N-Channel 20V(D-S) MOSFET

Product summary		
V_{DS}	20	V
$R_{DS(ON)}$(at V_{GS}=4.5V) Typ.	10	mΩ
$R_{DS(ON)}$(at V_{GS}=2.5V) Typ.	12.5	mΩ
I_D(T_A=25℃)	12	A

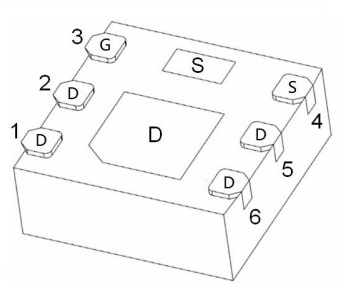
Features

- Trench Power LV MOSFET technology
- Low $R_{DS(ON)}$
- RoHS and Halogen-Free compliant

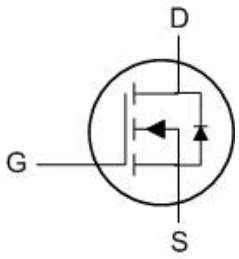
Applications

- Load switch
- PWM application

Pin Configuration



DFN2X2-6L



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECG2012A	DFN2X2-6L	7″	3000pcs

Absolute Maximum Ratings (at TA=25℃ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current [A]	T_C=25℃	12	A
		T_C=70℃	9.6	A
I_{DM}	Pulse Drain Current Tested [B]		50	A
P_D	Power Dissipation [C]		2.5	W
T_J,T_{STG}	Junciton and Storage Temperature Range		-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient [A]	50	℃/W

Electrical Characteristics (at T_J =25℃ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V,V_{GS}=0V	--	--	1	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±10V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	0.45	0.6	1.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [B]	V_{GS}=4.5V,I_D=5A	--	10	13	mΩ
		V_{GS}=2.5V,I_D=3A	--	12.5	16	mΩ
		V_{GS}=1.8V,I_D=2A	--	17	25	mΩ
V_{SD}	Diode Forward Voltage	I_S=5A,V_{GS}=0V	--	--	1.2	V
Dynamic Parameters [D]						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=10V f=1MHZ	--	777	--	pF
C_{oss}	Output Capacitance		--	164	--	pF
C_{rss}	Reverse Transfer Capacitance		--	140	--	pF
Q_g	Total Gate Charge	V_{DS}=10V,I_D=5.6A V_{GS}=4.5V	--	25.5	--	nC
Q_{gs}	Gate-Source Charge		--	2.8	--	nC
Q_{gd}	Gate-Drain Charge		--	4.6	--	nC
$t_{D(on)}$	Turn-on Delay Time	V_{DS}=10V I_D=1A,R_{GEN}=3Ω, V_{GS}=4.5V	--	4.4	--	ns
t_r	Turn-on Rise Time		--	28.2	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	16.2	--	ns
t_f	Turn-off Fall Time		--	26	--	ns

A. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 2OZ copper.

