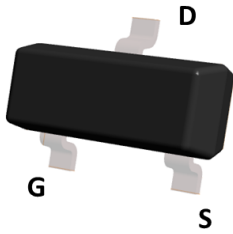
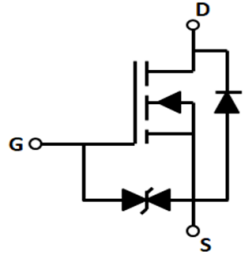
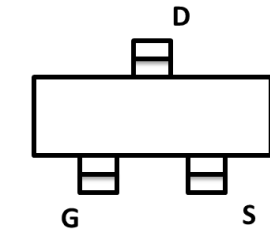


N-Channel Enhancement Mode Field Effect Transistor



Top View

SOT-23



Product Summary

- V_{DS} 20V
- I_D 6.0A
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 18 mohm
- $R_{DS(ON)}$ (at $V_{GS}=2.5V$) < 22 mohm
- $R_{DS(ON)}$ (at $V_{GS}=1.8V$) < 39 mohm
- ESD Protected Up to 3.5KV (HBM)

General Description

- Trench Power LV MOSFET technology
- High Power and current handling capability

Applications

- PWM application
- 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}	± 12	V
Drain Current	I_D	$T_A=25^\circ C$ @ Steady State	7.0
		$T_A=70^\circ C$ @ Steady State	5.6
Pulsed Drain Current ^A	I_{DM}	25	A
Total Power Dissipation @ $T_A=25^\circ C$	P_D	1.3	W
Thermal Resistance Junction-to-Ambient @ Steady State	$R_{\theta JA}$	96	$^\circ C/W$
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
YJL3416A	F2	8810.	3000	30000	120000	7" reel



YJL3416A

■ 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}	$V_{DS}=20V, V_{GS}=0V, T_C=25^\circ\text{C}$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$		2	± 10	μA
		$V_{GS}=\pm 8V, V_{DS}=0V$		0.7	± 1.5	μA
		$V_{GS}=\pm 5V, V_{DS}=0V$		100	± 300	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	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=6.0A$		13	18	m Ω
		$V_{GS}=2.5V, I_D=4.0A$		17	22	
		$V_{GS}=1.8V, I_D=3.0A$		27	39	
Diode Forward Voltage	V_{SD}	$I_S=7.0A, V_{GS}=0V$			1.2	V
Maximum Body-Diode Continuous Current	I_S				7.0	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1\text{MHZ}$		980		pF
Output Capacitance	C_{oss}			225		
Reverse Transfer Capacitance	C_{rss}			120		
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=4.5V, V_{DS}=10V, I_D=7.0A$		8.1		nC
Gate Source Charge	Q_{gs}			2.4		
Gate Drain Charge	Q_{gd}			3		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=4.5V, V_{DD}=10V, R_L=1.5\Omega, R_{GEN}=3\Omega$		1.2		ns
Turn-on Rise Time	t_r			2.4		
Turn-off Delay Time	$t_{D(off)}$			22		
Turn-off Fall Time	t_f			7		

