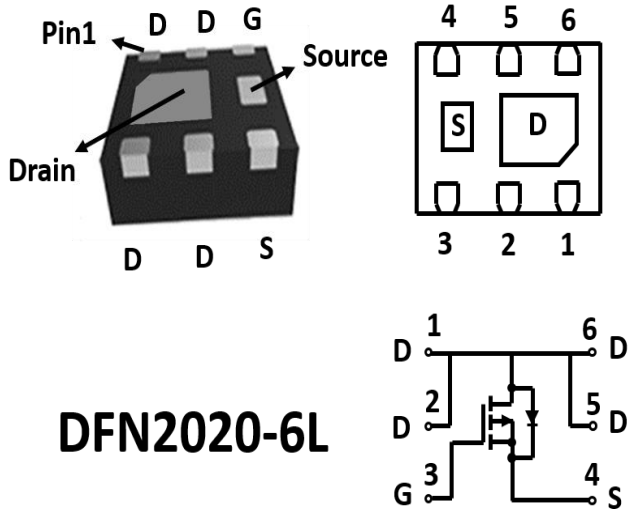


## P-Channel Enhancement Mode Field Effect Transistor



**DFN2020-6L**

### Product Summary

- $V_{DS}$  -16V
- $I_D$  -7A
- $R_{DS(ON)}$  (at  $V_{GS}=-4.5V$ ) <32 mohm
- $R_{DS(ON)}$  (at  $V_{GS}=-2.5V$ ) <42 mohm
- $R_{DS(ON)}$  (at  $V_{GS}=-1.8V$ ) <60 mohm

### General Description

- Trench Power LV MOSFET technology
- Low  $R_{DS(ON)}$
- Low Gate Charge

### Applications

- Battery charge
- Load switching in Cellular handset
- Ultraportable applications

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

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	$V_{DS}$	-16	V
Gate-source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current	$I_D$	$T_A=25^\circ C$	-7
		$T_A=70^\circ C$	-5.6
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	-28	A
Total Power Dissipation @ $T_A=25^\circ C$	$P_D$	2.2	W
Thermal Resistance Junction-to-Ambient <sup>B</sup>	$R_{\theta JA}$	50	$^\circ C/W$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	15	$^\circ C/W$
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
YJQ4666B	F2	..G66B	3000	15000	60000	7" reel



# YJQ4666B

## ■ 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	-16			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-16V, 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> =-7A		26	32	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> =-5A		34	42	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> =-2A		45	60	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-7A, V <sub>GS</sub> =0V		-0.7	-1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-7	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-9V, V <sub>GS</sub> =0V, f=1MHZ		890		pF
Output Capacitance	C <sub>oss</sub>			140		
Reverse Transfer Capacitance	C <sub>rss</sub>			90		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-9V, I <sub>D</sub> =-7A		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> =-9V, I <sub>D</sub> =-1A, R <sub>GEN</sub> =2.5Ω		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. R<sub>θJA</sub> 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<sub>θJC</sub> is guaranteed by design, while R<sub>θJA</sub> 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

