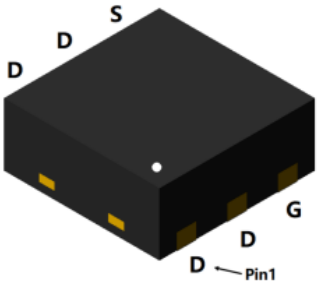
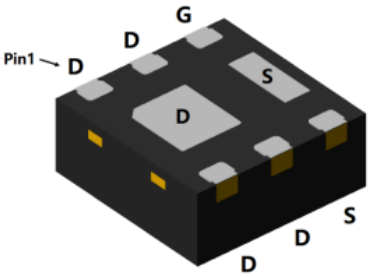
N-Channel Enhancement Mode Field Effect Transistor

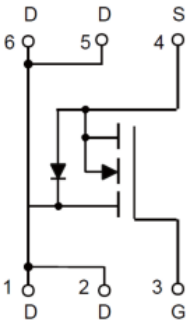


Top View



Bottom View

DFN2020-6L



Product Summary

- V_{DS} 30V
- I_D 13A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜12 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜15 mohm

General Description

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	30	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃	I_D	13	A
	T_A=100℃		8.0	
Pulsed Drain Current [A]		I_{DM}	55	A
Total Power Dissipation	T_A=25℃	P_D	2.9	W
	T_A=100℃		1.2	W
Thermal Resistance Junction-to-Ambient [B]		$R_{\theta JA}$	43	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
Q13N03A	F1	Q13N03	3000	30000	120000	7” reel

■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions		Min	Typ	Max	Units
Static Parameter							
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA		30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V	T_J=25℃			1	μA
			T_J=55℃			5	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V				±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA		1.0	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=8A			7	12	mΩ
		V_{GS}= 4.5V, I_D=5A			11	15	
Diode Forward Voltage	V_{SD}	I_S=13A,V_{GS}=0V				1.2	V
Maximum Body-Diode Continuous Current	I_S					13	A
Dynamic Parameters							
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V,f=1MHZ			1015		pF
Output Capacitance	C_{oss}				201		
Reverse Transfer Capacitance	C_{rss}				164		
Switching Parameters							
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=20V,I_D=20A			23.6		nC
Gate-Source Charge	Q_{gs}				3.8		
Gate-Drain Charge	Q_{gd}				7		
Reverse Recovery Charge	Q_{rr}	I_F=15A, di/dt=100A/us			0.2		
Reverse Recovery Time	t_{rr}				5		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=20V, I_D=2A, R_{GEN}=3Ω			7		
Turn-on Rise Time	t_r				20		
Turn-off Delay Time	$t_{D(off)}$				24		
Turn-off fall Time	t_f				24		

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

B. $R_{\theta JA}$ 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. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ 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

