P-Channel -30V (D-S) MOSFET

● FEATURES

$R_{DS(ON)} \leqq 13m\Omega @ V_{GS} = -10V$

$R_{DS(ON)} \leqq 22m\Omega @ V_{GS} = -4.5V$

high density cell design for extremely low $R_{DS(ON)}$
Exceptional on-resistance and maximum DC current
capability

● GENERAL DESCRIPTION

The FS3419 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

● PIN CONFIGURATION

Top   Bottom   Pin 1

PDFN3×3-8L

P-MOS
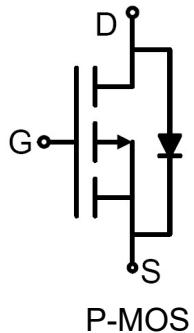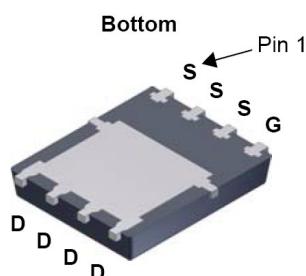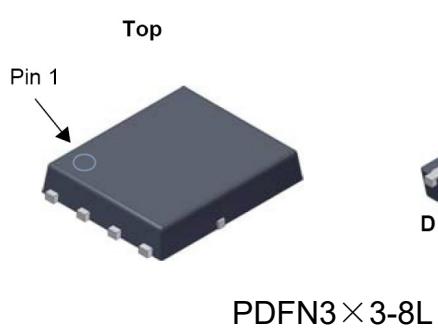
● Absolute Maximum Ratings (T$_A$=25℃ Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	-35	A
Pulsed Drain Current	I_{DM}	-50	A
Maximum Power Dissipation	P_D	35	W
Derating factor		0. 28	W/℃
Single pulse avalanche energy (Note 5)	E_{AS}	300	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	℃

* The device mounted on 1in$_2$ FR4 board with 2 oz copper

● **Electrical Characteristics** (T$_J$=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV$_{DSS}$	V$_{GS}$=0V I$_D$=-250μA	-31	-33	-	V
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$=-30V,V$_{GS}$=0V	-	-	1	μA
Gate-Body Leakage Current	I$_{GSS}$	V$_{GS}$=±20V,V$_{DS}$=0V	-	-	±100	nA
On Characteristics(Note 3)						
Gate Threshold Voltage	V$_{GS(th)}$	V$_{DS}$=V$_{GS}$,I$_D$=-250μA	-1	-1.6	-2.2	V
Drain-Source On-State Resistance	R$_{DS(ON)}$	V$_{GS}$=-10V, I$_D$=-10A V$_{GS}$=-4.5V, I$_D$=-10A	-	10 13	13 22	mΩ
Forward Transconductance	g$_{FS}$	V$_{DS}$=-10V,I$_D$=-15A	-	20	-	S
Dynamic Characteristics(Note4)						
Input Capacitance	C$_{Iss}$	V$_{DS}$=-15V,V$_{GS}$=0V, F=1.0MHz	-	3250	-	PF
Output Capacitance	C$_{oss}$		-	605	-	PF
Reverse Transfer Capacitance	C$_{rss}$		-	565	-	PF
Switching Characteristics(Note 4)						
Turn-on Delay Time	t$_{d(on)}$	V$_{DD}$=-15V,I$_D$=-10A V$_{GS}$=-10V,R$_{GEN}$=6Ω	-	13	-	nS
Turn-on Rise Time	t$_r$		-	12	-	nS
Turn-Off Delay Time	t$_{d(off)}$		-	50	-	nS
Turn-Off Fall Time	t$_f$		-	14	-	nS
Total Gate Charge	Q$_g$	V$_{DS}$=-15V,I$_D$=-10A, V$_{GS}$=-10V	-	84	-	nC
Gate-Source Charge	Q$_{gs}$		-	11.7	-	nC
Gate-Drain Charge	Q$_{gd}$		-	25	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage(Note 3)	V$_{SD}$	V$_{GS}$=0V,I$_S$=-10A	-	-0.85	-1.2	V
Diode Forward Current(Note 2)	I$_S$		-	-	-50	A
Reverse Recovery Time	t$_{rr}$	TJ = 25°C, IF = -10A di/dt = 100A/μs(Note3)	-	-	45	nS
Reverse Recovery Charge	Q$_{rr}$		-	-	43	nC
Forward Turn-On Time	t$_{on}$	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Note:

a: Pulse test: pulse width < =300us, duty cycle < =2%

b: FORSEMI reserves the right to improve product design, functions and reliability without notice.

