N-Channel 75V (D-S) MOSFET

General Description

The FIR6N06LG is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching and low in-line power loss are needed in a very small outline surface mount package.

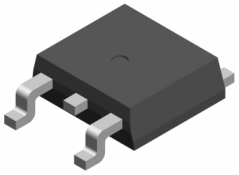
Features

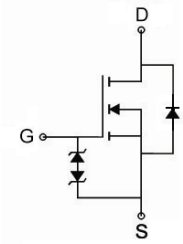
- $R_{DS(ON)}$ ≦102mΩ@V_{GS}=10V
- $R_{DS(ON)}$ ≦120mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding

APPLICATIONS

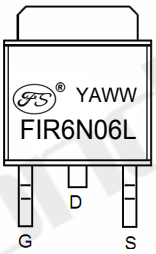
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch
- DSC

PIN Connection TO-252





N-Channel MOSFET



Marking Diagram

Y = Year
A = Assembly Location
WW = Work Week
FIR6N06L = Specific Device Code

Absolute Maximum Ratings (T_A=25℃ Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	75	V
Gate-Source Voltage	V_{GSS}	±20	V

Electrical Characteristics (T_j =25℃ Unless Otherwise Specified)

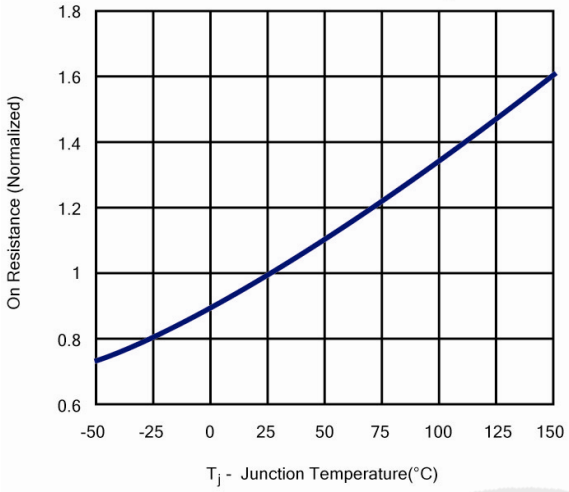
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0, I_D=250μA	75			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1		3	V
I_D	Continuous Drain Current(@Tc=25℃)			6		A
	Continuous Drain Current(@Tc=100℃)			3.4		A
I_{GSS}	Gate Body Leakage	V_{DS}=0V, V_{GS}=±16V			±10	μA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=75V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D= 4A		85	102	mΩ
		V_{GS}=4.5V, I_D= 2A		95	120	
V_{SD}	Diode Forward Voltage	I_S=4A, V_{GS}=0V		0.85	1.2	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_D=4.5A		18		nC
Qg	Total Gate Charge	V_{DS}=30V, V_{GS}=4.5V, I_D=4.5A		9		
Qgs	Gate-Source Charge			3.2		
Qgd	Gate-Drain Charge			3.9		
Ciss	Input capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		700		pF
Coss	Output Capacitance			60		
Crss	Reverse Transfer Capacitance			20		
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=30V, R_L =15Ω, V_{GEN}=10V, R_G=1Ω		12		ns
t_r	Turn-On Rise Time			16		
$t_{d(off)}$	Turn-Off Delay Time			35		
t_f	Turn-Off Fall Time			4		

Notes: a. Based on epoxy or solder paste and bond wire Cu wire 2mil×8(S), Au wire l.3mil×2(G) on each die of SOP-8 package.

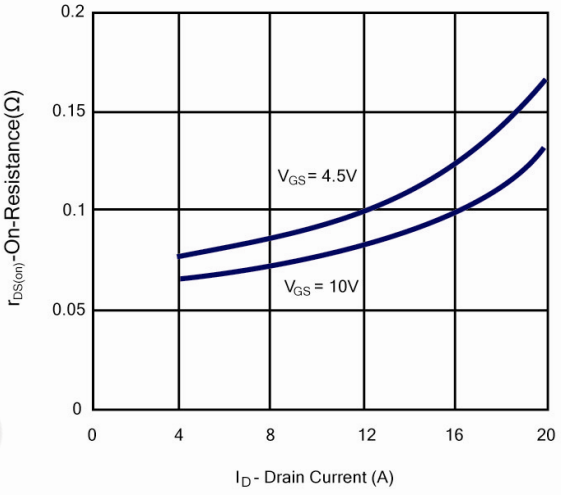
b. Pulse test; pulse width ≦ 300us, duty cycle≦ 2%.

