FORSEMI

FS2319

60V P-Channel MOSFET

● **Features**

$R_{DS(ON)}$ < 66mΩ @ V_{GS}= - 10V

$R_{DS(ON)}$ < 86mΩ @ 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
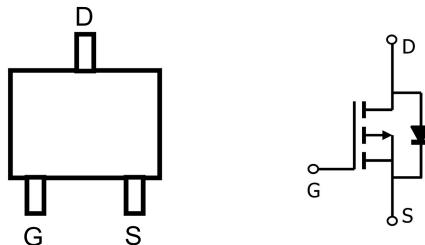
● **General Description**

The FS2319 is the P-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.

● **APPLICATIONS**

Power Management

Portable Equipment

Battery Powered System

Load Switch

● **Pin Configuration**

SOT23

● **Absolute Maximum Ratings** (T_A=25°C unless otherwise noted)

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current(T_J=150°C)		I_D@T_A=25°C	-5.5	A
		I_D@T_A=70°C	-3.8	
Pulsed Drain Current		I_{DM}	-25	
Power Dissipation	T_A=25°C	P_D	1.25	W
	T_A=70°C		0.8	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Resistance-Junction-to-Ambient [C]		R_{JA}	--	42	W
Maximum Resistance-Junction-to-Ambient [C]	Steady-State		--	55	
Maximum Resistance- Junction-to-Case		R_{JC}	--	35	
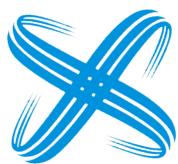
● **Electrical Characteristics** (T_A=25°C unless otherwise noted)

| Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=-250µA, V_{GS}=0V	-60			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=- 60V, V_{GS}=0			-1	uA
I_{GSS}	Gate-Body leakage current	V_{DS}=0V, V_{GS}=±20V			±0.1	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} I_D=-250µA	-1		-2.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[a]	V_{GS} = -10V, I_D = -2.0A		55	66	mΩ
		V_{GS} = -4.5 V, I_D = -1.0A		66	86	
V_{SD}	Diode Forward Voltage	I_S=-1.7A,V_{GS}=0V		-0.78	-1.1	V
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=--15V, f=1MHz		725		pF
C_{oss}	Output Capacitance			73		
C_{rss}	Reverse Transfer Capacitance			54		
SWITCHING PARAMETERS						
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DS}=--30V, I_D=-2A		23.2		nC
Q_g	Total Source Charge	V_{DS}=-30V, V_{GS}=-4.5V,I_D=-2A		11.3		
Q_{gs}	Gate-Source Drain Charge			4.7		
$t_{D(on)}$	Turn-On Delay Time	V_{GS}=-10V, V_{DS}=--30V, R_L=30Ω, R_{GEN}=-3Ω,I_D=-1A		30.2		ns
t_r	Turn-On Rise Time			8.6		
$t_{D(off)}$	Turn-Off Delay Time			56.2		
t_f	Turn-Off Fall Time			6.6		

