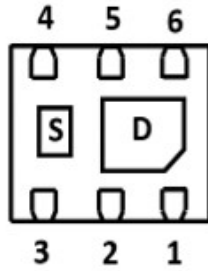
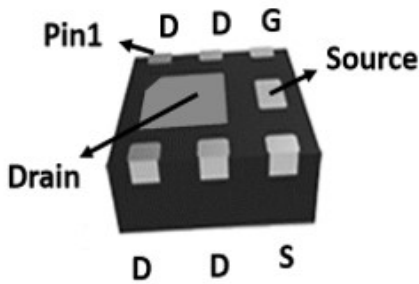
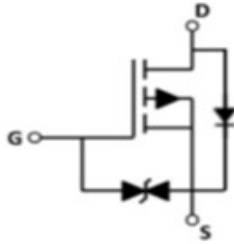


P-Channel Enhancement Mode Field Effect Transistor



DFN2020-6L



Product Summary

- V_{DS} -20V
- I_D -6.2A
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <42 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-2.5V$) <55 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-1.8V$) <100 mohm
- ESD Protected Up to 4.0KV (HBM)

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 ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	V_{DS}	-20	V
Gate-source Voltage	V_{GS}	± 12	V
Drain Current	I_D	$T_A=25^\circ\text{C}$ Steady State	-6.2
		$T_A=70^\circ\text{C}$ Steady State	-4.96
Pulsed Drain Current ^A	I_{DM}	-23	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$ Steady State	P_D	2.2	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B	$R_{\theta JA}$	56.8	$^\circ\text{C}/\text{W}$
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
YJQ3415A	F1	3415	3000	30000	120000	7" reel



YJQ3415A

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V, T _C =25°C			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V		±2.5	±10	μA
		V _{GS} = ±8V, V _{DS} =0V		±900	±2000	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-0.40	-0.62	-1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = -4.5V, I _D =-5.6A		29	42	mΩ
		V _{GS} = -2.5V, I _D =-4.3A		36	55	
		V _{GS} = -1.8V, I _D =-2.0A		55	100	
Diode Forward Voltage	V _{SD}	I _S =-6.2A, V _{GS} =0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I _S				-6.2	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHZ		1010		pF
Output Capacitance	C _{oss}			130		
Reverse Transfer Capacitance	C _{rss}			109		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DD} =-10V, I _D =-4A		10.98		nC
Gate Source Charge	Q _{gs}			2.17		
Gate Drain Charge	Q _{gd}			2.54		
Reverse Recovery Charge	Q _{rr}	I _F =-4A, di/dt=100A/us		4.38		
Reverse Recovery Time	t _{rr}			24.8		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-4.5V, V _{DD} =-10V, R _L =2.5Ω, R _{GEN} =3Ω		8.4		ns
Turn-on Rise Time	t _r			36.2		
Turn-off Delay Time	t _{D(off)}			76.8		
Turn-off Fall Time	t _f			56.2		