Typical Characteristics (T_J =25℃ Noted)

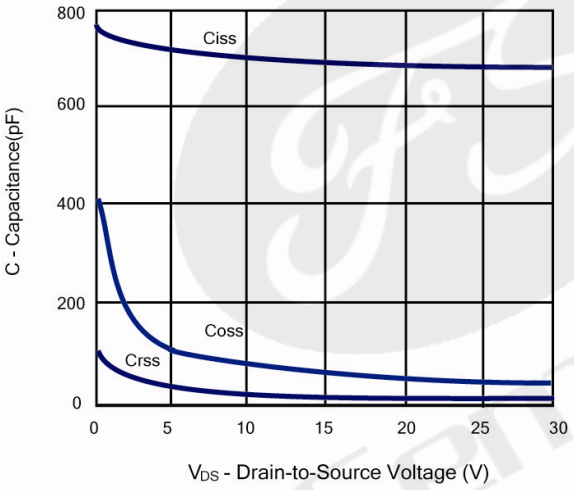
On Resistance vs. Junction Temperature



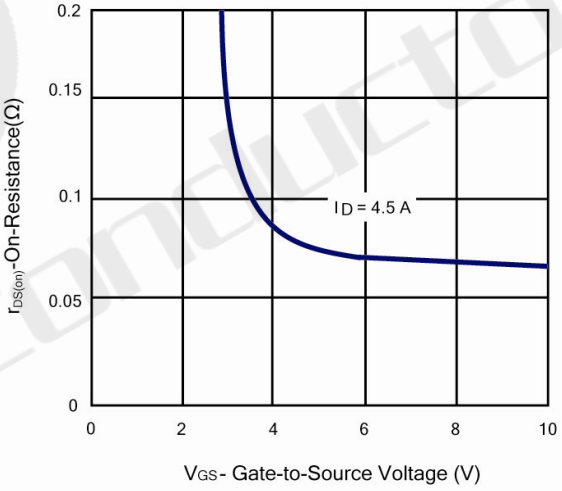
On-Resistance vs. Drain Current



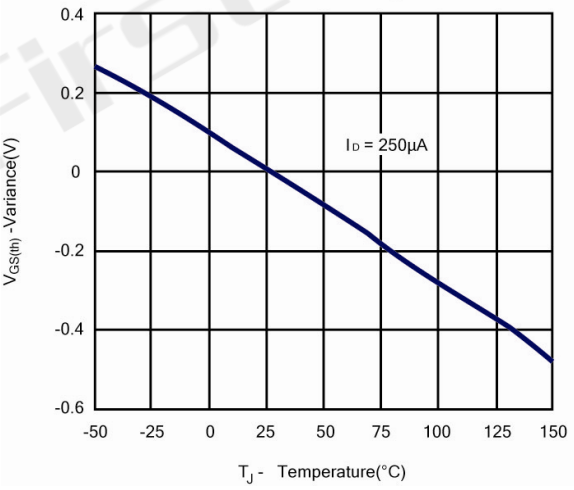
Capacitance



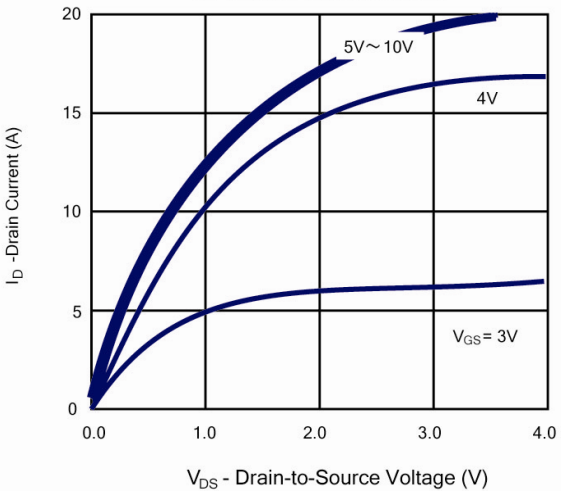
On-Resistance vs. Gate-to-Source Voltage