● **TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**
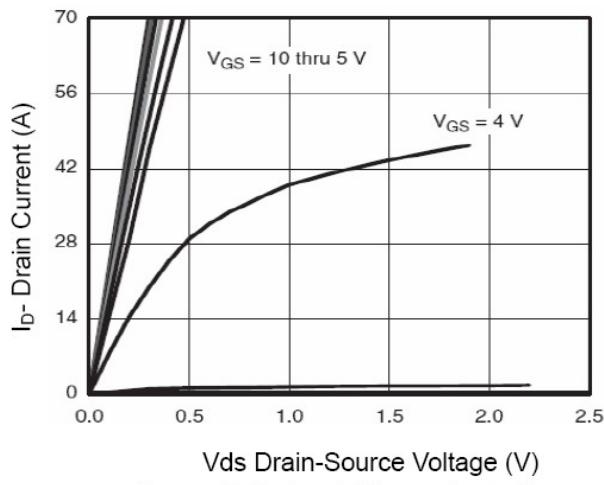

**Figure 1 Output Characteristics**
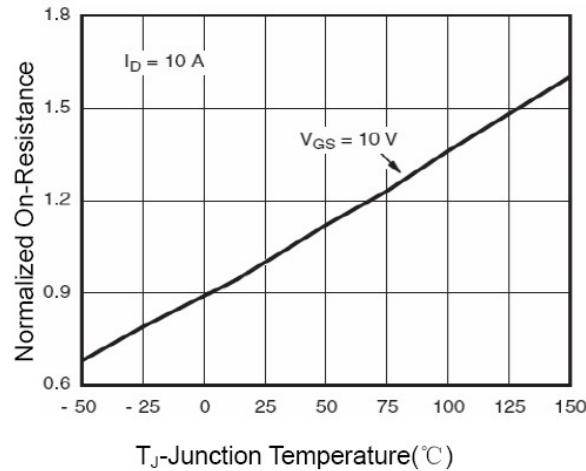
Figure 4 Rdson-Junction Temperature
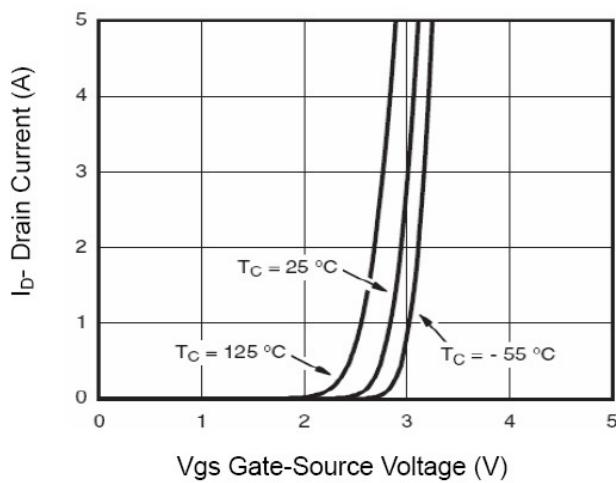

Figure 2 Transfer Characteristics
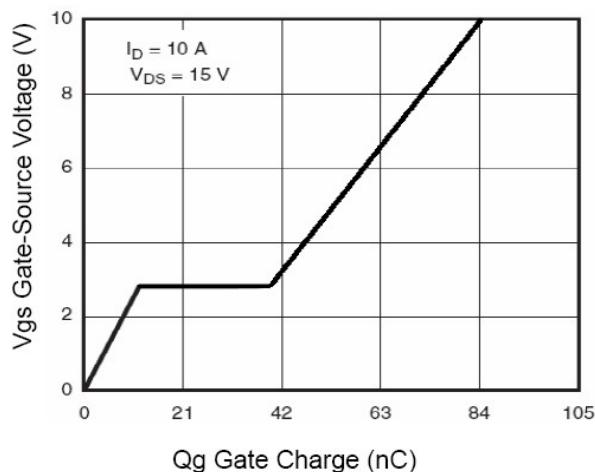
Figure 5 Gate Charge
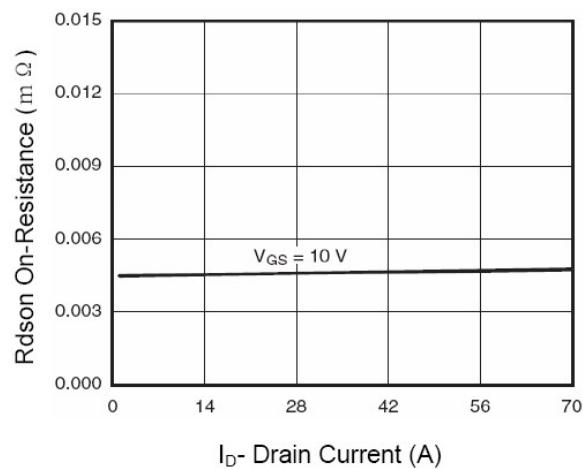
Figure 3 Rdson- Drain Current
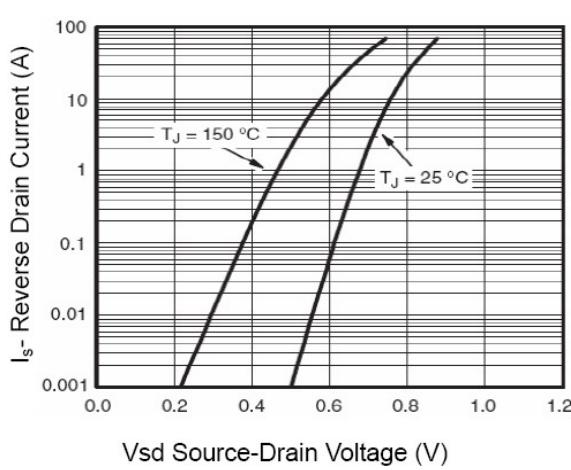
Figure 6 Source- Drain Diode Forward

