

## N-Channel Enhancement Mode Field Effect Transistor

### Product Summary

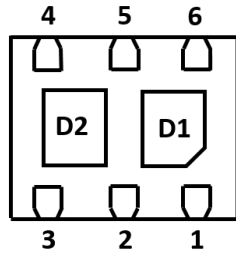
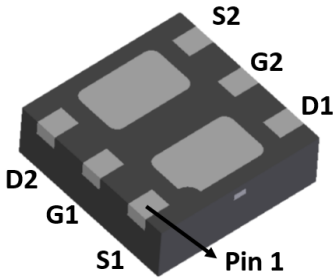
• $V_{DS}$	30V
• $I_D$	7.7A
• $R_{DS(ON)}$ (at $V_{GS}=10V$ )	<27 mohm
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	<33 mohm
• $R_{DS(ON)}$ (at $V_{GS}=2.5V$ )	<45 mohm

### General Description

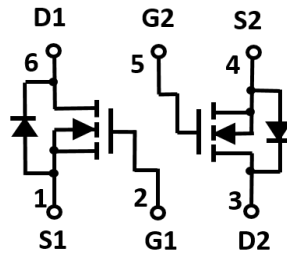
- Trench Power LV MOSFET technology
- High density cell design for low  $R_{DS(ON)}$
- High Speed switching

### Applications

- Battery protection
- Load switch
- Power management



**DFN2020-6L**



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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	$V_{DS}$	30	V
Gate-source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current	$I_D$	$T_A=25^\circ\text{C}$	7.7
		$T_A=70^\circ\text{C}$	6.2
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	30	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$	$P_D$	2.0	W
Thermal Resistance Junction-to-Ambient @ Steady State	$R_{\theta JA}$	56	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	$^\circ\text{C}$

### ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ3400A	F2	3400A.	3000	15000	60000	7" reel



# YJQ3400A

## ■ 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> =7.7A		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	45	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =7.7A, V <sub>GS</sub> =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				7.7	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> =7.7A		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 ≤ 300us, Duty cycle ≤ 2%.