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

C. The power dissipation is limited by 150℃ junction temperature.

D. Guaranteed by design, not subject to production testing.

Typical Characteristics

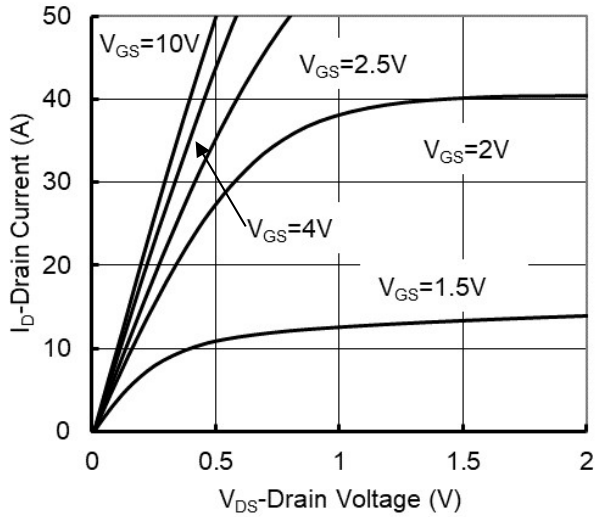


Figure1. Output Characteristics

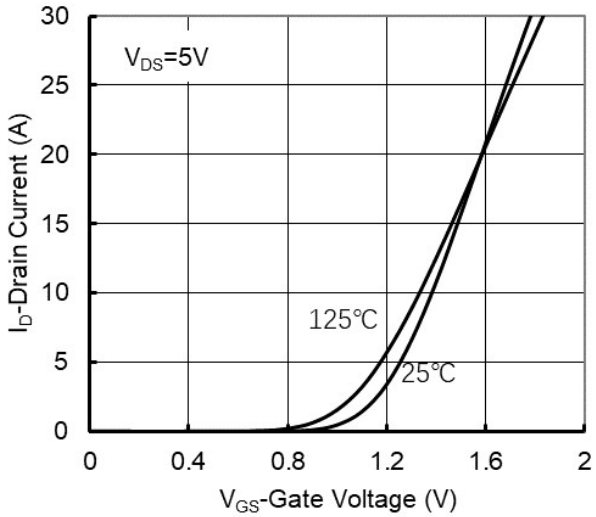


Figure2. Transfer Characteristics

