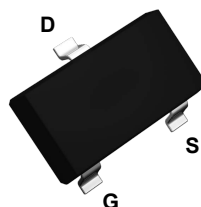
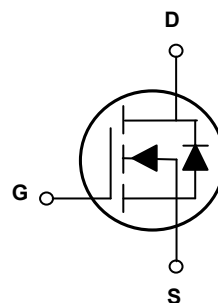


## Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	55mΩ (Max.)
$I_D$	4.2A



SOT-23



Schematic Diagram

## Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



## Description

The SSF2300 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

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

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-to-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current, @ Steady-State ( $T_A=25^{\circ}\text{C}$ ) <sup>1</sup>	$I_D$	4.2	A
Continuous Drain Current, @ Steady-State ( $T_A=70^{\circ}\text{C}$ )		2.9	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	16	A
Power Dissipation ( $T_A=25^{\circ}\text{C}$ )	$P_D$	1.2	W
Linear Derating Factor ( $T_A=25^{\circ}\text{C}$ )		9.6	mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) <sup>3</sup>	$R_{\theta JA}$	150	$^{\circ}\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +150	$^{\circ}\text{C}$

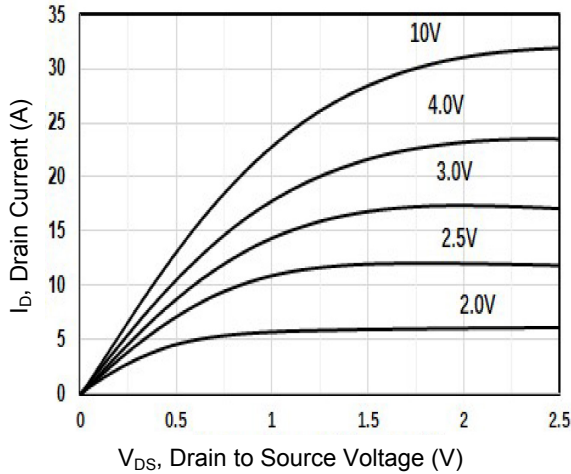
**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$	-	-	1	$\mu A$
		$T_J=125^\circ\text{C}$	-	-	50	
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{GS}=10V$	-	-	100	nA
		$V_{GS}=-10V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=3.0A$	-	43	55	m $\Omega$
		$V_{GS}=2.5V, I_D=2.0A$	-	62	85	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.51	0.65	1.1	V
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=10V,$ $f=1\text{MHz}$	-	220	-	pF
Output Capacitance	$C_{oss}$		-	34	-	
Reverse Transfer Capacitance	$C_{rss}$		-	26	-	
Total Gate Charge	$Q_g$	$I_D=3.0A, V_{DD}=10V,$ $V_{GS}=4.5V$	-	3.64	-	nC
Gate-to-Source Charge	$Q_{gs}$		-	0.89	-	
Gate-to-Drain ("Miller") Charge	$Q_{gd}$		-	0.78	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DD}=110V,$ $R_L=1.5\Omega, R_{GEN}=3\Omega$	-	6.9	-	nS
Rise Time	$t_r$		-	57	-	
Turn-Off Delay Time	$t_{d(off)}$		-	14.2	-	
Fall Time	$t_f$		-	52.5	-	
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	$I_S$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	4.2	A
Pulsed Source Current (Body Diode)	$I_{SM}$		-	-	16	A
Diode Forward Voltage	$V_{SD}$	$I_S=3.0A, V_{GS}=0V$	-	1	1.2	V

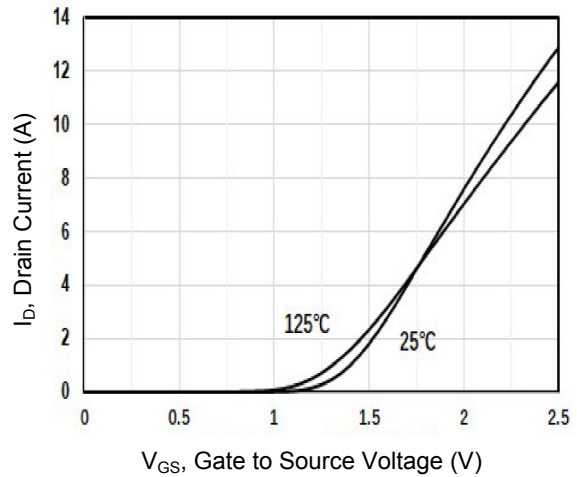
Notes:

1. Pulse test: Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
2. Repetitive rating; pulse width limited by max. junction temperature.
3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

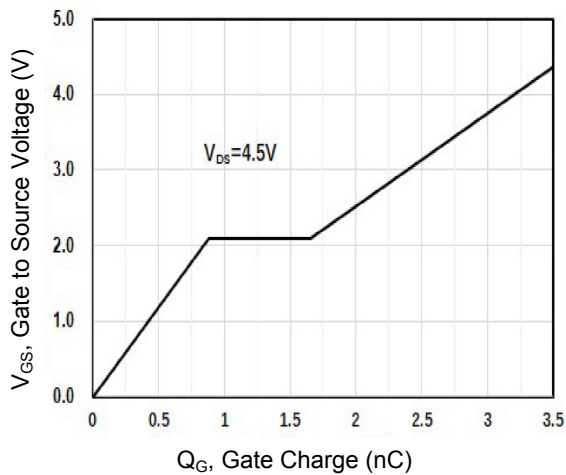
**Typical Electrical and Thermal Characteristic Curves**