Notes:
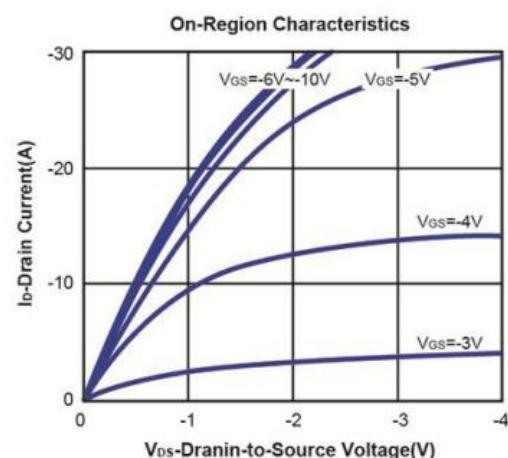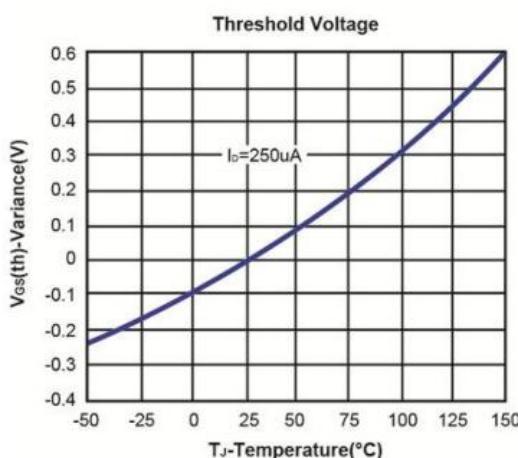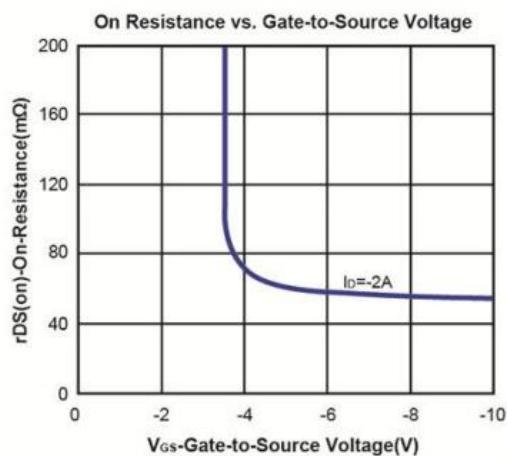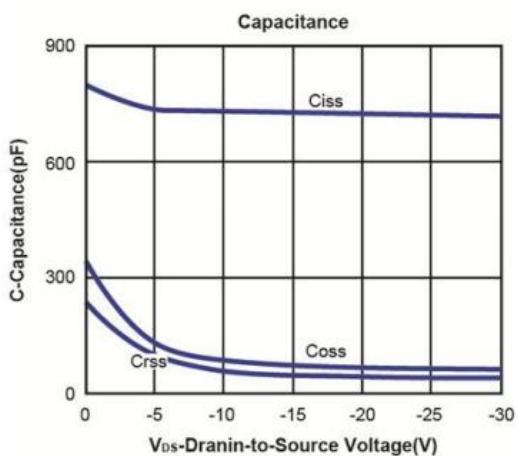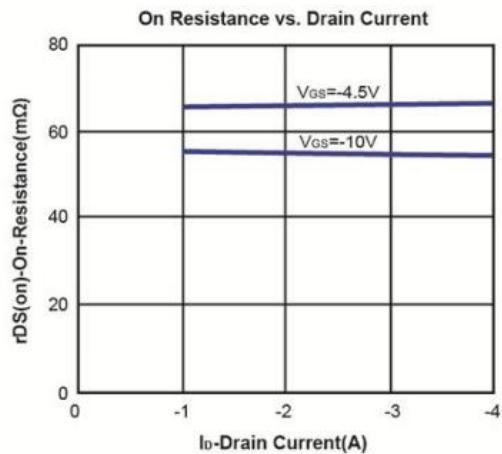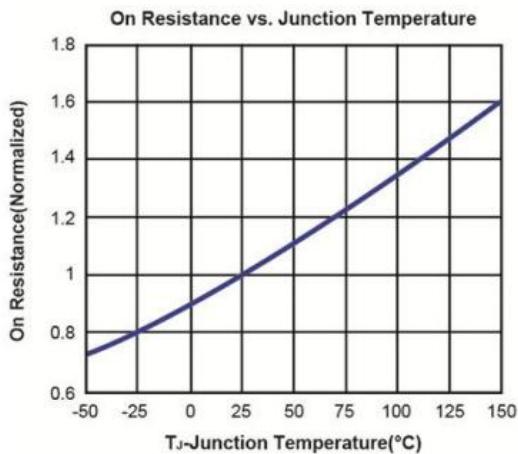
a. Based on Epoxyr and bond wire Cu2mil x4 (S), Cu 2mil x1 (G) on each die of sop-8 package.