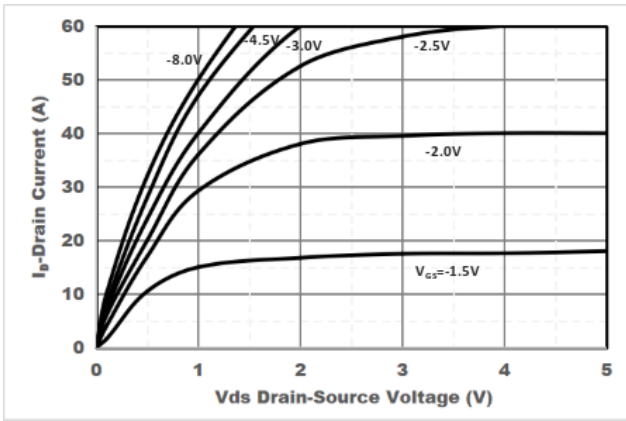


Figure1. Output Characteristics

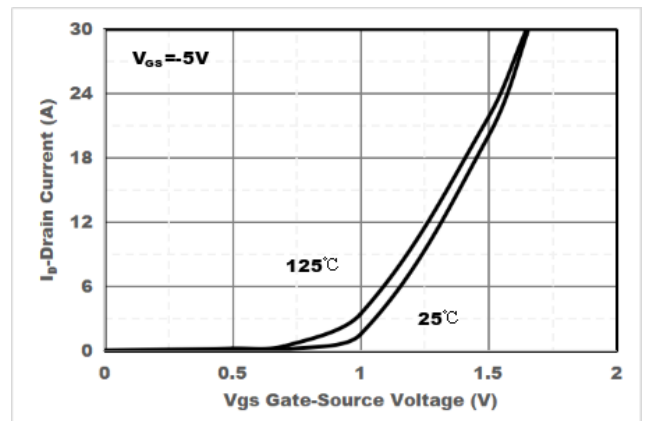


Figure2. Transfer Characteristics

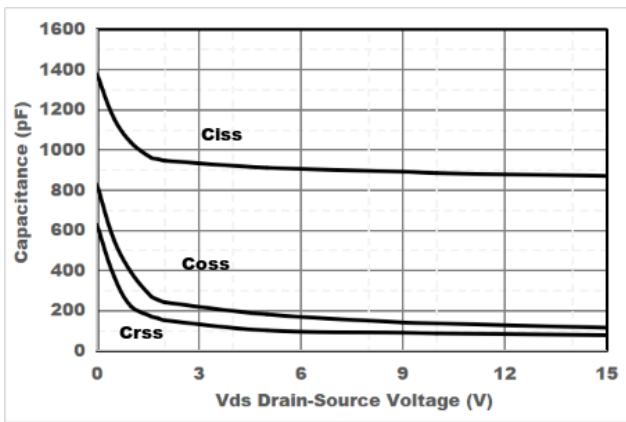


Figure3. Capacitance Characteristics

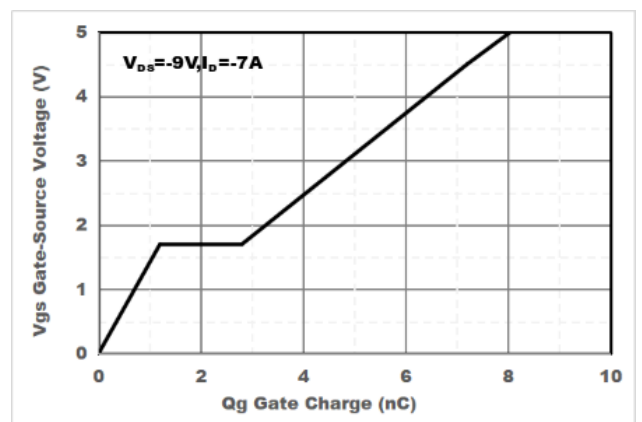


Figure4. Gate Charge

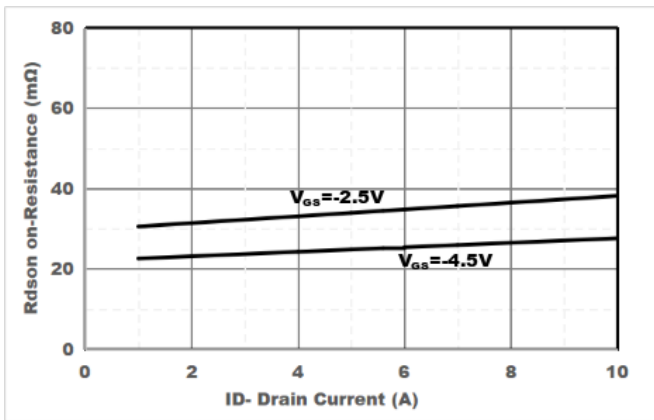


Figure5. Drain-Source on Resistance

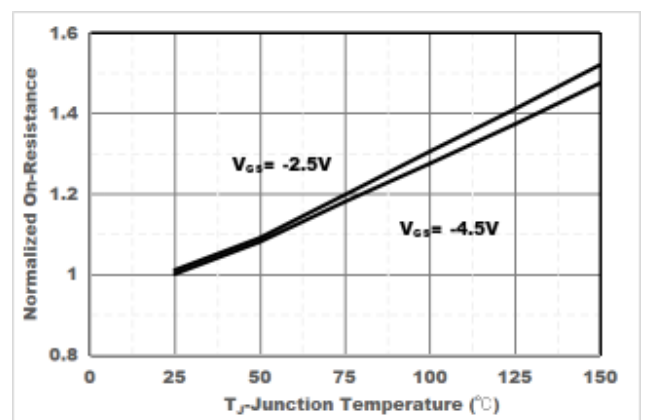


Figure6. Drain-Source on Resistance

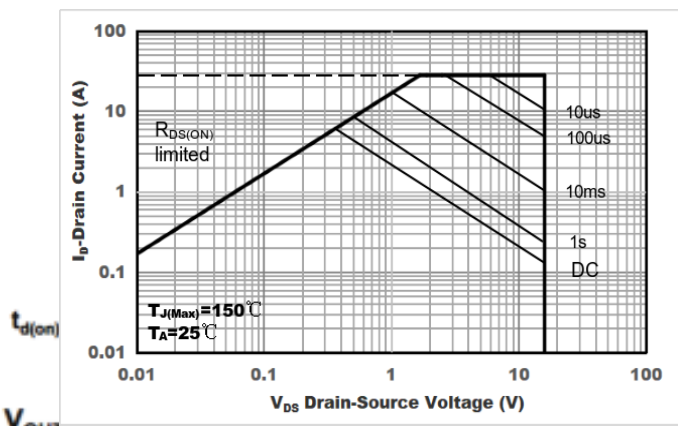
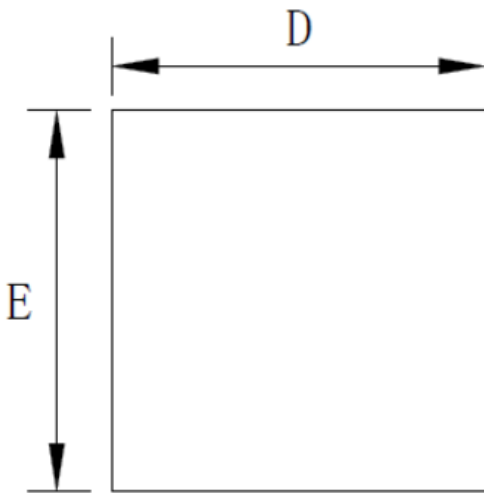




