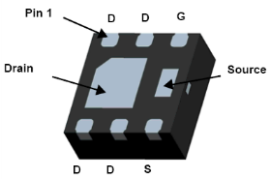
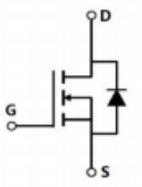
Main Product Characteristics:

V_{DSS}	30V
R_{DS}(on)	5.8mΩ(typ.)
I_D	18A



DFN2x2-6L

Pin Assignments



Schematic Diagram

Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for battery charge, load switching in cellular handset and general ultraportable applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description:

It utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in battery charge and load switching in cellular handset and a wide variety of other ultraportable applications

Absolute Max Rating:

Symbol	Parameter	Max.	Units
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 4.5V①	18	A
I_{DM}	Pulsed Drain Current②	54	
P_D @T_C = 25°C	Power Dissipation③	16	W
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

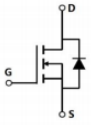
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient ④	—	35	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

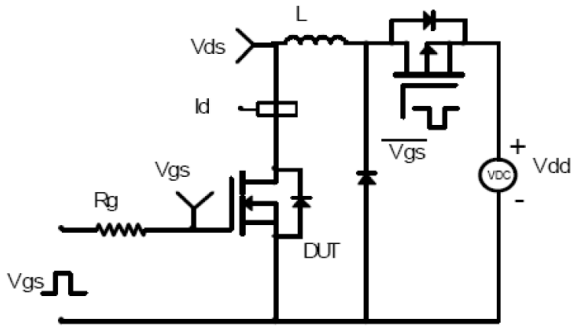
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	30	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	5.8	8	mΩ	V_{GS} =10V, I_D =15A
		—	9.6	14		V_{GS} =4.5V, I_D =10A
$V_{GS(th)}$	Gate threshold voltage	1	—	2.5	V	V_{DS} = V_{GS}, I_D = 250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} = 30V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} = 20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	12.8	—	nC	I_D = 15A,
Q_{gs}	Gate-to-Source charge	—	2.8	—		V_{DD}=15V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	3.8	—		V_{GS} = 10V
$t_{d(on)}$	Turn-on delay time	—	8.2	—	nS	V_{GS}=10V,
t_r	Rise time	—	19.2	—		V_{DS}=22V,
$t_{d(off)}$	Turn-Off delay time	—	23	—		I_D = 10A,
t_f	Fall time	—	5.6	—		R_{GEN}=2.2Ω
C_{iss}	Input capacitance	—	972	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	141	—		V_{DS} = 30V
C_{rss}	Reverse transfer capacitance	—	7.8	—		f = 1MHz

Source-Drain Ratings and Characteristics

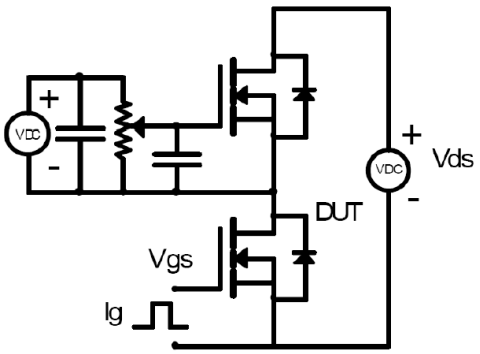
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	18	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	54	A	
V_{sd}	Diode Forward Voltage	—	0.87	1.2	V	I_S=15A, V_{GS}=0V
t_{rr}	Reverse Recovery Time	—	30	—	nS	T_J = 25°C, I_F =15A, di/dt = 100A/μs
Q_{rr}	Reverse Recovery Charge	—	90	—	nC	

Test Circuits and Waveforms

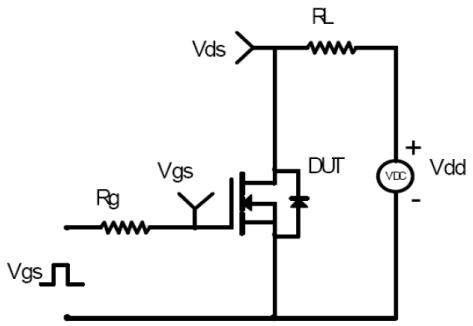
EAS Test Circuit:



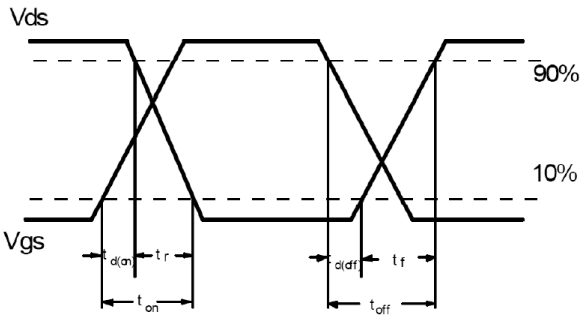
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

