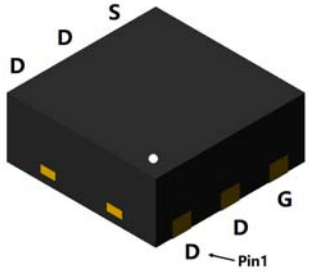
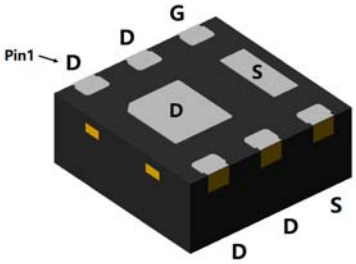
N-Channel Enhancement Mode Field Effect Transistor

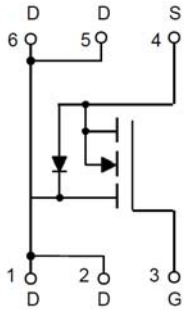


Top View



Bottom View

DFN2020-6L



Product Summary

- V_{DS} 20V
- I_D 12A
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜13mohm
- $R_{DS(ON)}$(at V_{GS}=2.5V) ＜16mohm
- $R_{DS(ON)}$(at V_{GS}=1.8V) ＜25mohm
- 100% ∇V_{DS} Tested

General Description

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

Applications

- PWM application
- Load switch

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	20	V
Gate-source Voltage		V_{GS}	±10	V
Drain Current	T_A=25℃	I_D	12	A
	T_A=70℃		9.6	
Pulsed Drain Current [A]		I_{DM}	50	A
Total Power Dissipation	T_A=25℃	P_D	2.5	W
	T_A=70℃		1.6	W
Thermal Resistance Junction-to-Ambient [B]		$R_{\theta JA}$	50	℃/ 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
Q2012A	F1	N2012A	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	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS1}	V_{GS}=±10V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	0.45	0.62	1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=5A		10	13	mΩ
		V_{GS}=2.5V, I_D=3A		12.5	16	
		V_{GS}=1.8V, I_D=2A		17	25	
Diode Forward Voltage	V_{SD}	I_S=5A,V_{GS}=0V			1.2	V
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V,f=1MHz		777		pF
Output Capacitance	C_{oss}			164		
Reverse Transfer Capacitance	C_{rss}			140		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=4.5V,V_{DS}=10V,I_D=5.6A		25.5		nC
Gate-Source Charge	Q_{gs}			2.8		
Gate-Drain Charge	Q_{gd}			4.6		
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=4.5V, V_{DS}=10V, R_L=1.5Ω R_{GEN}=3Ω		4.4		
Turn-on Rise Time	t_r			28.2		
Turn-off Delay Time	$t_{D(off)}$			16.2		
Turn-off fall Time	t_f			26		