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

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



■ Typical Performance Characteristics

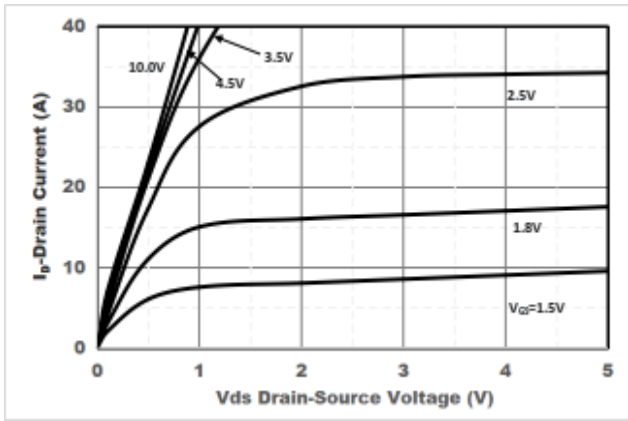


Figure1. Output Characteristics

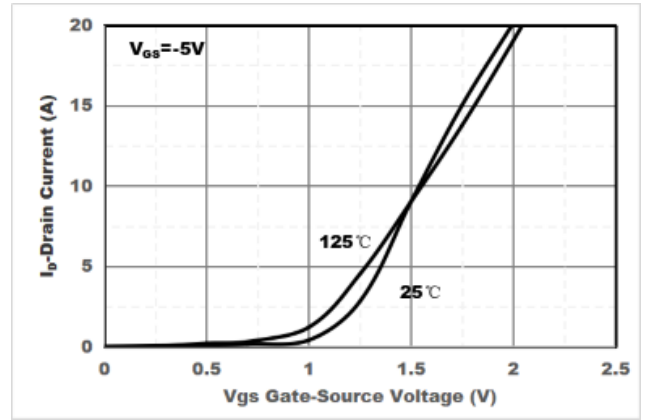


Figure2. Transfer Characteristics

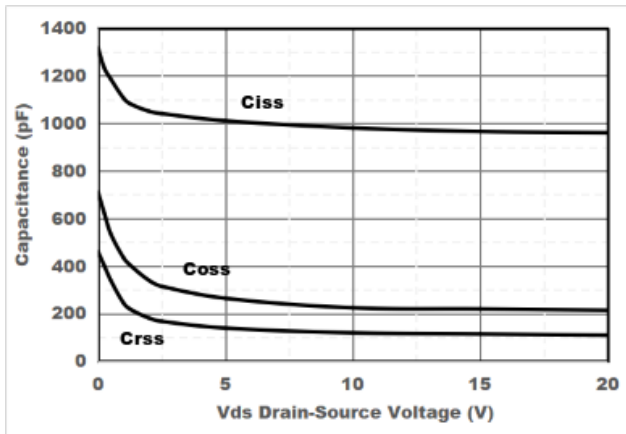


Figure3. Capacitance Characteristics

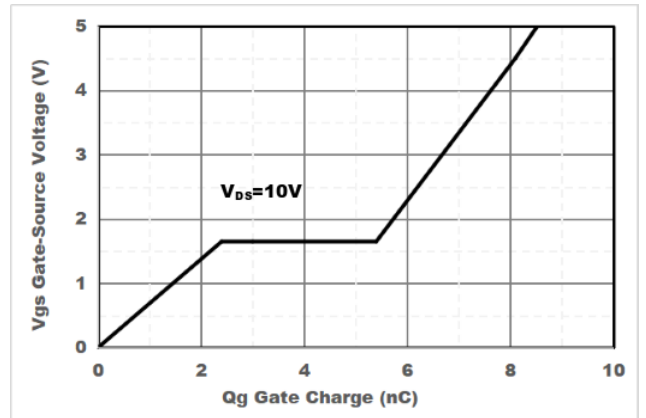


Figure4. Gate Charge

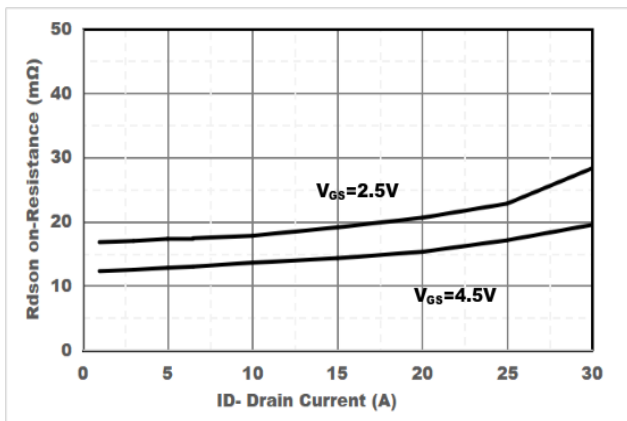


Figure5. Drain-Source on Resistance

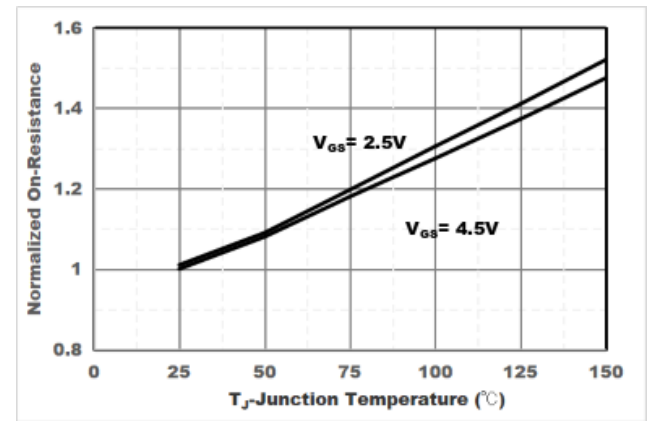