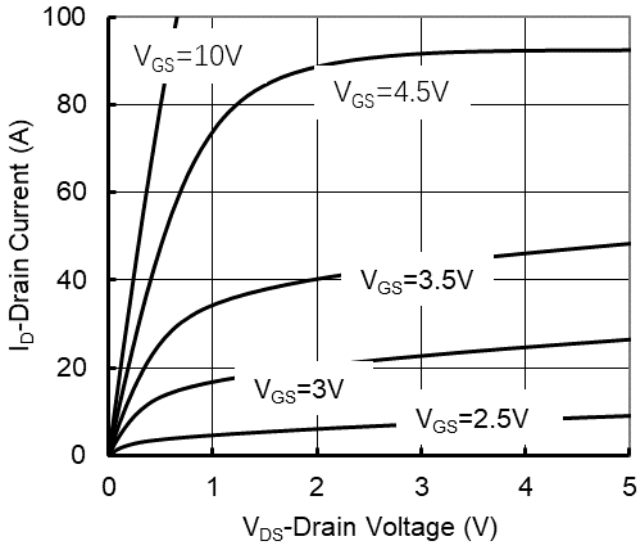


Figure1. Output Characteristics

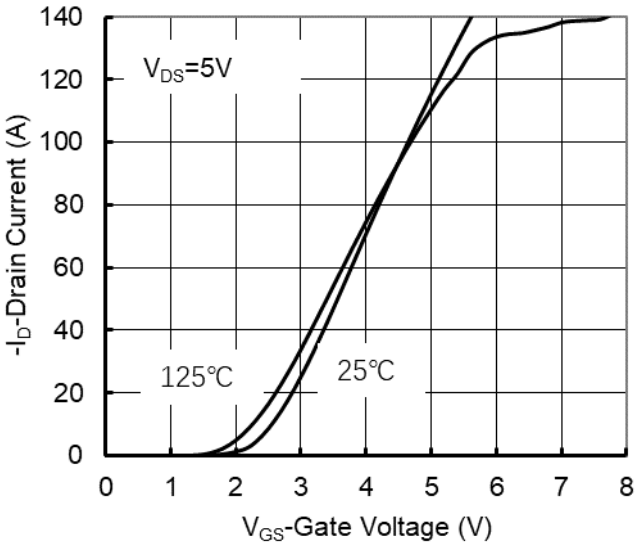


Figure2. Transfer Characteristics

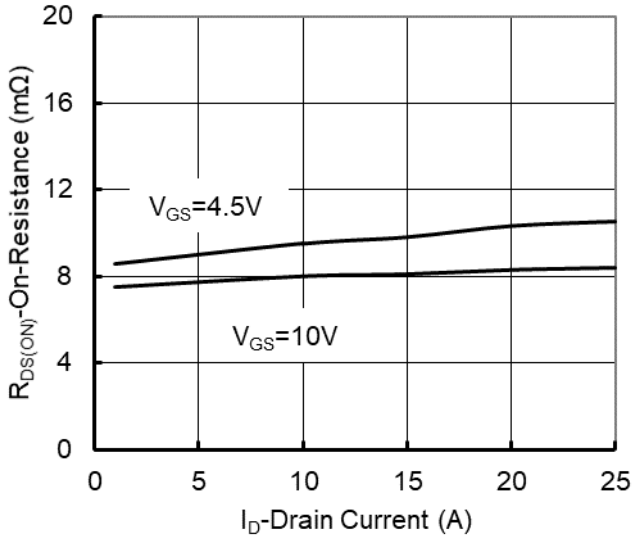


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

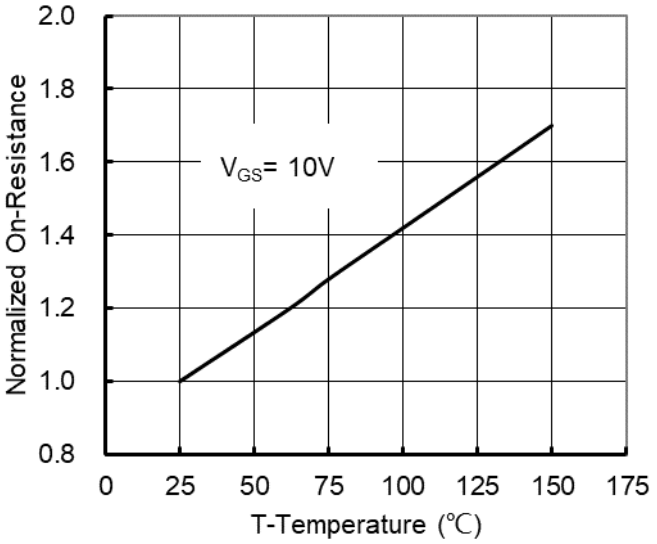


Figure 4: On-Resistance vs. Junction Temperature

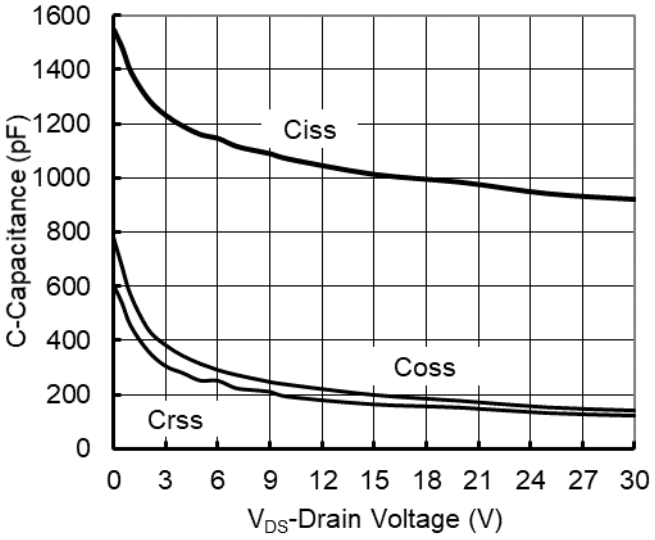


Figure5. Capacitance Characteristics