④The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with TA =25 ℃

Typical Electrical and Thermal Characteristics

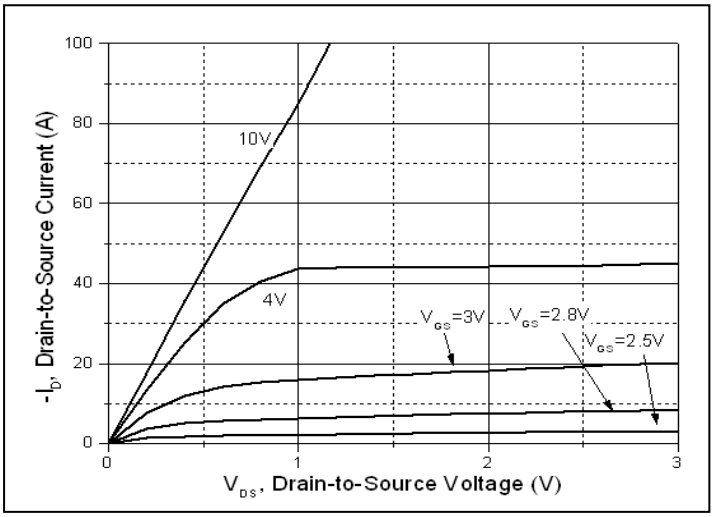


Figure1.Typical Output Characteristics

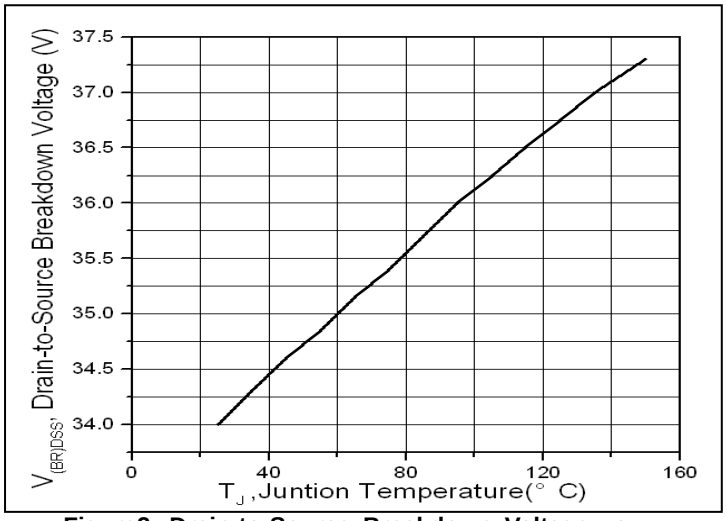


Figure2. Drain-to-Source Breakdown Voltage vs. Junction Temperature

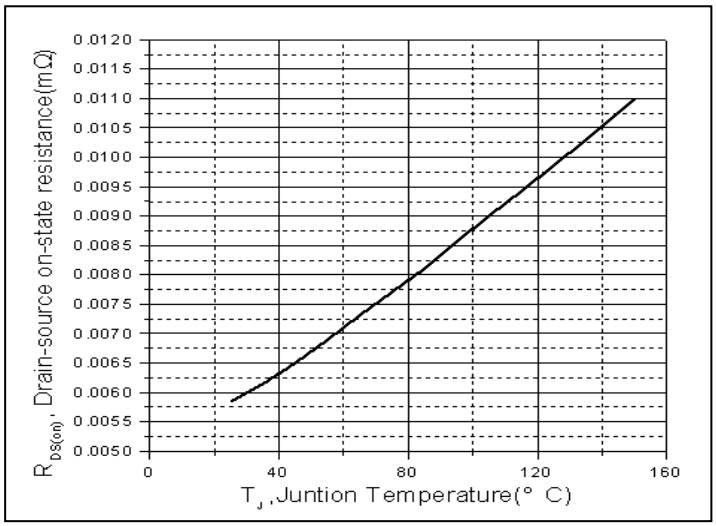


Figure3. Normalized On-Resistance vs. Junction Temperature

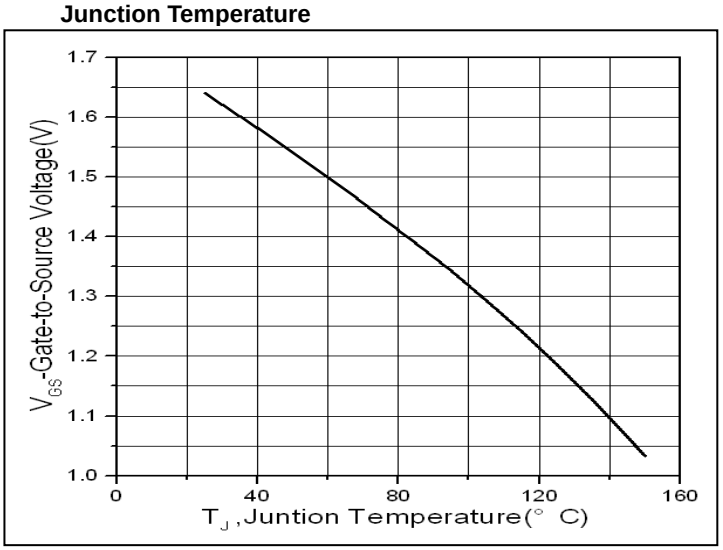


Figure 4. Normalized V_{GS}(th) vs. Junction Temperature

