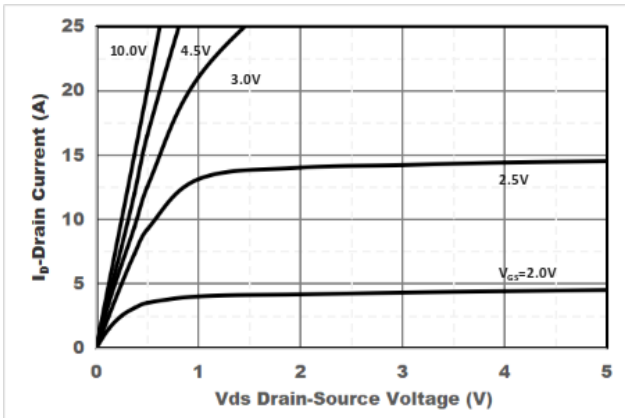


Figure1. Output Characteristics

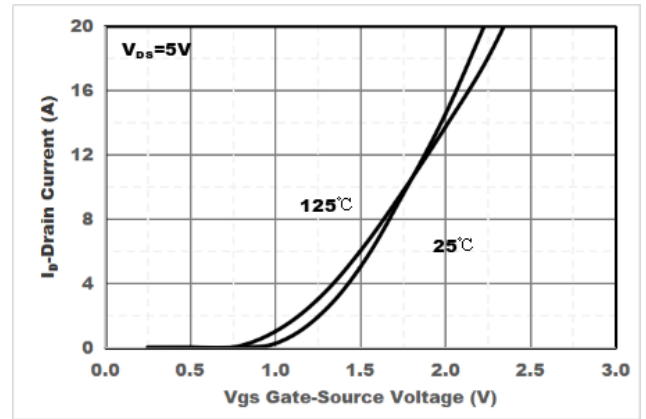


Figure2. Transfer Characteristics

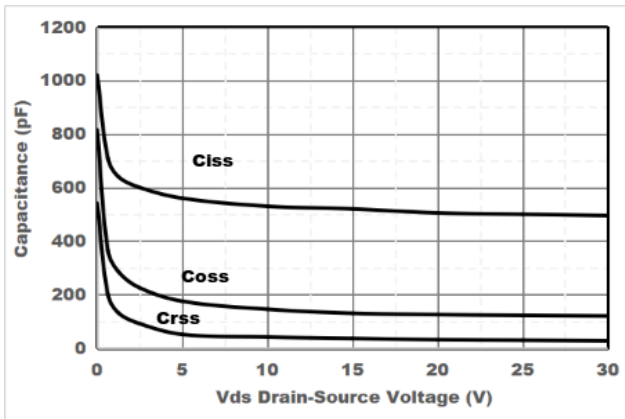


Figure3. Capacitance Characteristics

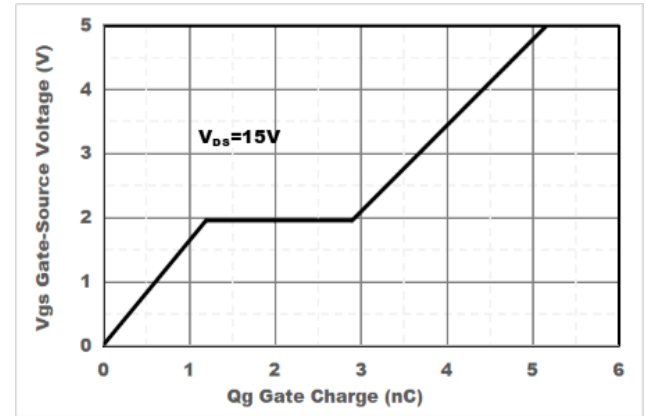


Figure4. Gate Charge

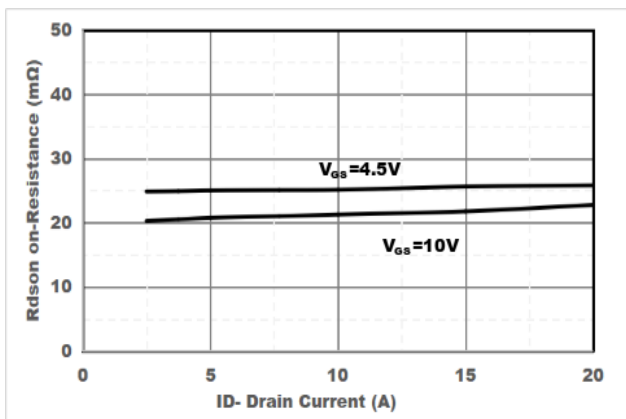


Figure5. Drain-Source on Resistance

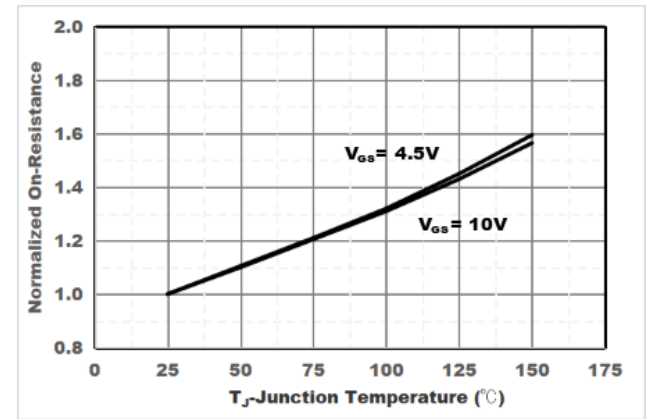


Figure6. Drain-Source on Resistance

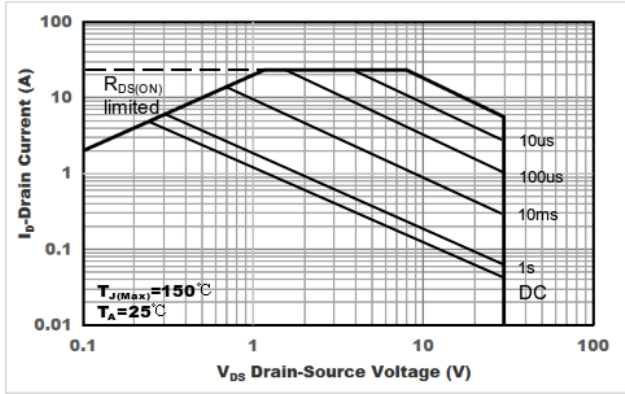