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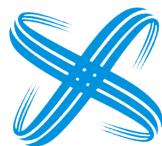
● **PACKAGE   PDFN3×3-8L**
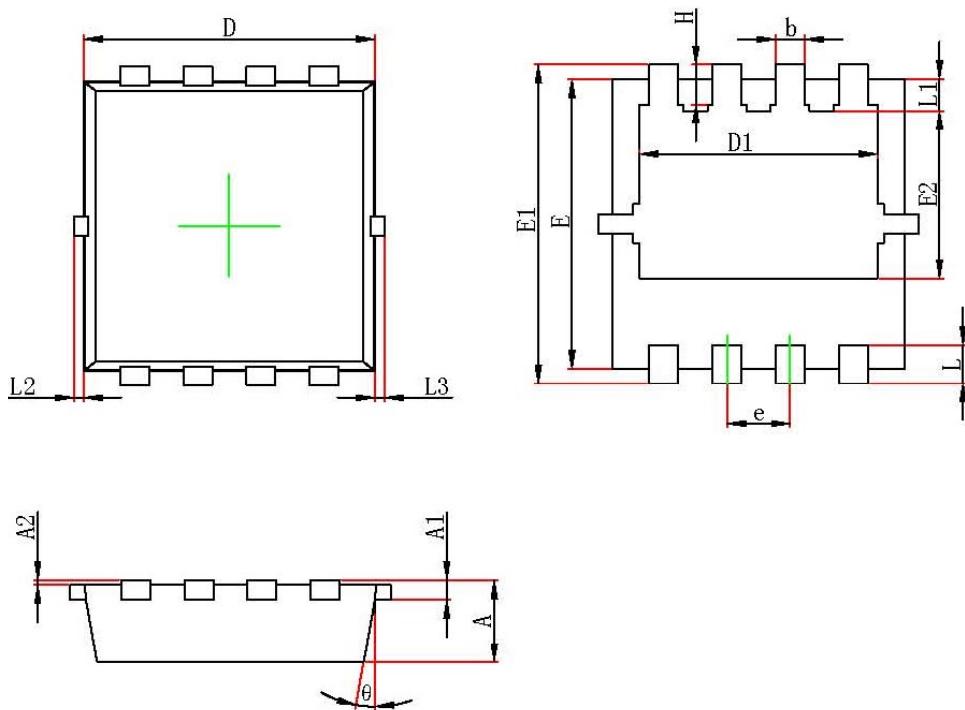
DFN3030-8L：mm			
Dim	**Min**	**Max**	**Typ**
A	0.65	0.85	0.75
A1	0.152Ref.		
A2	0	0.05	0.03
D	2.90	3.10	3.00
D1	2.24	2.54	2.39
E	2.90	3.10	3.00
E1	3.15	3.45	3.30
E2	1.23	1.64	1.43
e	0.55	0.75	0.65
b	0.20	0.40	0.30
L	0.30	0.50	0.40
L1	0.18	0.48	0.33
L2	0	0.10	0.05
L3	0	0.10	0.05
H	0.31	0.52	0.42
θ	9°	13°	11°