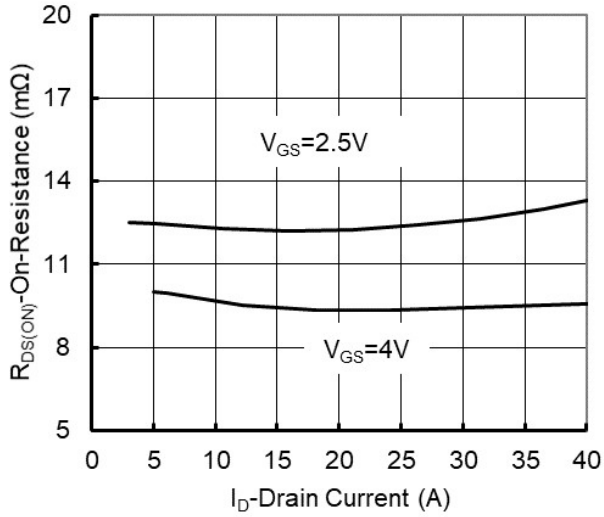


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

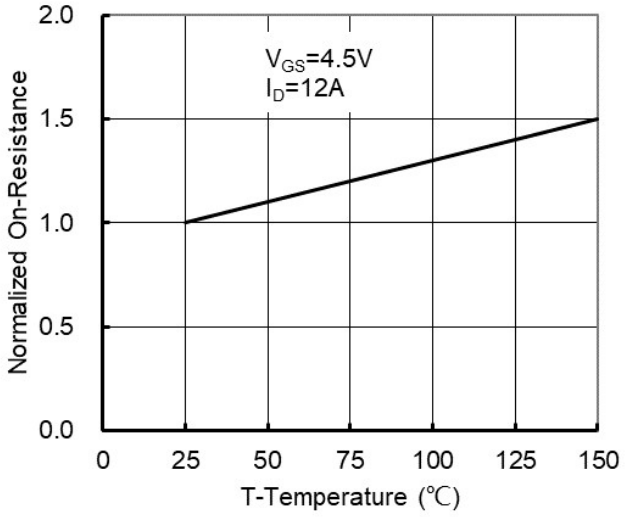


Figure 4: On-Resistance vs. Junction Temperature

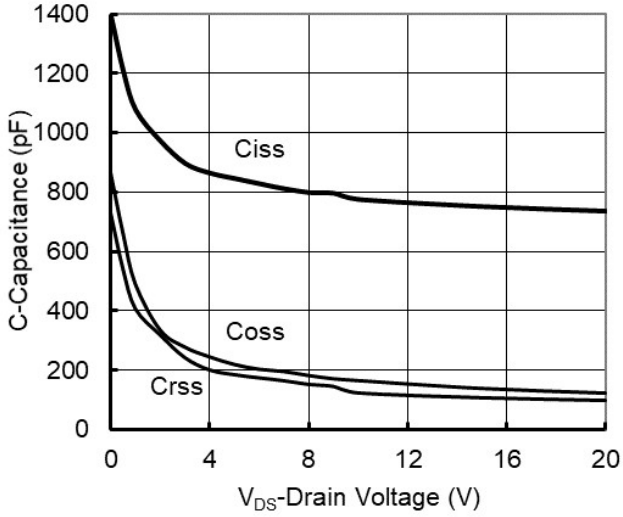


Figure5. Capacitance Characteristics

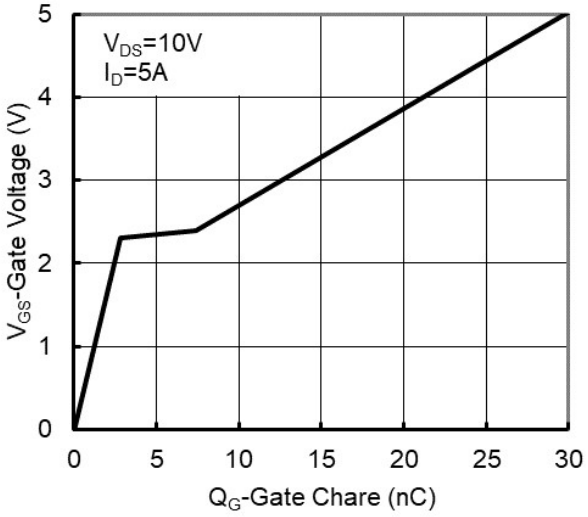


Figure6. Gate Charge

Typical Characteristics