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

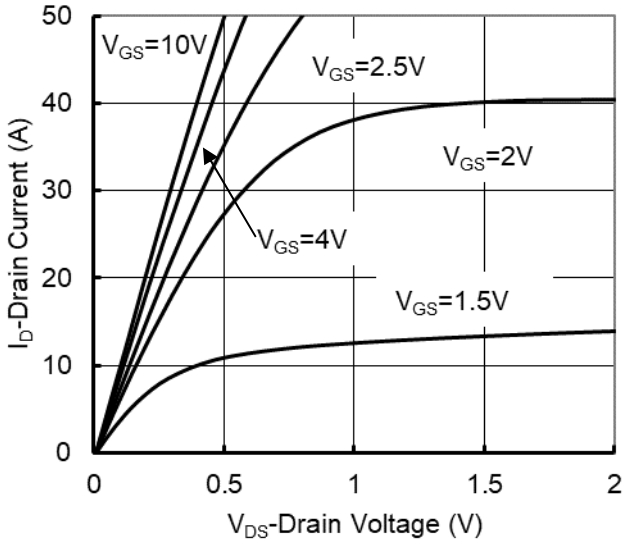


Figure1. Output Characteristics

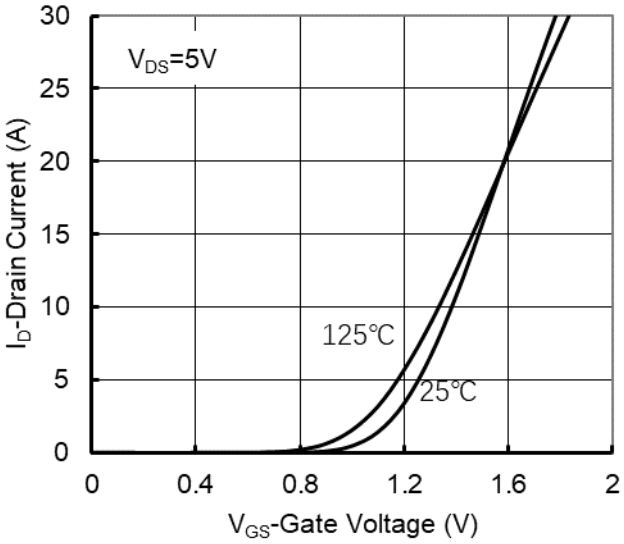


Figure2. Transfer Characteristics

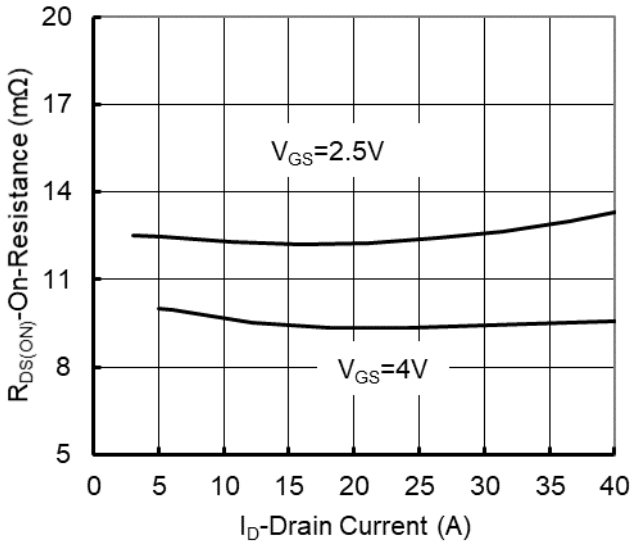


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

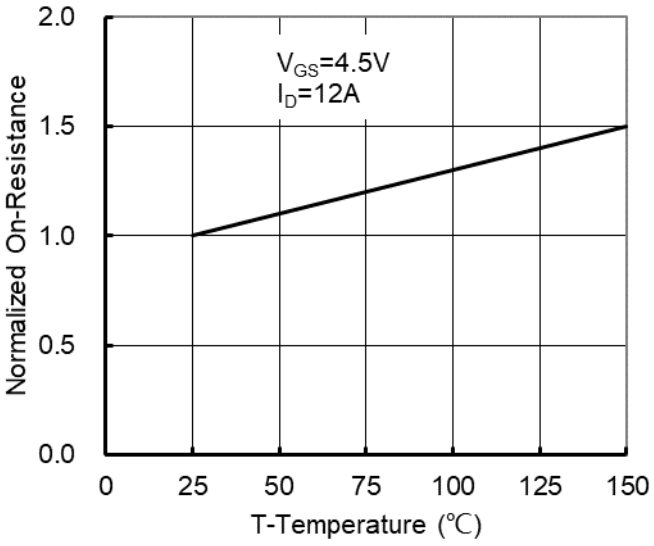


Figure 4: On-Resistance vs. Junction Temperature

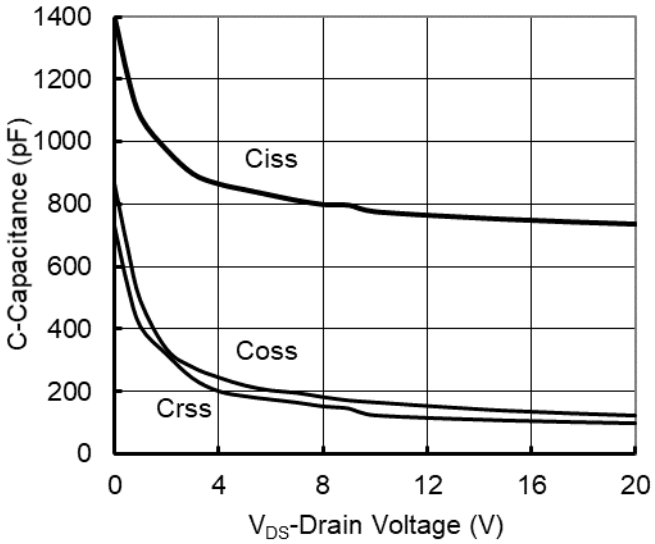


Figure5. Capacitance Characteristics

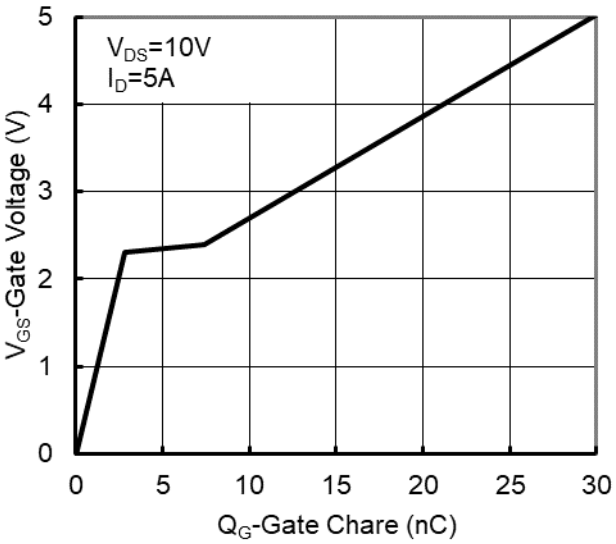


Figure6. Gate Charge

