

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

### ● FEATURES

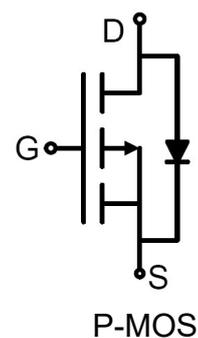
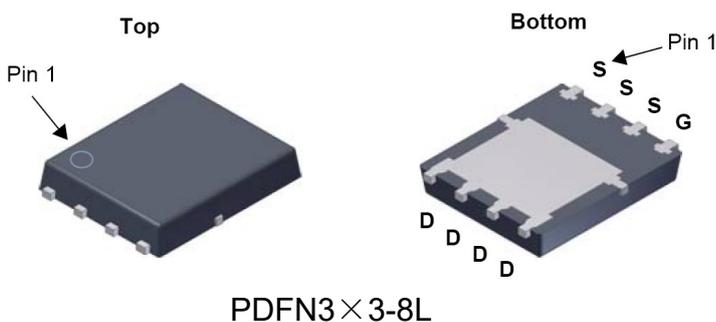
$R_{DS(ON)} \leq 13m\Omega @ V_{GS} = -10V$

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

high density cell design for extremely low  $R_{DS(ON)}$

Exceptional on-resistance and maximum DC current capability

### ● PIN CONFIGURATION



### ● 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.

### ● Absolute Maximum Ratings ( $T_A = 25^\circ C$ Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	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/ $^\circ C$
Single pulse avalanche energy (Note 5)	$E_{AS}$	300	mJ
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^\circ C$

\* The device mounted on 1in<sub>2</sub> FR4 board with 2 oz copper

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## ● Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

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

Note:

a: Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%

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

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● TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

