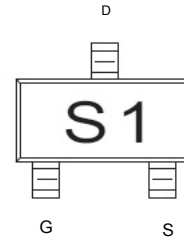


Main Product Characteristics

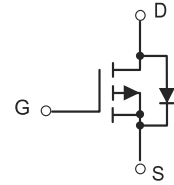
$V_{(BR)DSS}$	-20V
$R_{DS(on)MAX}$	112mΩ@-4.5V
	142mΩ@-2.5V
I_D	-2.3A



SOT-23



Marking and Pin Assignment



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for DC-DC converter, power management in portable battery, computer, printer, cellular and general purpose applications
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSF2301S utilizes the latest processing techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in load switching, DC/DC converter and a wide variety of other applications.

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current	I_D	-2.3	A
Pulsed Drain Current	I_{DM}	-10	
Continuous Source-Drain Diode Current	I_S	-0.72	
Maximum Power Dissipation	P_D	0.4	W
Thermal Resistance from Junction to Ambient($t \leq 5s$)	$R_{\theta JA}$	312.5	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to +150	

Electrical Characteristics (T_A=25°C unless otherwise specified)

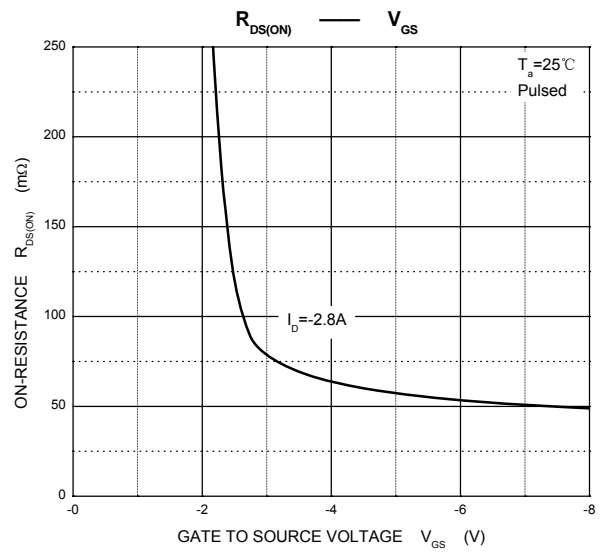
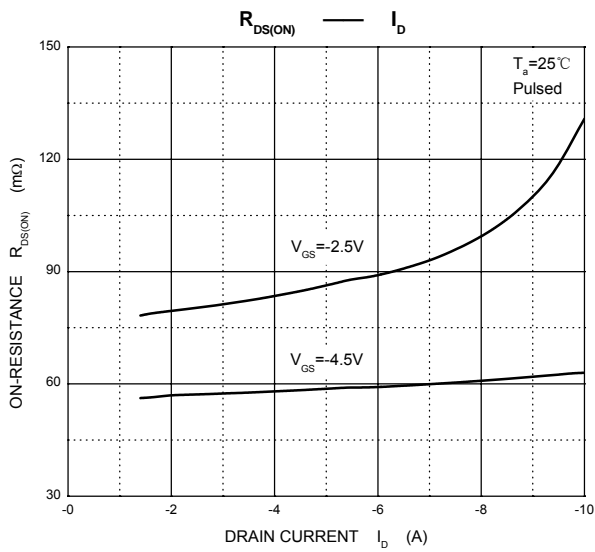
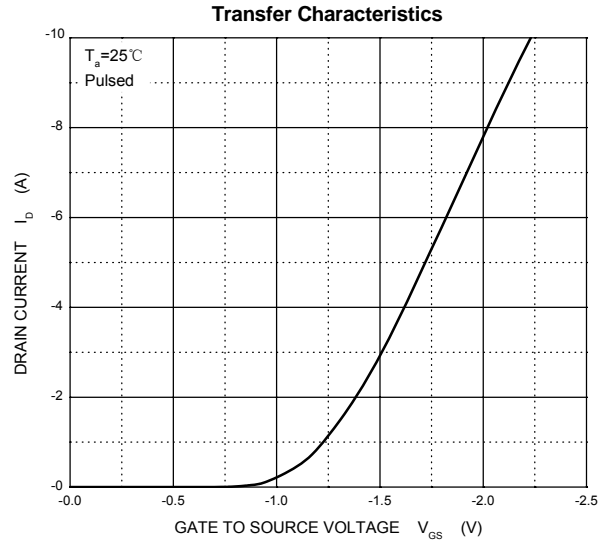
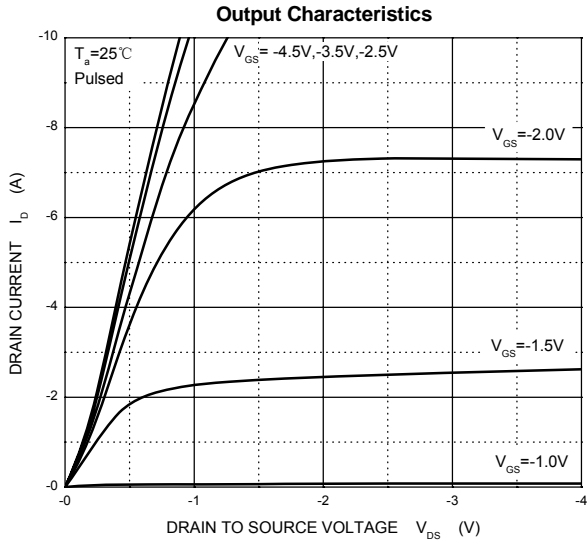
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20	---	---	V
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.7	-1	
Gate-Source Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±8V	---	---	±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V	---	---	-1	μA
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = -4.5V, I _D = -2.8A	---	0.090	0.112	Ω
		V _{GS} = -2.5V, I _D = -2.0A	---	0.110	0.142	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5V, I _D = -2.8A	---	6.5	---	S
Dynamic^b						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz	---	405	---	pF
Output Capacitance	C _{oss}		---	75	---	
Reverse Transfer Capacitance	C _{rss}		---	55	---	
Total Gate Charge	Q _g	V _{DS} = -10V, V _{GS} = -4.5V, I _D = -3A	---	5.5	10	nC
		V _{DS} = -10V, V _{GS} = -2.5V, I _D = -3A	---	3.3	6	
Gate-Source Charge	Q _{gs}		---	0.7	---	
Gate-Drain Charge	Q _{gd}		---	1.3	---	
Gate Resistance	R _g	f = 1MHz	---	6.0	---	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = -10V, R _L = 10Ω, I _D = -1A, V _{GEN} = -4.5V, R _g = 1Ω	---	11	20	ns
Rise Time	t _r		---	35	60	
Turn-Off Delay Time	t _{d(off)}		---	30	50	
Fall Time	t _f		---	10	20	
Drain-source body diode characteristics						
Continuous Source-Drain Diode Current	I _S	T _C = 25°C	---	---	-1.3	A
Pulse Diode Forward Current ^a	I _{SM}		---	---	-10	
Body Diode Voltage	V _{SD}	I _S = -0.7A	---	-0.8	-1.2	V