■ Typical Performance Characteristics

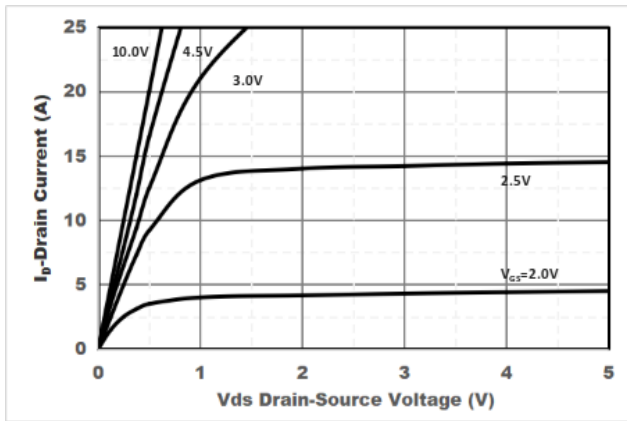


Figure1. Output Characteristics

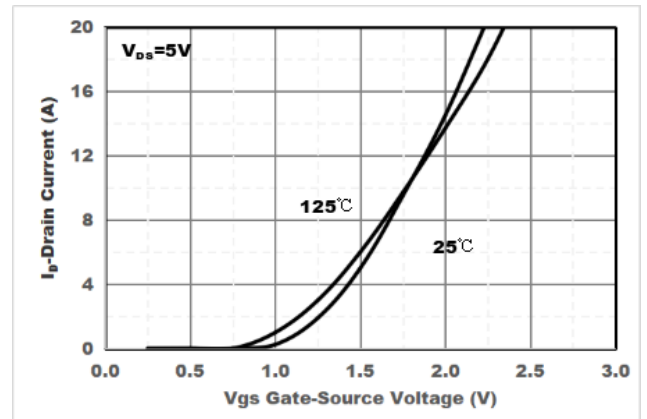


Figure2. Transfer Characteristics

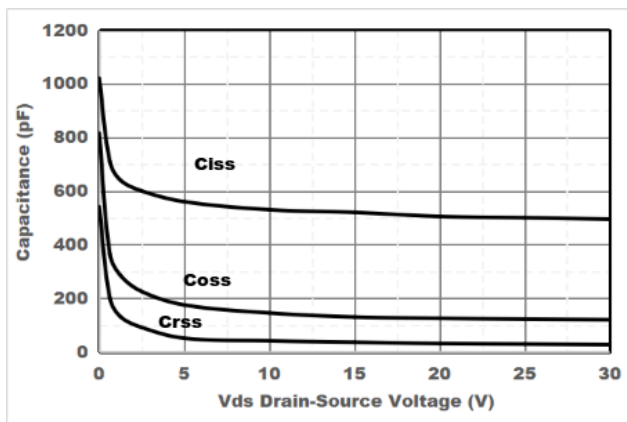


Figure3. Capacitance Characteristics

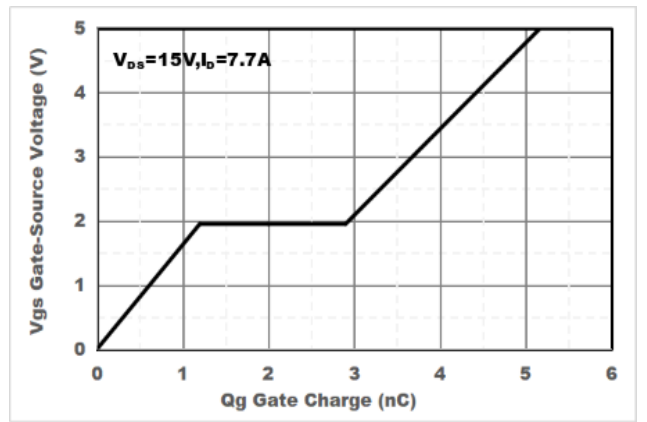


Figure4. Gate Charge

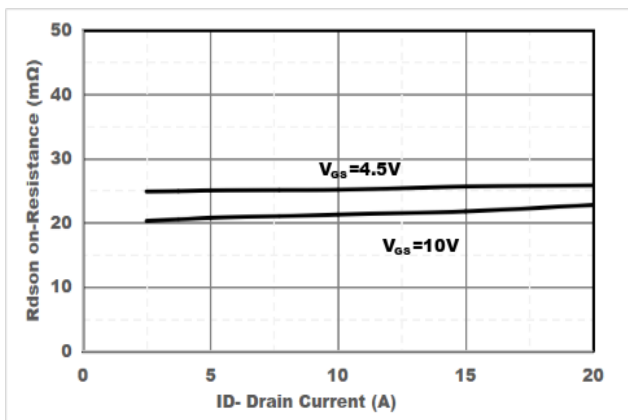


Figure5. Drain-Source on Resistance

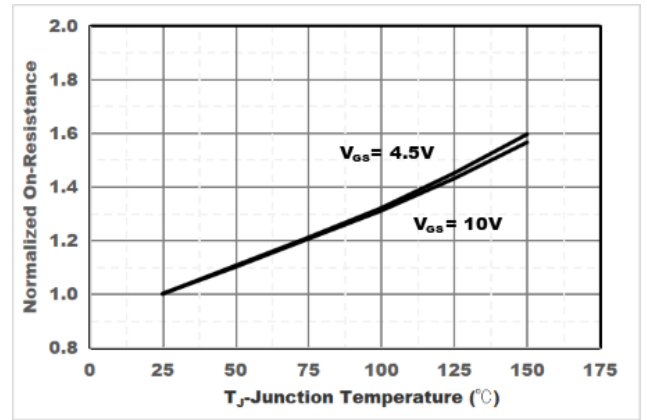


Figure6. Drain-Source on Resistance

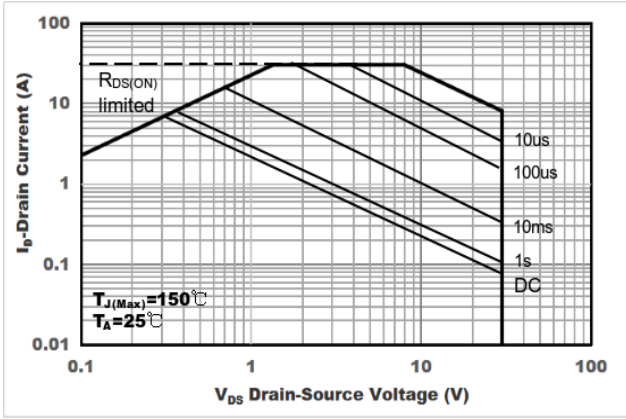


Figure7. Safe Operation Area

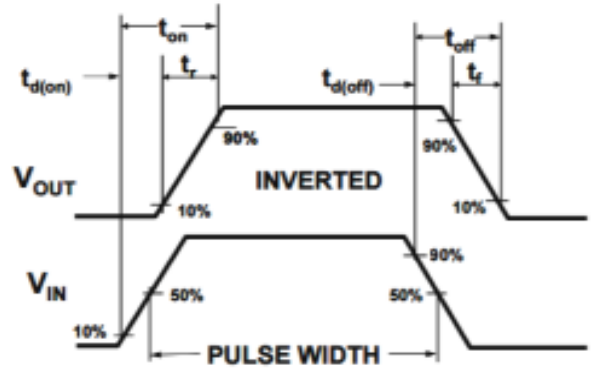