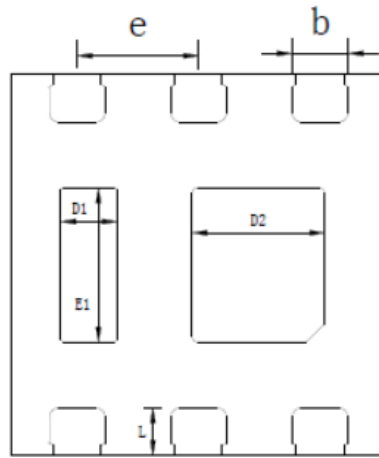
Figure7. Safe Operation Area

Figure8. Switching wave

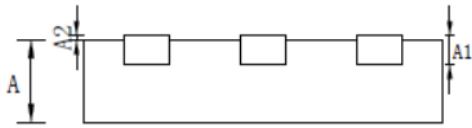
## ■ DFN2020-6L(0.45mm) Package information



Top View  
【顶视图】



Bottom View  
【背视图】



Side View  
【侧视图】

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.40	0.45	0.50
A1		0.15REF	
A2	0.00	0.02	0.05
L	0.20	0.25	0.30
b	0.25	0.30	0.35
D	1.95	2.00	2.05
E	1.95	2.00	2.05
e		0.65BSC	
D2	0.61	0.71	0.81
D1	0.20	0.30	0.40
E1	0.71	0.81	0.91



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