Notes :

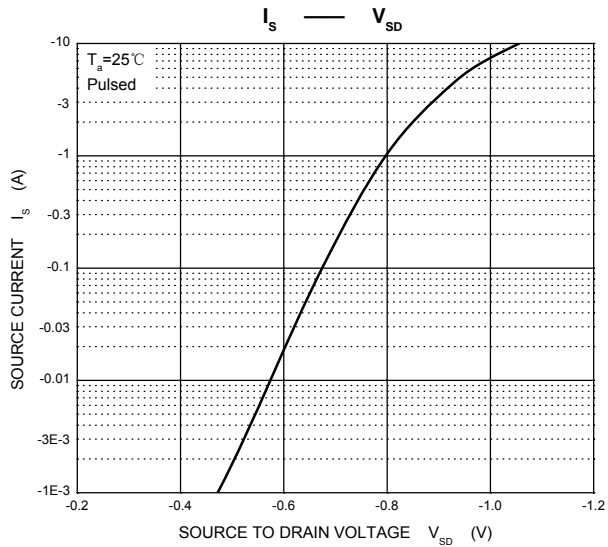
a. Pulse Test : Pulse Width < 300μs, Duty Cycle ≤2%.

b. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristic Curves

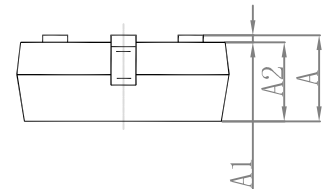
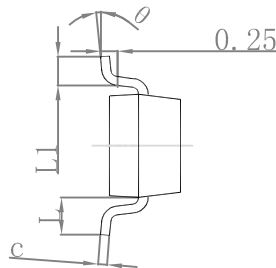
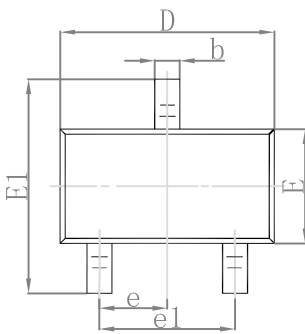


Typical Electrical and Thermal Characteristic Curves



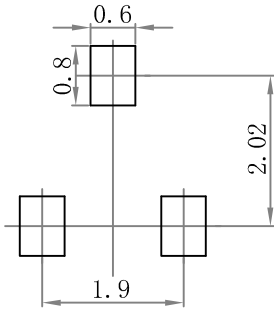
Package Outline Dimensions

SOT-23



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		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.