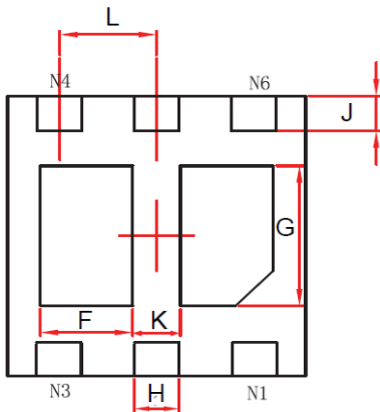
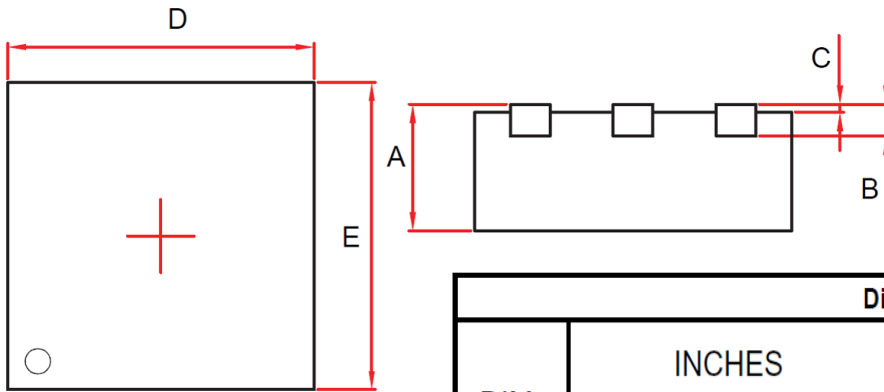


Figure8. Switching wave



# YJQ3400A

## ■ DFN2020-6L Package information



Dimensions					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.030	.034	0.750	0.850	
B	0.008REF.		0.200REF.		
C	0.000	0.002	0.000	0.050	
D	0.077	0.081	1.950	2.050	
E	0.077	0.081	1.950	2.050	
F	0.017	0.027	0.440	0.690	
G	0.033	0.043	0.840	1.090	
H	0.010	0.014	0.250	0.350	
J	0.007	0.015	0.175	0.375	
K	0.010	0.014	0.250	0.350	
L	0.026TYP.		0.650TYP.		



# YJQ3400A

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