N-Channel Enhancement Mode MOSFET

Features

• RDS(ON)=37mΩ @V_{GS}=10V
• RDS(ON)=49mΩ@V_{GS}=4.5V
• RDS(ON)=52mΩ@V_{GS}=2.5V
• Super high density cell design for extremely low $R_{DS(ON)}$
• Exceptional on-resistance and maximum DC current capability

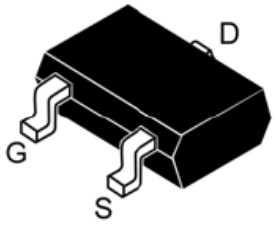
General Description

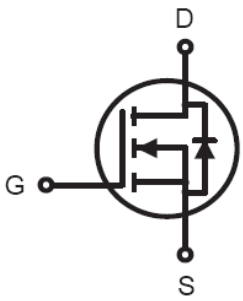
The FS2306A is the N-Channel logic enhancement mode power field effect transistors, using high cell density, DMOS trench technology.

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, notebook computer power management and other battery powered circuits,and low in-line power loss that are needed in a very small outline surface mount package.

Pin Configurations





SOT23

Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	5 secs	Steady State	Units
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±12		V
Continuous Drain Current(t_J=150)[a,b]	T_A=25℃	I_D	4.0	3.16	A
	T_A=70℃		3.5	2.7	
Pulsed Drain Current		I_{DM}	20		A
Continuous Source Current (Diode Conduction) [a,b]		I_S	1.04	0.62	A
Power Dissipationa,b	T_A=25℃	P_D	1.25	0.75	W
	T_A=70℃		0.8	0.48	
Operating Junction Temperature		T_J	-55 to 150		℃

● Thermal Resistance Ratings

Parameter		Symbol	Limits		Units
			Typ	Max	
Maximum Junction-to-Ambienta	T 5sec	R_{thJA}	80	100	℃/W
	Steady-State		130	166	
Maximum Junction-to-Foot(Drain)	Steady-State	R_{thJF}	60	75	℃/W

Notes

a. Surface Mounted on FR4 Board, t ≤ 5 se c .

b. Pulse width limited by maximum junction temperature.

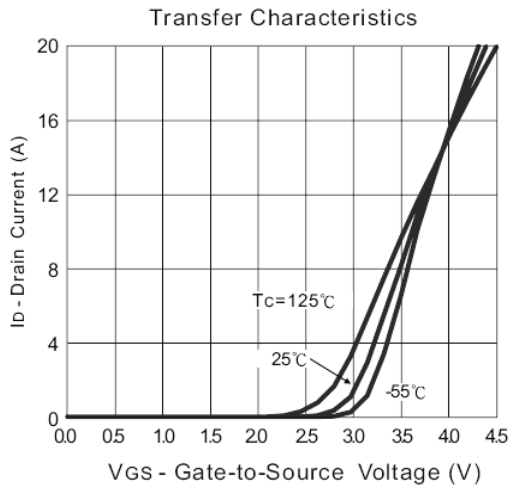
● Electrical Characteristics @T_A=25℃ unless otherwise noted

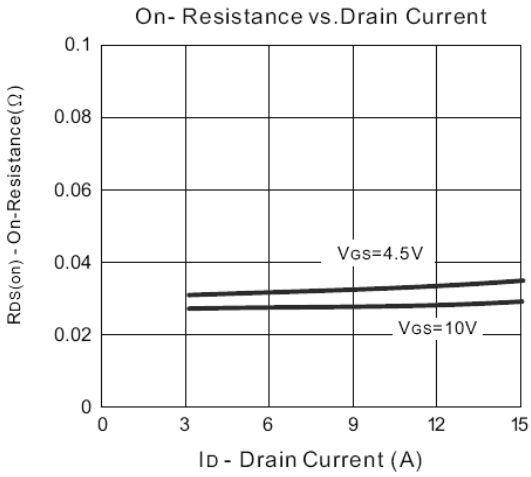
Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} =0V,I_D=10 A	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} I_D=250 A	0.7		1.4	
I_{GSS}	Gate-Body Leakage	V_{DS} =0V, V_{GS} = 20V			100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 30V, V_{GS} = 0V			0.5	A
		V_{DS} = 30V, V_{GS} = 0V T =55J			10	
$I_{D(ON)}$	On-Stae Drain Current [a]	V_{DS} 4.5V, V_{GS} = 10V	6			A
$R_{DS(ON)}$	Drain-Source On-Resistance [a]	V_{GS} = 10V, I_D = 4.0A		28	37	mΩ
		V_{GS} = 4.5V, I_D = 3.5A		36	49	
		V_{GS} = 2.5V, I_D = 2.8A		38	55	
V_{SD}	Diode Forward Voltage	I_S = 1.25A, V_{GS} = 0V		0.8	1.2	V
DYNAMIC PARAMETERS						
Q_g	Total Gate Charge	V_{DS}= 15V, V_{GS}= 10V, I_D= 2.5A		10.6	15	nC
Q_{gs}	Gate Source Charge			3.2		
Q_{gd}	Gate-Drain Charge			1		
R_g	Gate Resistance	f= 1.0MHz		0.72		Ω
$t_{d(on)}$	Turn-On Time	V_{DD}= 15V, RL = 15Ω I_D = 1A, V_{GEN}= 10V R_G = 6Ω		7.4	15	nS
t_r				13.2	20	
$t_{d(off)}$	Turn-Off Time			21.6	31	
t_f				3.5	9	