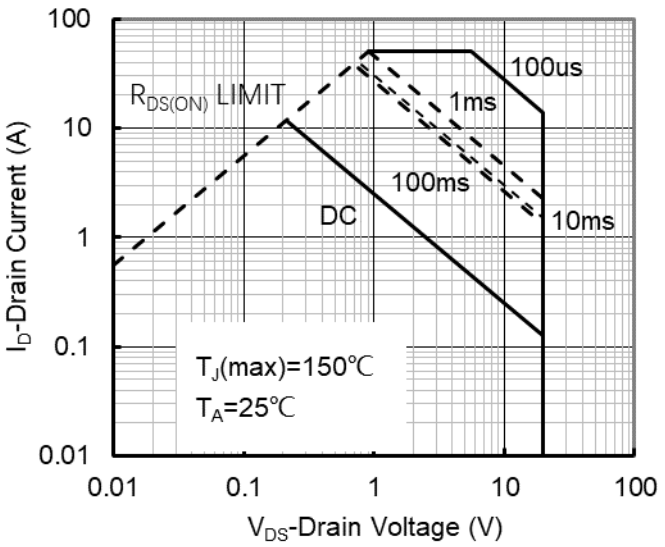


Figure7. Safe Operation Area

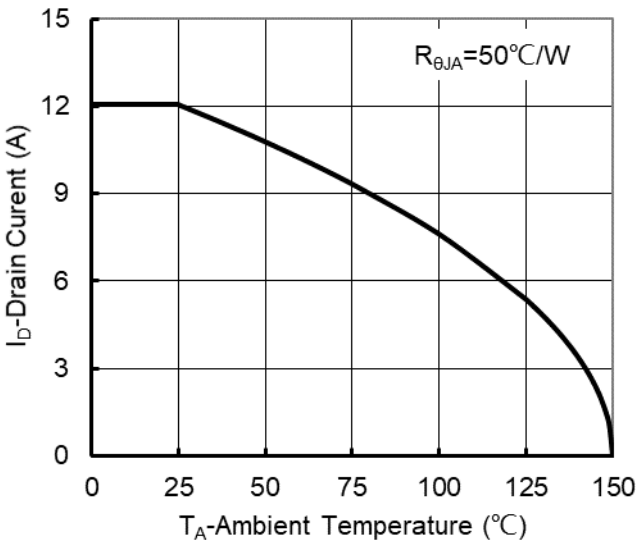


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

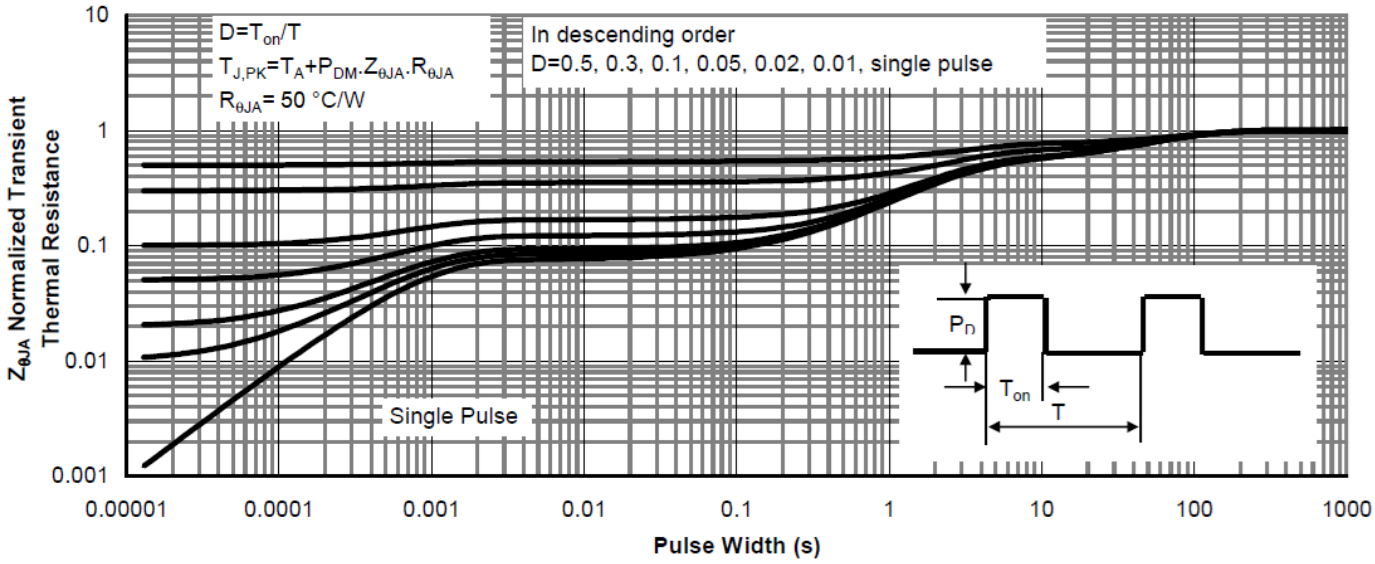
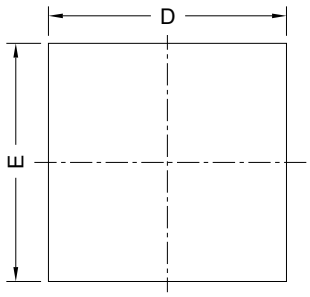
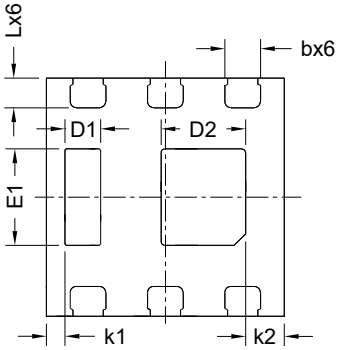


Figure9. Normalized Maximum Transient Thermal Impedance

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

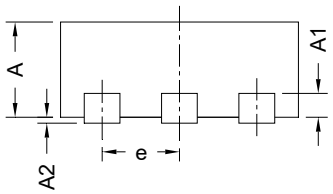


Top View
正面视图

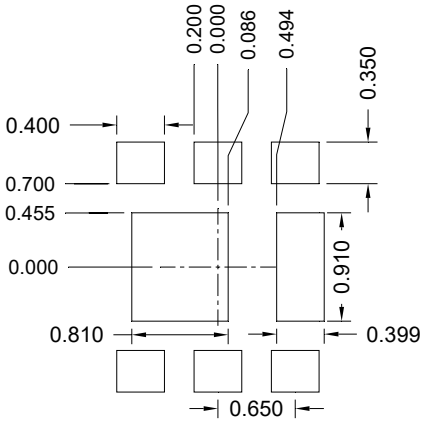


Bottom View
背面视图

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	



Side View
侧面视图



Suggested Solder Pad Layout
Top View

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

Notice

All products, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in STARSEA's terms and conditions of sale for such products, STARSEA assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of STARSEA products including liability or warranties relating to fitness for a particular purpose, merchantability,or infringement of any patent, copyright, or other intellectual property right.