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

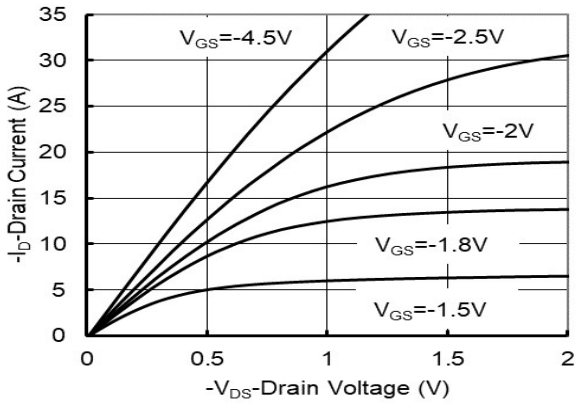


Figure1. Output Characteristics

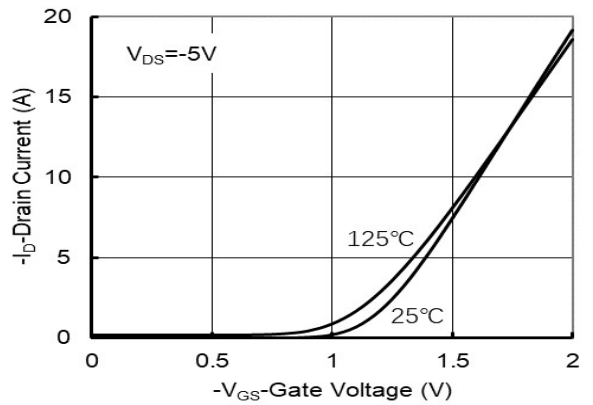


Figure2. Transfer Characteristics

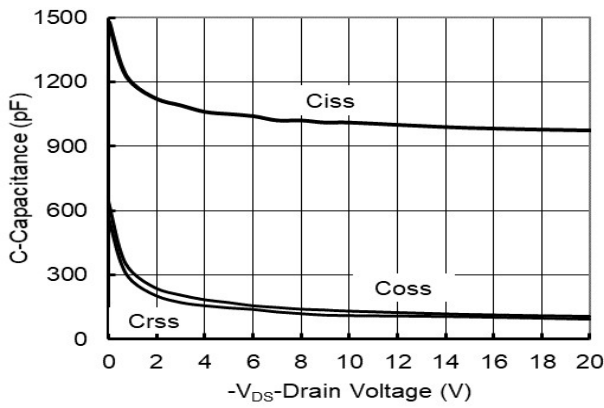


Figure3. Capacitance Characteristics

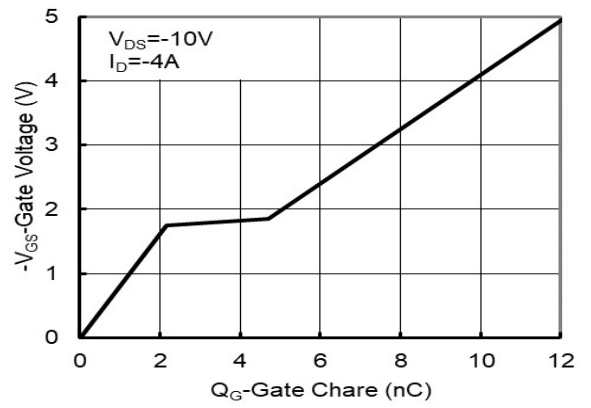


Figure4. Gate Charge

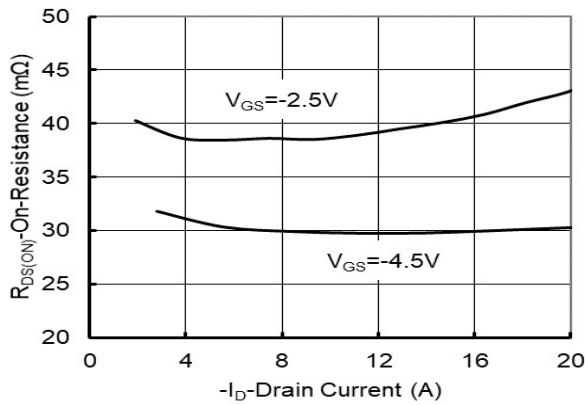


Figure5. Drain-Source on Resistance

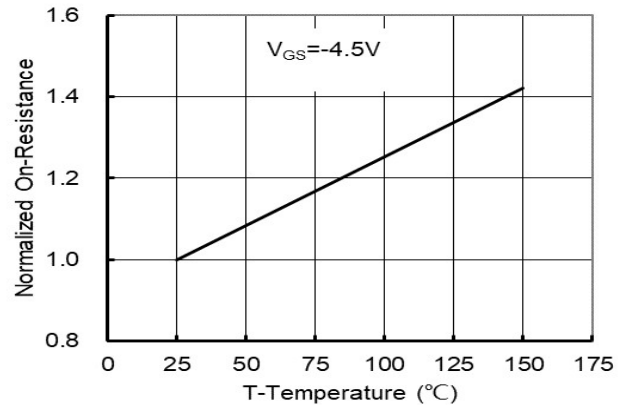


Figure6. Drain-Source on Resistance



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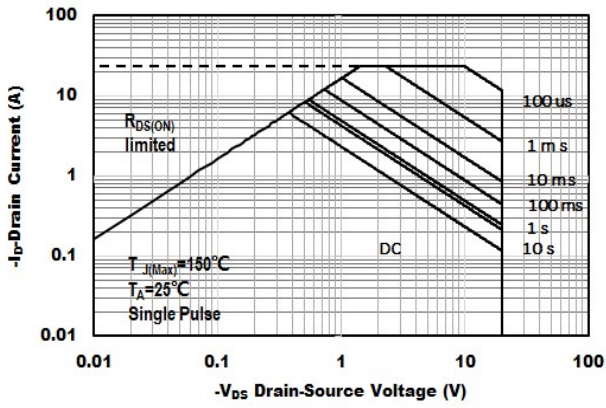