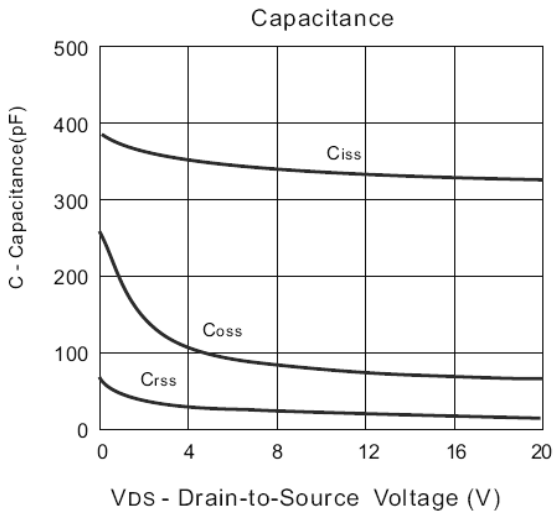
Notes

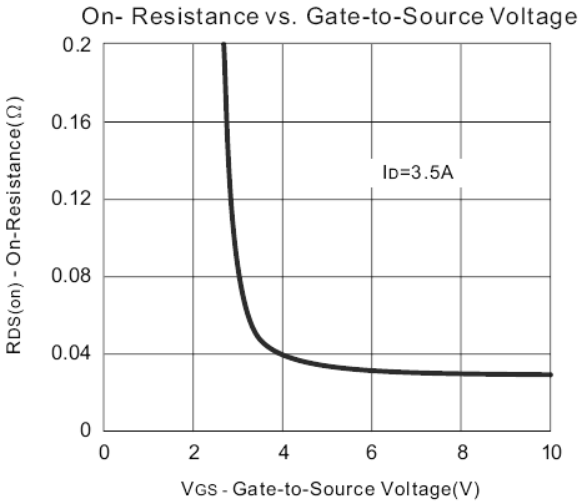
a. Pulse test: PW ≤ 300μs duty cycle ≤ 2%.

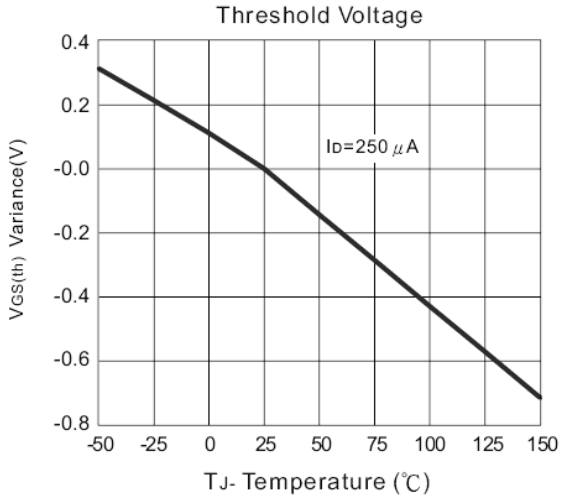
- **Typical Performance Characteristics** (TJ =25 Noted)



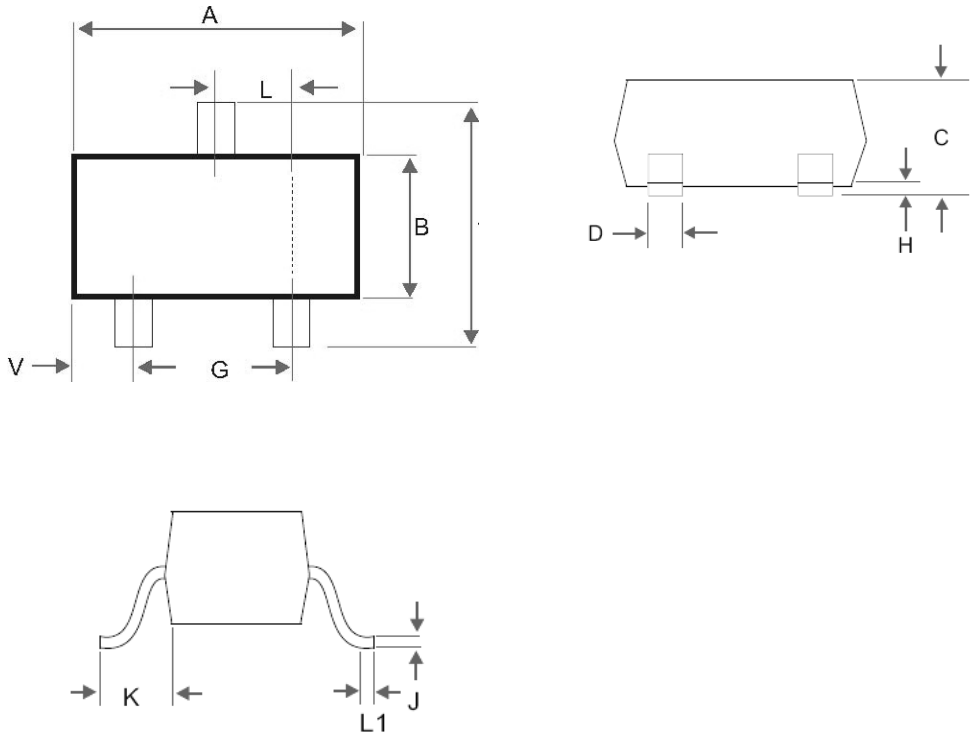








- **Package Information**



DIM	MILLIMETERS	
	MIN	MAX
A	2.80	3.1
B	1.20	1.7
C	0.89	1.3
D	0.37	0.50
G	1.78	2.04
H	0.013	0.15
J	0.085	0.2
K	0.45	0.7
L	0.89	1.02
S	2.10	3
V	0.45	0.60
L1	0.2	0.6