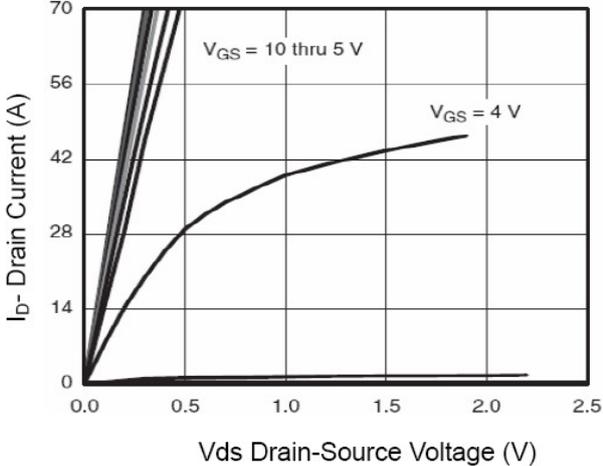


Figure 1 Output Characteristics

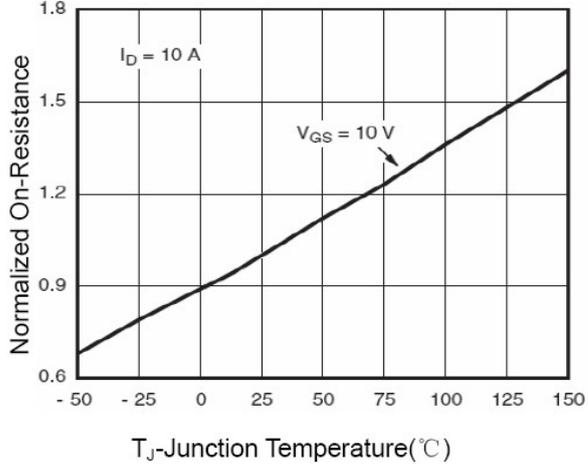


Figure 4 Rdson-Junction Temperature

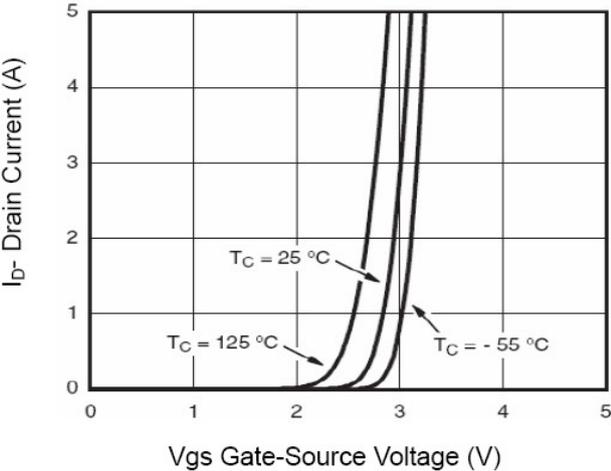


Figure 2 Transfer Characteristics

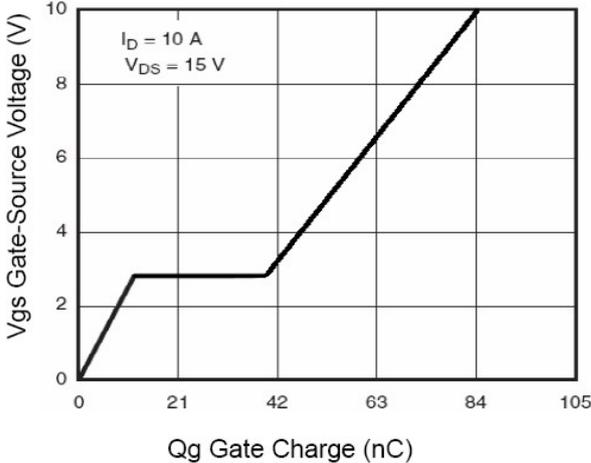


Figure 5 Gate Charge

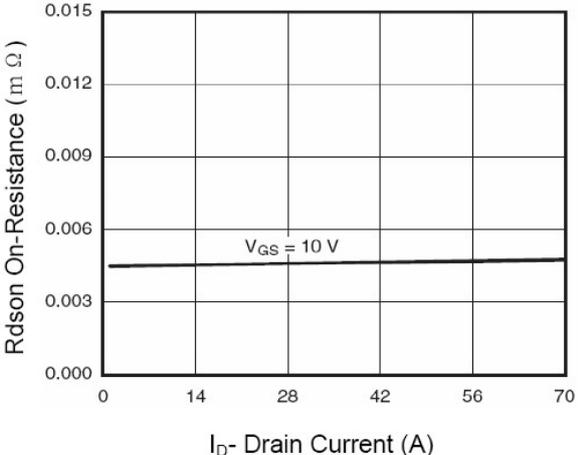


Figure 3 Rdson- Drain Current

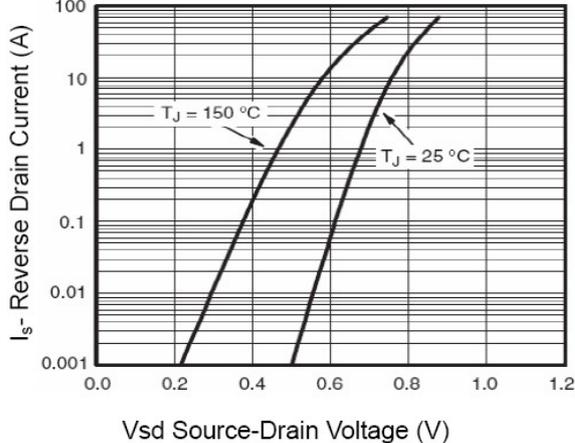
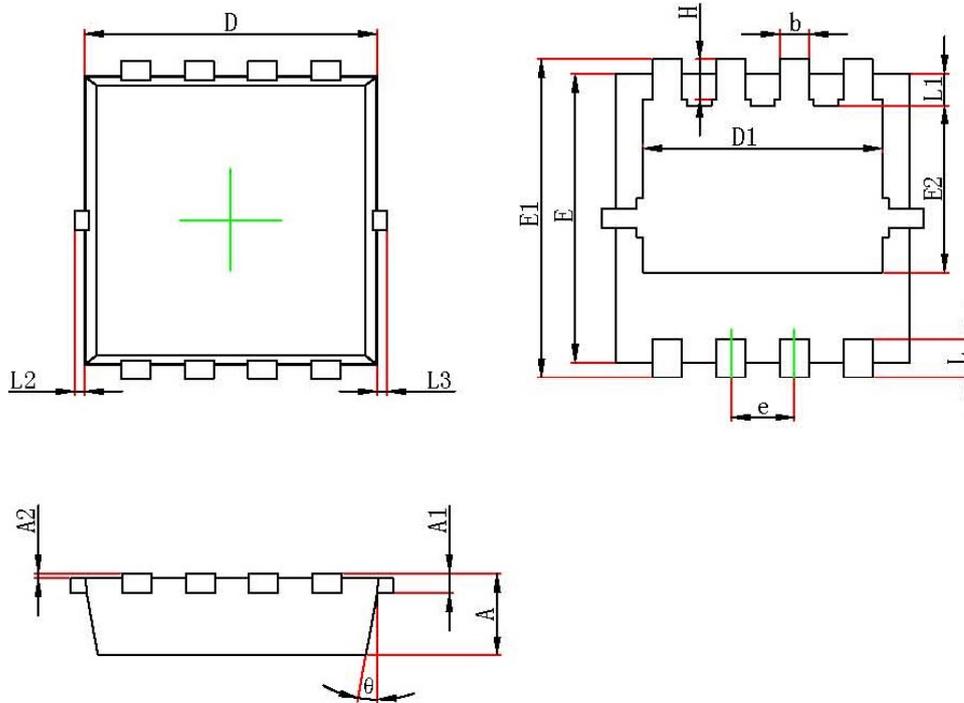


Figure 6 Source- Drain Diode Forward

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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°