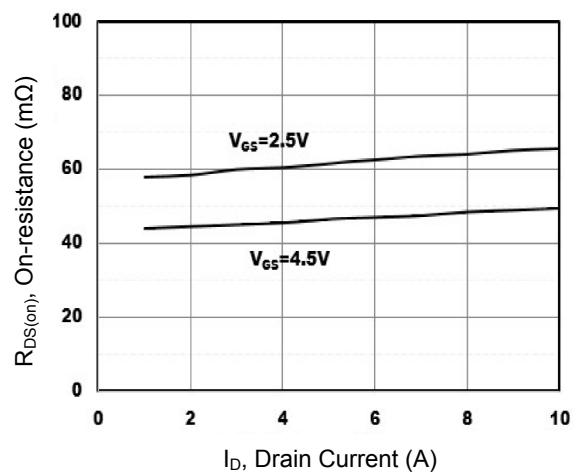
**Figure 1. Typical Output Characteristics**



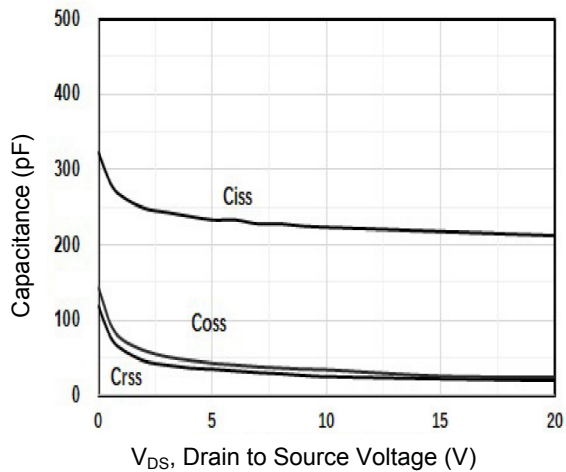
**Figure 2. Typical Transfer Characteristics**



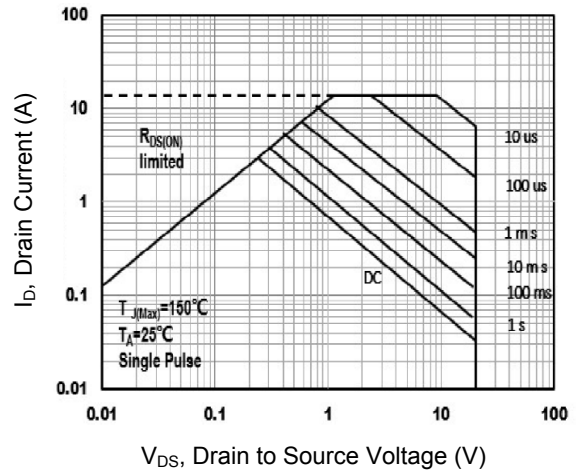
**Figure 3. Gate Charge**



**Figure 4. On-Resistance vs. Drain-Source Current**

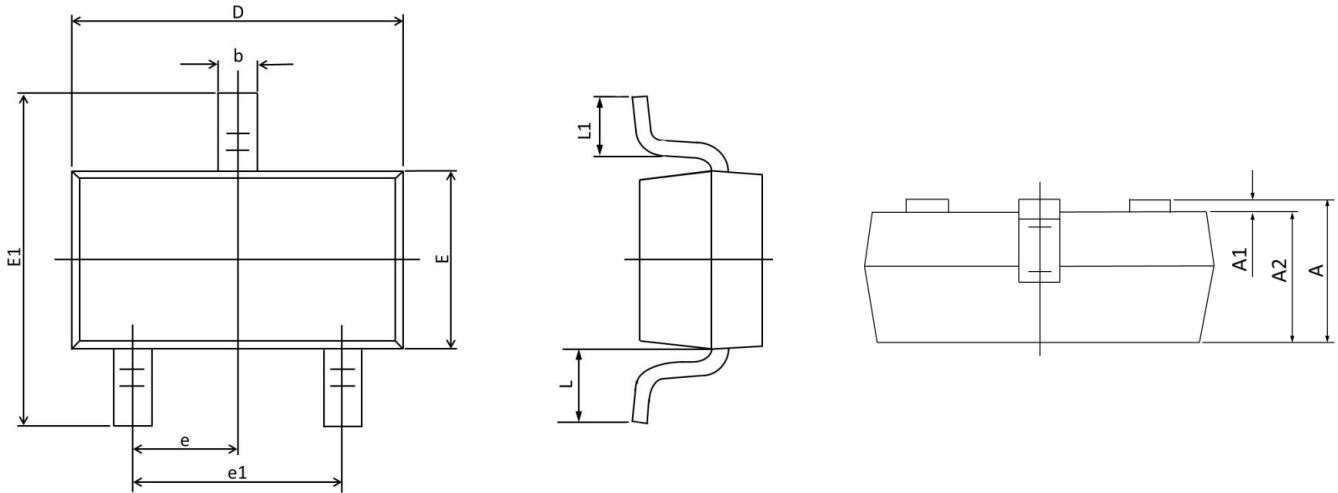


**Figure 5. Capacitance Characteristics**



**Figure 6. Safe Operation Area**

**Package Outline Dimensions (SOT-23)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.047
A1	0.000	0.100	0.000	0.004
A2	0.900	1.150	0.035	0.045
b	0.300	0.500	0.012	0.020
D	2.800	3.040	0.110	0.120
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.55 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020

**Order Information**

Device	Package	Marking	Carrier	Quantity
SSF2300	SOT-23	2300	Tape & Reel	3,000pcs / Reel