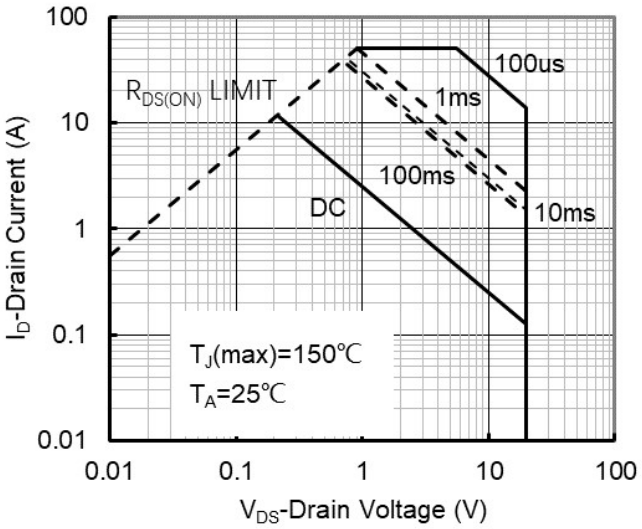


Figure7. Safe Operation Area

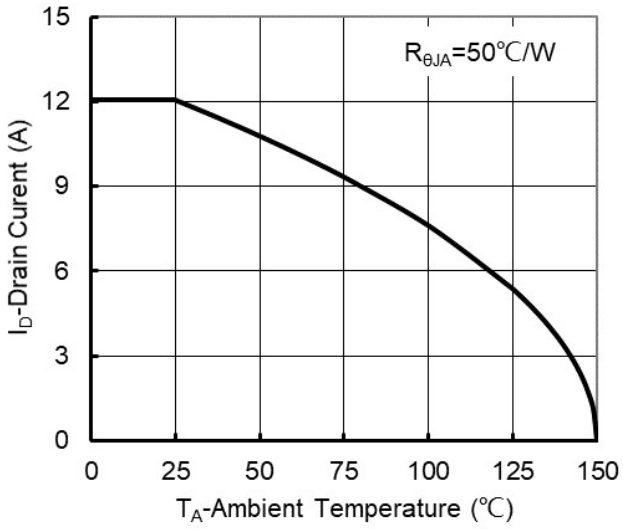


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

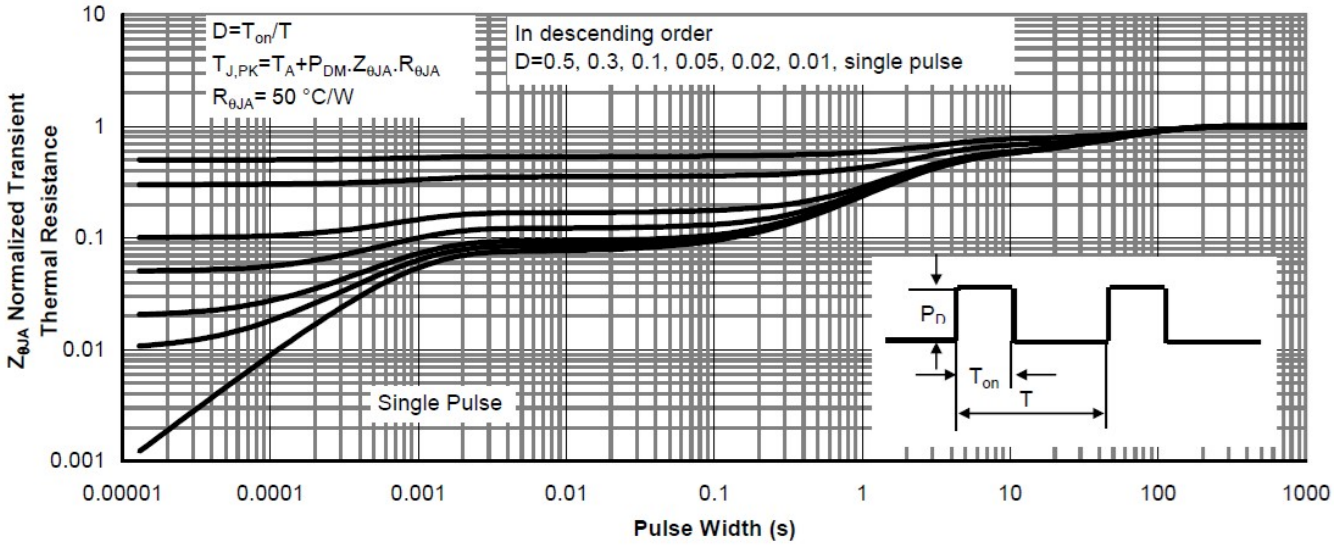
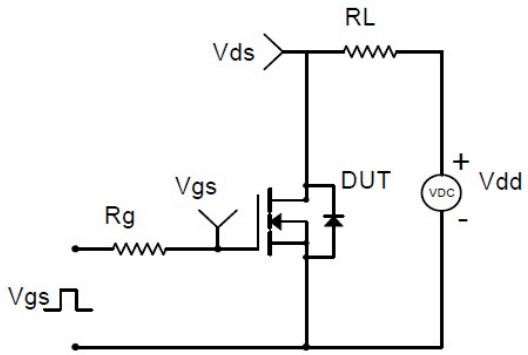
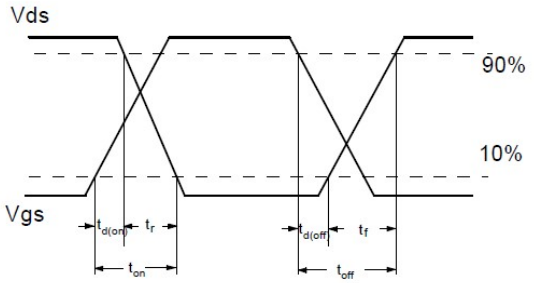


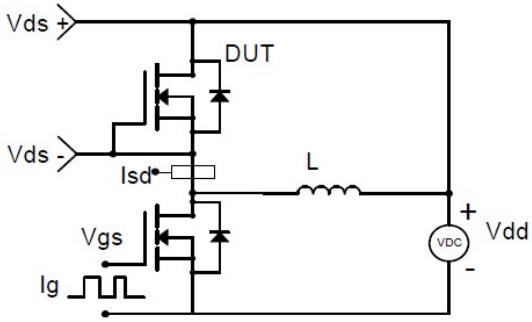
Figure9. Normalized Maximum Transient Thermal Impedance