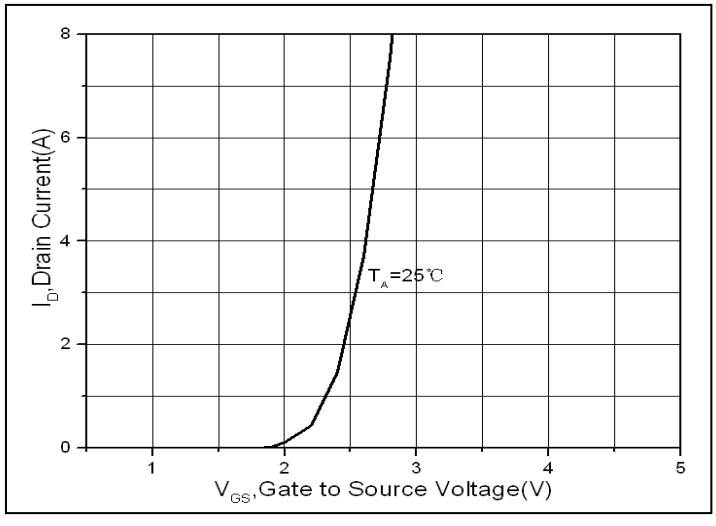


Figure5. Transfer Characteristics

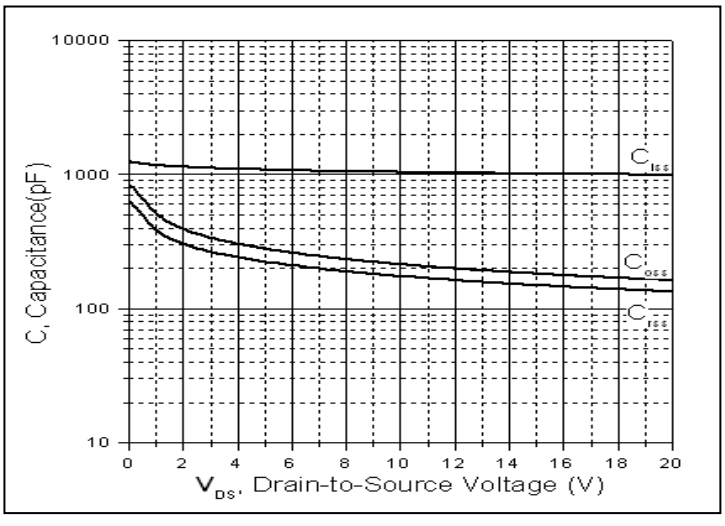


Figure6. Capacitance

Typical Electrical and Thermal Characteristics

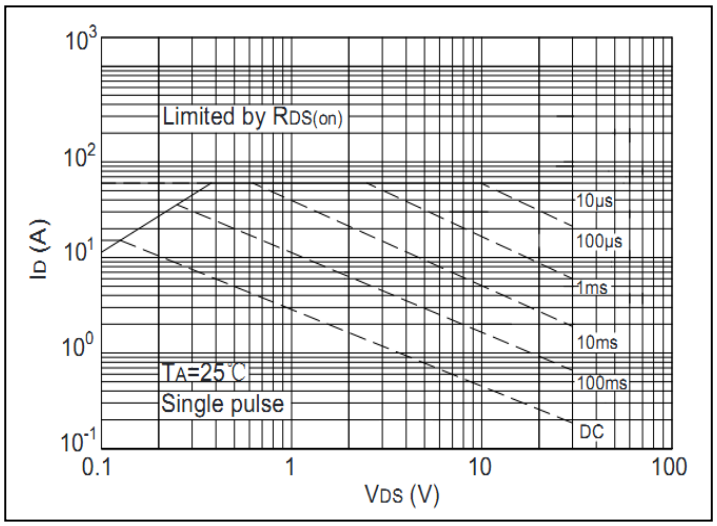


Figure 7. Safe Operation Area

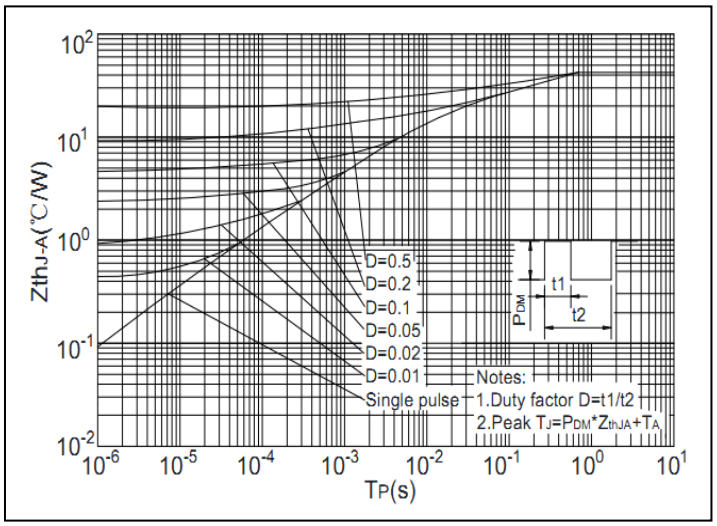
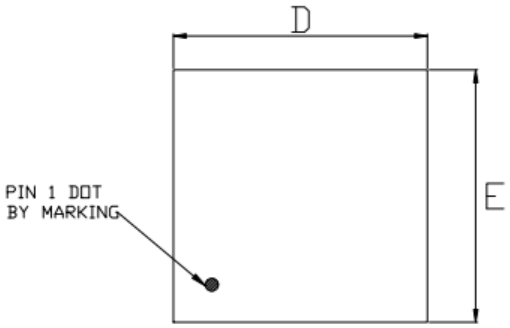


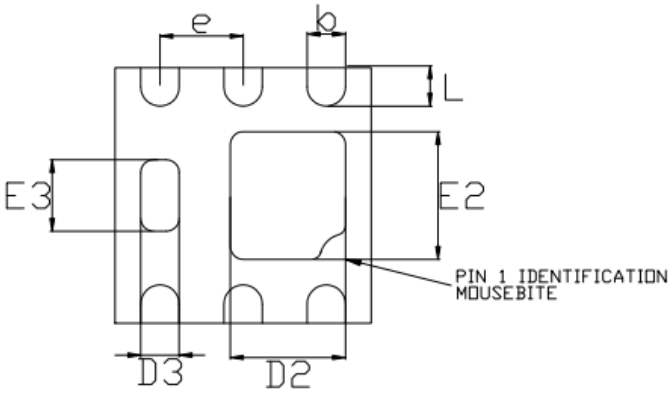
Figure 8. Transient Thermal Impedance

Mechanical Data：

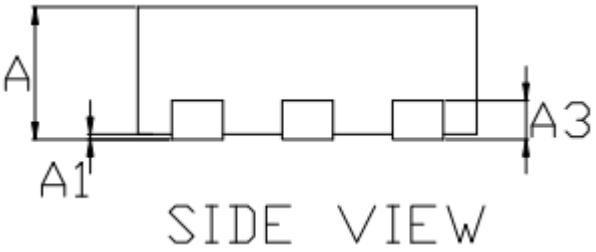
DFN 2 x 2-6L PACKAGE INFORMATION



TOP VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS(MM)			
PKG.	W:VERY VERY THIN		
REF.	MIN.	NOM.	MAX
A	0.70	0.75	0.80
A1	0.00	–	0.05
A3	0.20 REF.		
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	0.85	0.90	0.95
E2	0.95	1.00	1.05
D3	0.25	0.30	0.35
E3	0.51	0.56	0.61
b	0.25	0.30	0.35
L	0.25	0.30	0.35
e	0.65 BSC		

Notes:

①Does not fully conform to JEDEC registration MO-229 dated Aug/2003.
②Dimensions are in millimeters.
③Dimensions and tolerances per ASME Y14.5M. 1994.

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