Figure7. Safe Operation Area

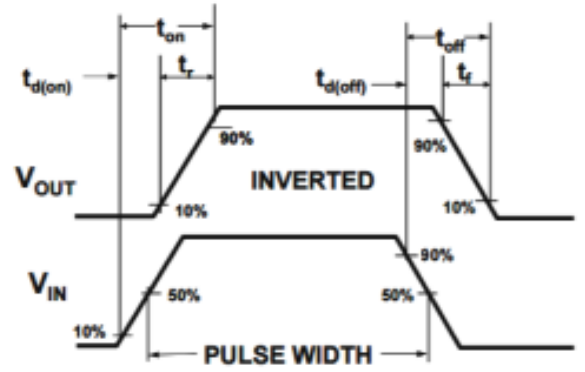
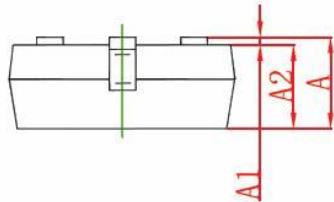
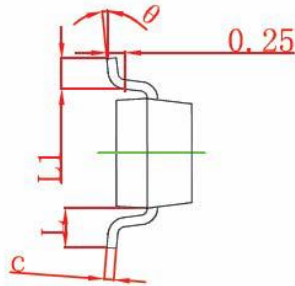
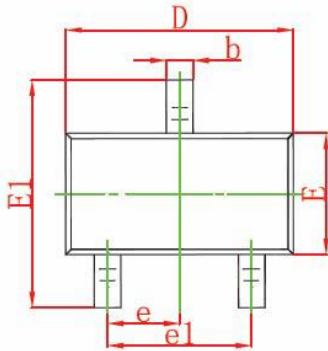


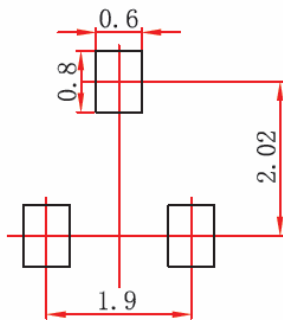
Figure8. Switching wave

## ■ SOT-23 Package information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°

## ■ SOT-23 Suggested Pad Layout



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



# YJL3400A

---

## Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.