Figure7. Safe Operation Area

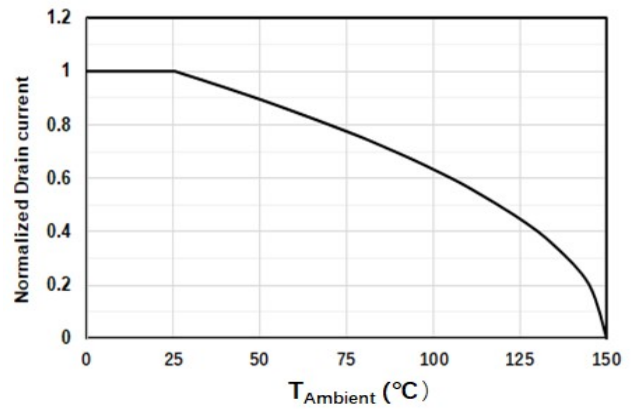


Figure8. Drain Current vs Ambient temperature

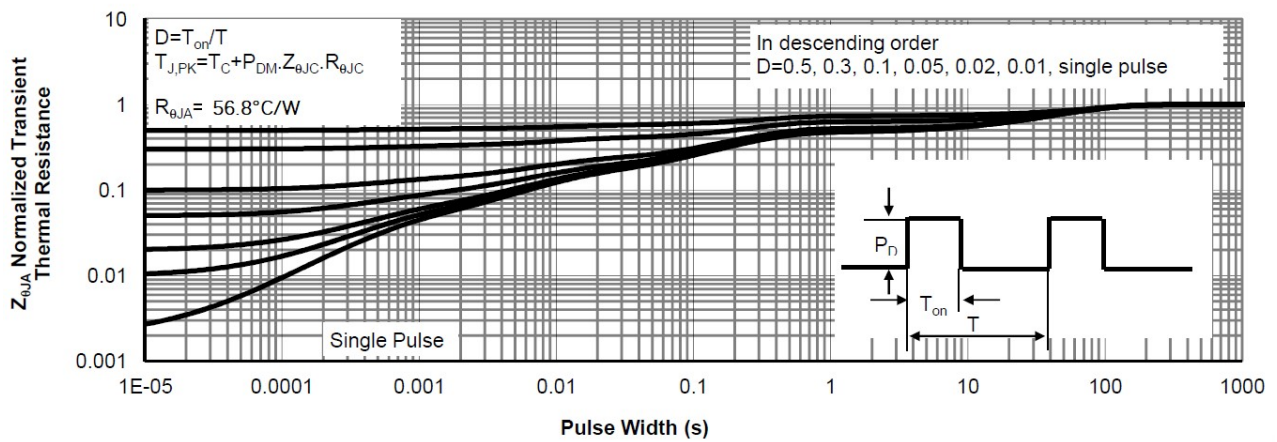
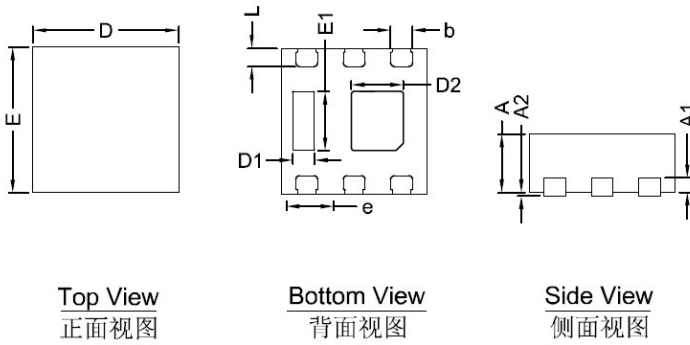


Figure9. Normalized Maximum Transient Thermal Impedance



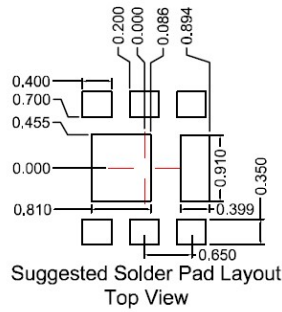
YJQ3415A

■ DFN2020-6L Package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	1.90	2.00	2.10
E	1.90	2.00	2.10
A	0.70	0.80	0.90
A1	0.20 BSC		
A2			0.10
D1	0.20	0.30	0.40
D2	0.61	0.71	0.81
E1	0.71	0.81	0.91
L	0.15	0.25	0.35
b	0.20	0.30	0.40
e	0.65 BSC		

- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.10\text{mm}$.
 3. The pad layout is for reference purposes only.





YJQ3415A

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