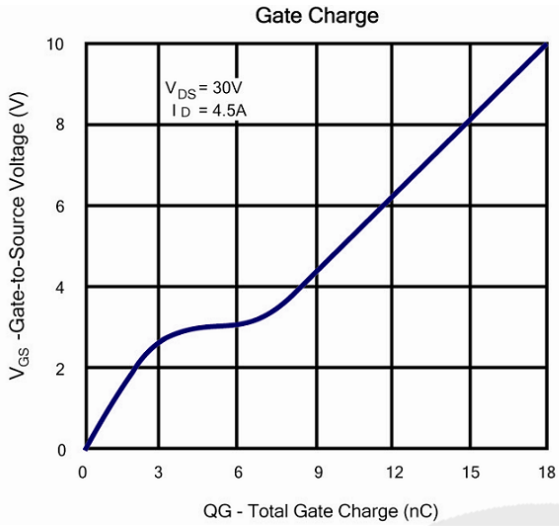
Threshold Voltage

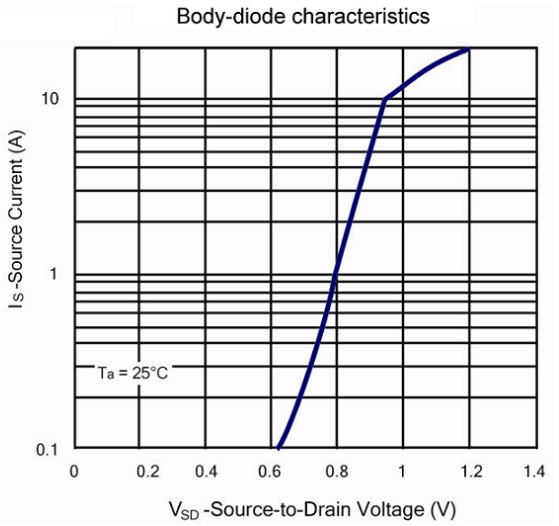


On-Region Characteristics

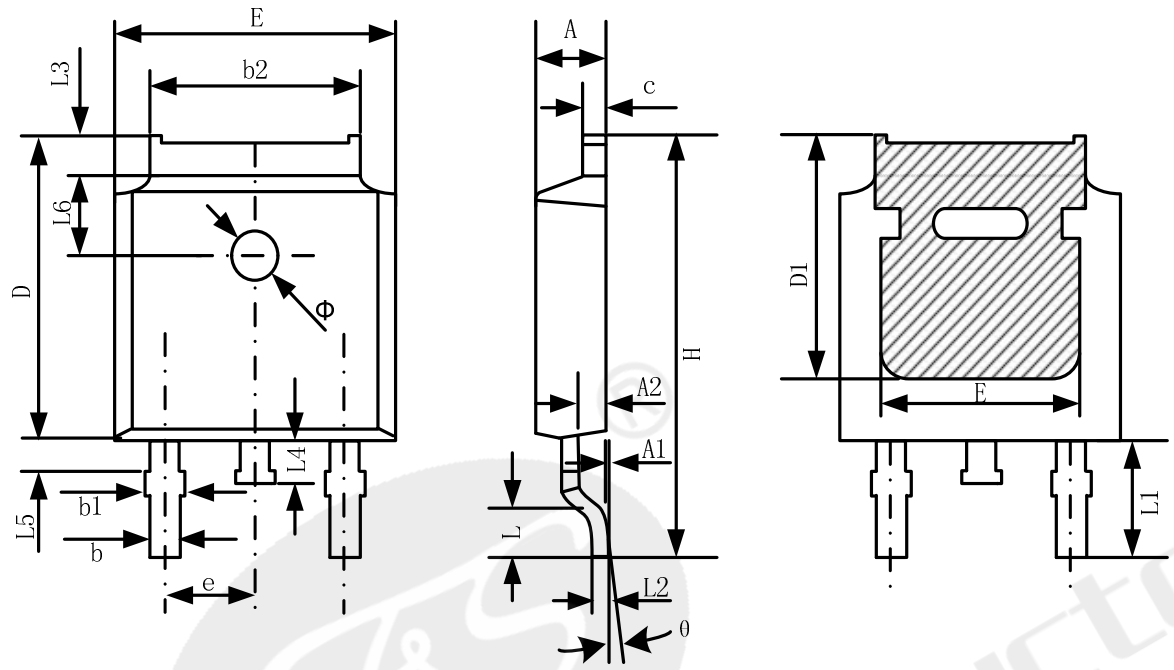


Typical Characteristics (T_J =25℃ Noted)





Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.38	0.087	0.094
A1	0.00	0.10	0.000	0.004
A2	0.90	1.10	0.035	0.043
b	0.72	0.85	0.028	0.033
b1	0.72	0.90	0.028	0.035
b2	5.13	5.46	0.202	0.215
c	0.47	0.60	0.019	0.024
D	6.00	6.20	0.236	0.244
D1	5.25	--	0.207	--
E	6.50	6.70	0.256	0.264
E1	4.70	--	0.185	--
e	2.19	2.39	0.086	0.094
H	9.80	10.40	0.386	0.409
L	1.40	1.70	0.055	0.067
L1	2.90 REF		0.114 REF	
L2	0.508 BSC		0.020 BSC	
L3	0.90	1.25	0.035	0.049
L4	0.60	1.00	0.024	0.039
L5	0.15	0.75	0.006	0.030
L6	1.80 REF		0.071 REF	
Φ	1.20	1.40	0.047	0.055
θ	0°	8°	0°	8°

Declaration

- FIRST reserves the right to change the specifications, the same specifications of products due to different packaging line mold, the size of the appearance will be slightly different, shipped in kind, without notice! Customers should obtain the latest version information before ordering, and verify whether the relevant information is complete and up-to-date.
- Any semiconductor product under certain conditions has the possibility of failure or failure,The buyer has the responsibility to comply with safety standards and take safety measures when using FIRST products for system design and manufacturing,To avoid To avoid potential failure risks, which may cause personal injury or property damage!
- Product promotion endless, our company will wholeheartedly provide customers with better products!

ATTACHMENT

Revision History

Date	REV	Description	Page
2018.01.01	1.0	Initial release	