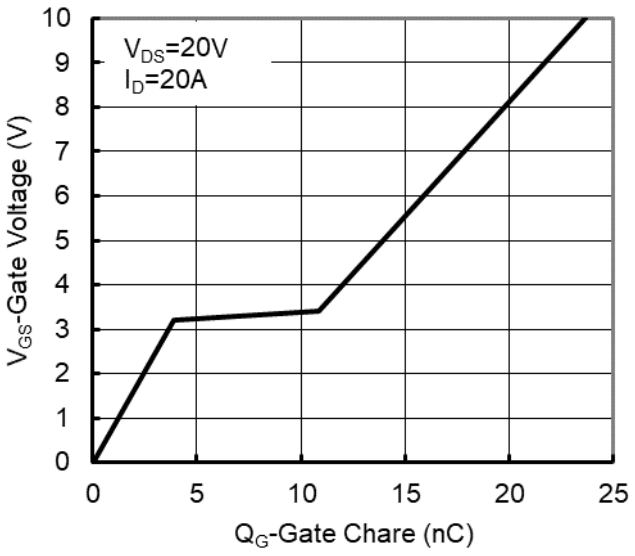


Figure6. Gate Charge

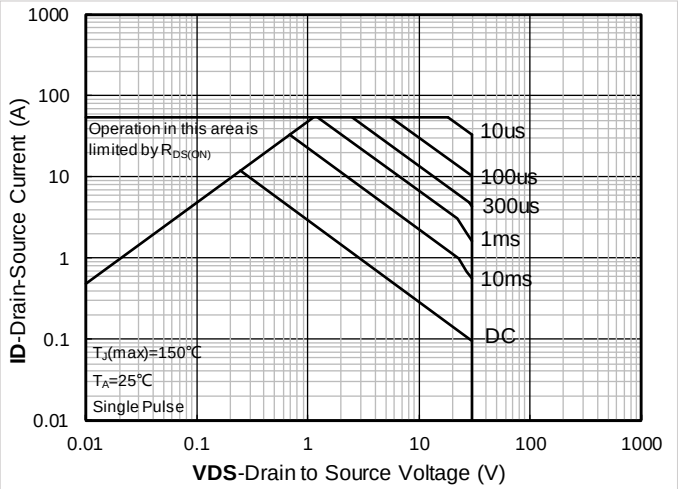


Figure7. Safe Operation Area

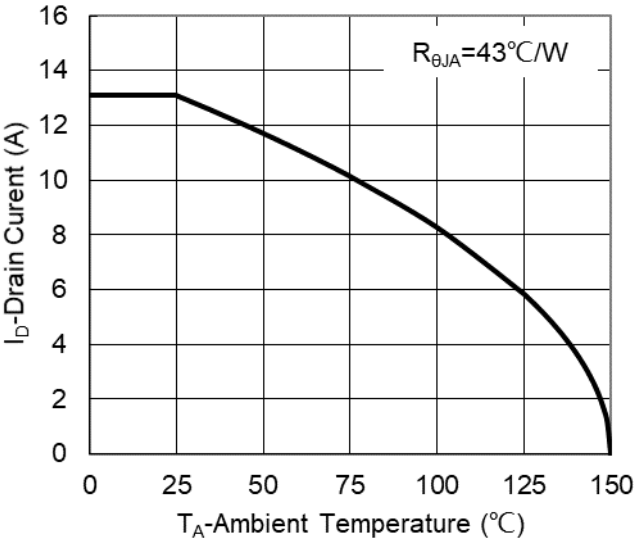


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

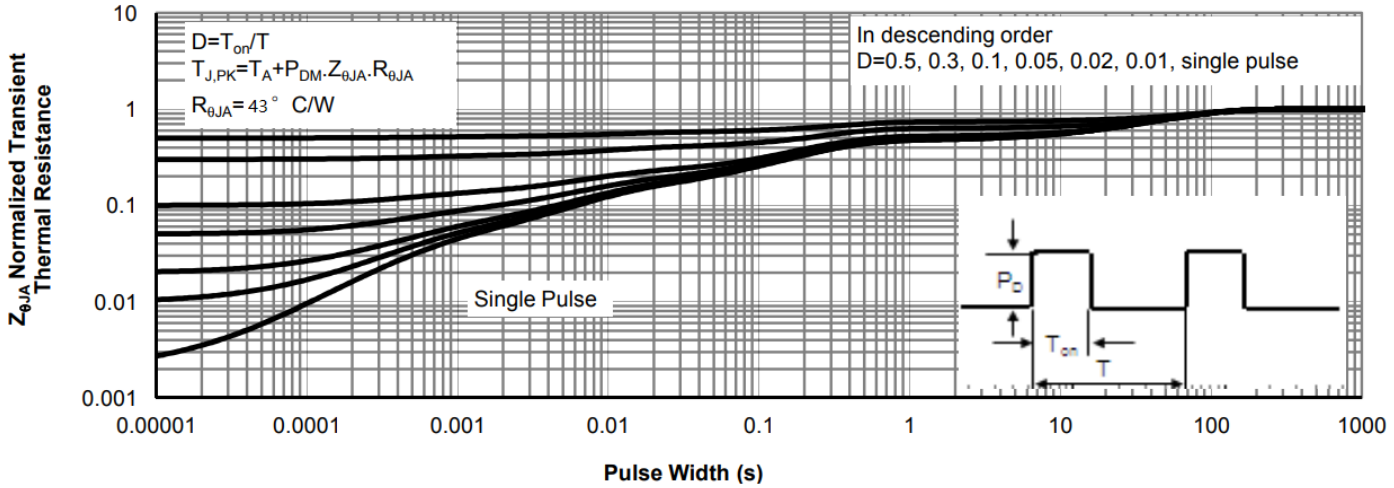
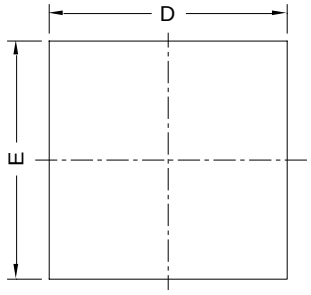
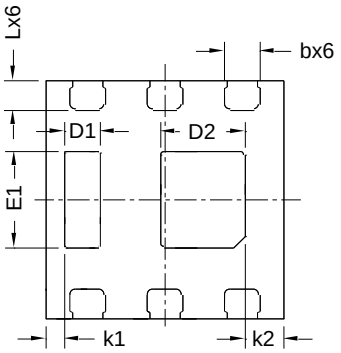


Figure9.Normalized Maximum Transient Thermal Impedance

■ DFN2020-6L-E-0.80MM Package information



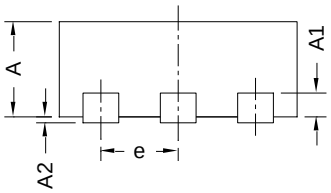
Top View
正面视图



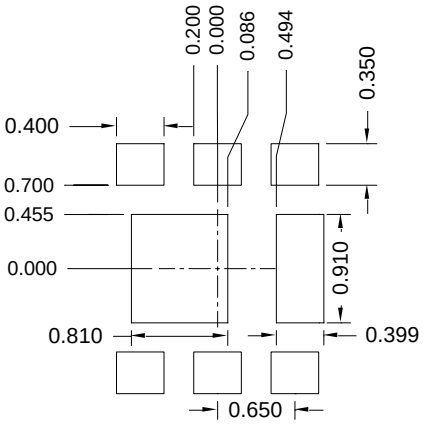
Bottom View
背面视图

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	
k1		0.156 BSC	
k2		0.326 BSC	

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.10mm.
3.The pad layout is for reference purposes only.



Side View
侧面视图



Suggested Solder Pad Layout
Top View

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