Figure6. Drain-Source on Resistance

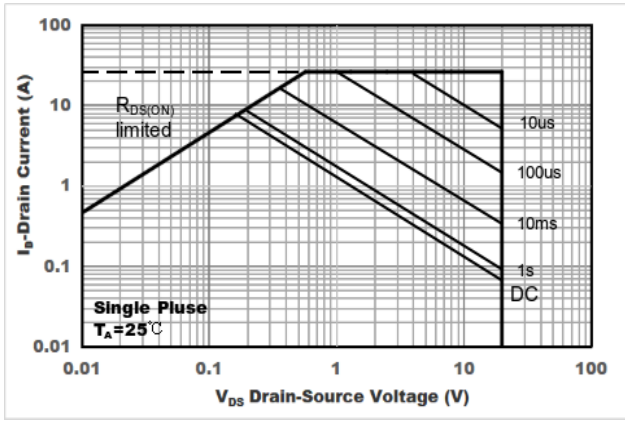


Figure7. Safe Operation Area

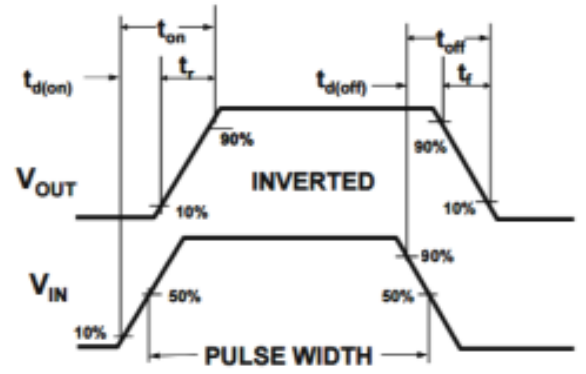
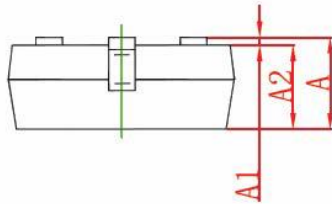
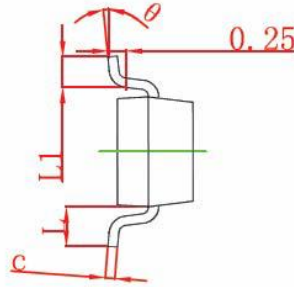
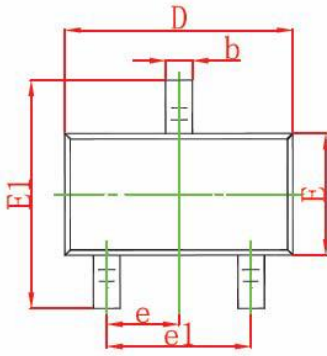


Figure8. Switching wave



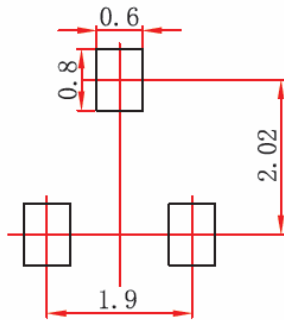
YJL3416A

■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
θ	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.



YJL3416A

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