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

c. The device mounted on 1in2 FR4 board with 2 oz copper
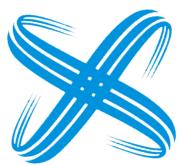
● **TYPICAL CHARACTERISTICS** (T_A=25°C UNLESS NOTED)

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_A=25°C UNLESS NOTED)

Gate Charge

V_{DS}=-30V
I_D=-2A

QG-Total Gate Charge(nC)
V_{GS}-Gate-to-Source Voltage(V)

Body-diode characteristics

Ta=25°C

V_{SD}-Source-to-Drain Voltage(V)
Is-Source Current(A)
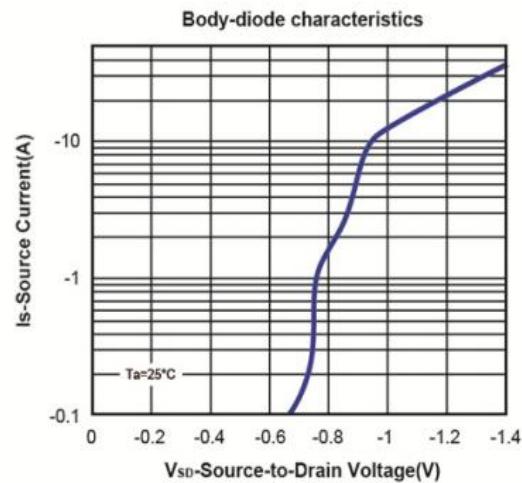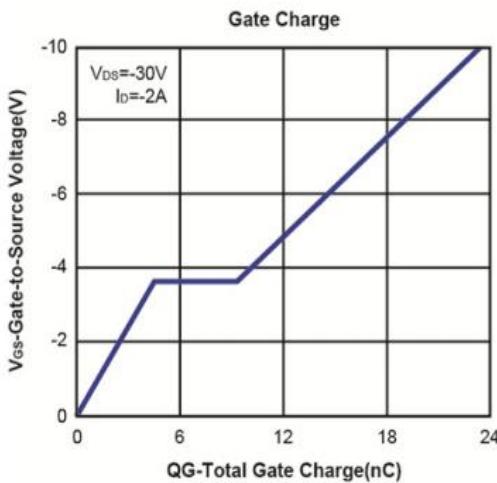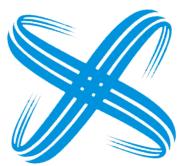
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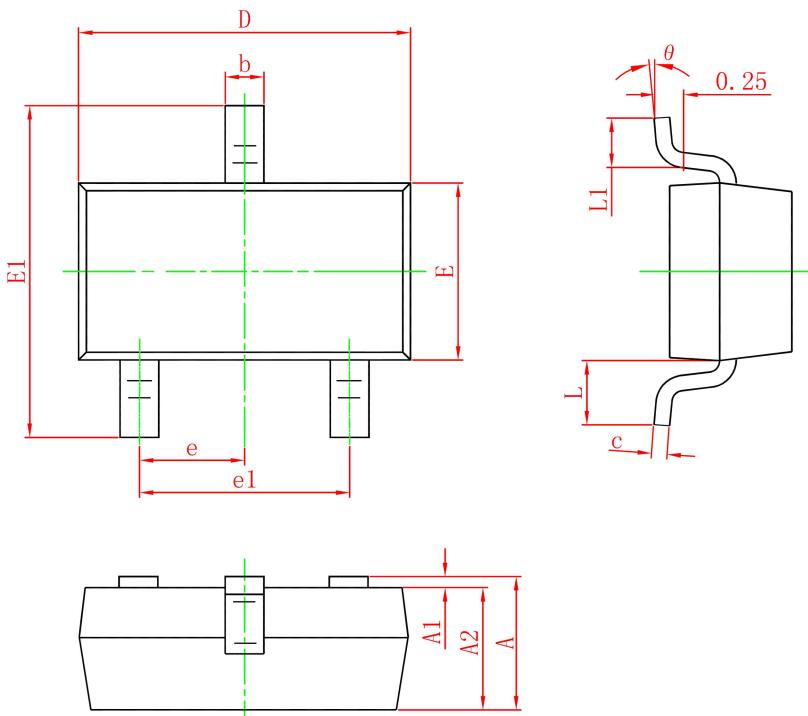
● **Package Information**

SOT-23 PACKAGE OUTLINE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°
UNIT:mm				