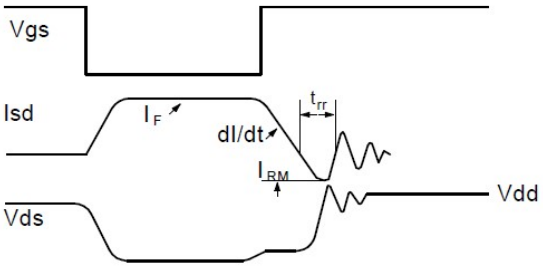
Typical Characteristics



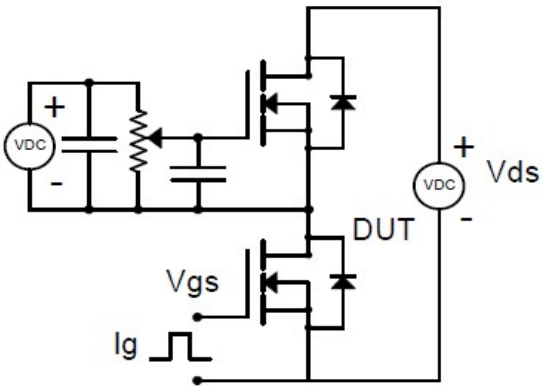


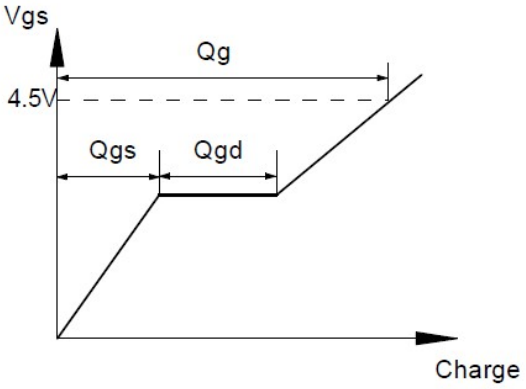
Resistive Switching Test Circuit & Waveforms



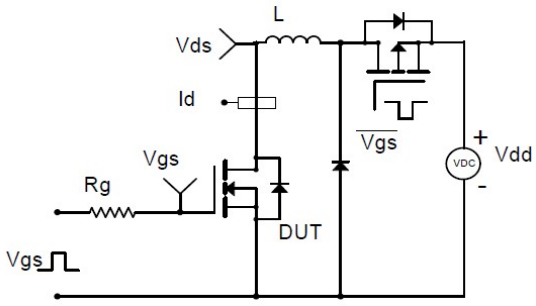


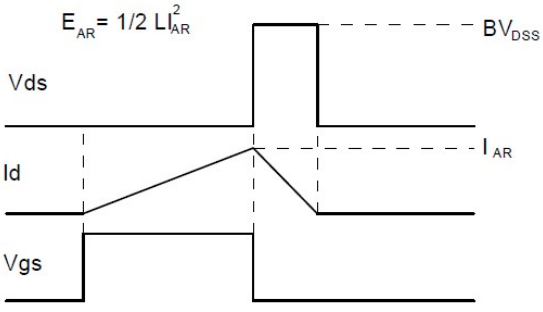
Diode Recovery Test Circuit & Waveforms





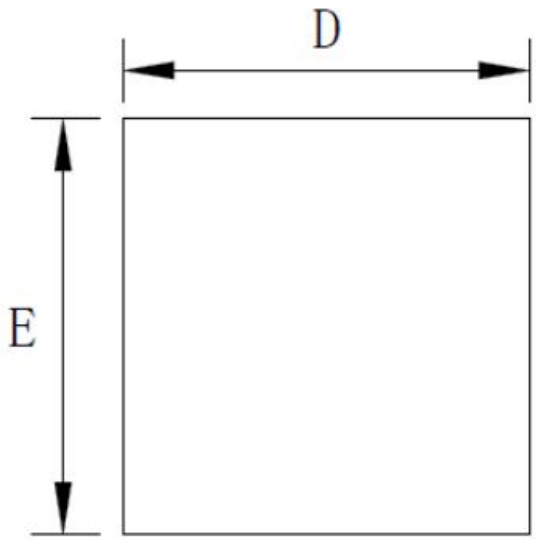
Gate Charge Test Circuit & Waveform



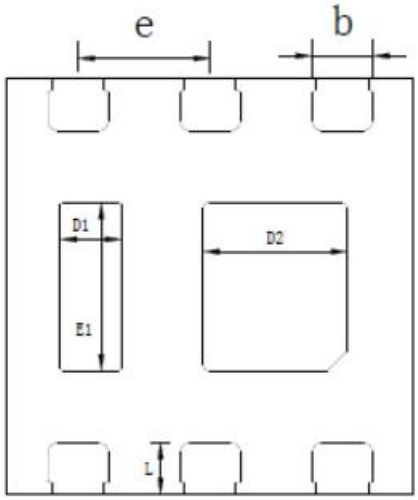


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

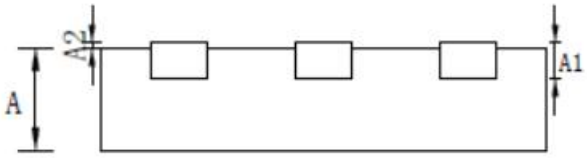
DFN2X2-6L Package Information



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