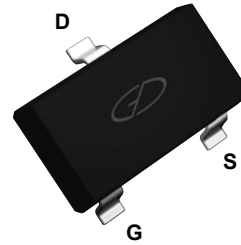
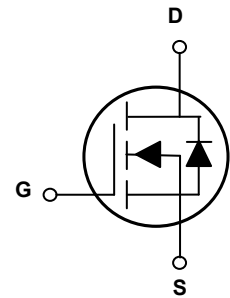


Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	44m Ω (max.)
I_D	4A



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 SSF2302 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-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current, @ Steady-State @ $T_A=25^\circ\text{C}$ ¹	I_D	4	A
Pulsed Drain Current ²	I_{DM}	14	A
Power Dissipation	P_D	1	W
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=1\text{mA}$	-	0.02	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=16V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=3A$	-	27	44	m Ω
		$V_{GS}=2.5V, I_D=2A$	-	35	58	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.3	0.6	1	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-2	-	$\text{mV}/^\circ\text{C}$
Forward Transconductance	gfs	$V_{DS}=10V, I_D=2A$	-	4.4	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=10V, V_{GS}=4.5V, I_D=3A$	-	5.8	-	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	0.6	-	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	1.5	-	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=10V, V_{GS}=4.5V, R_G=25\Omega, I_D=1A$	-	2.9	-	nS
Rise Time ^{2,3}	t_r		-	8.4	-	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	19.2	-	
Fall Time ^{2,3}	t_f		-	5.6	-	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, F=1\text{MHz}$	-	314	-	pF
Output Capacitance	C_{oss}		-	50	-	
Reverse Transfer Capacitance	C_{rss}		-	40	-	
Source-Drain Ratings and Characteristics						
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	-	-	4.0	A
Pulsed Source Current	I_{SM}		-	-	14	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	-	-	1	V

Notes:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

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

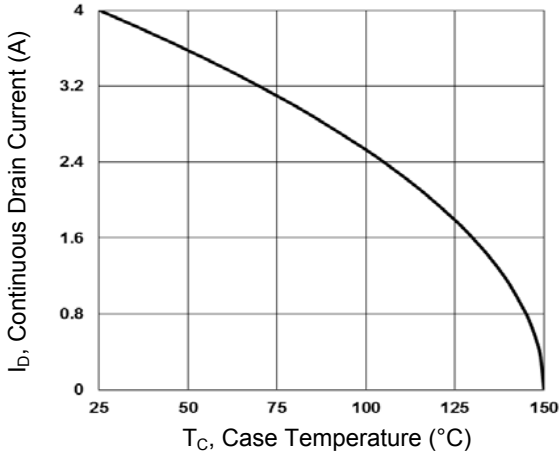


Figure 1. Continuous Drain Current vs. T_C

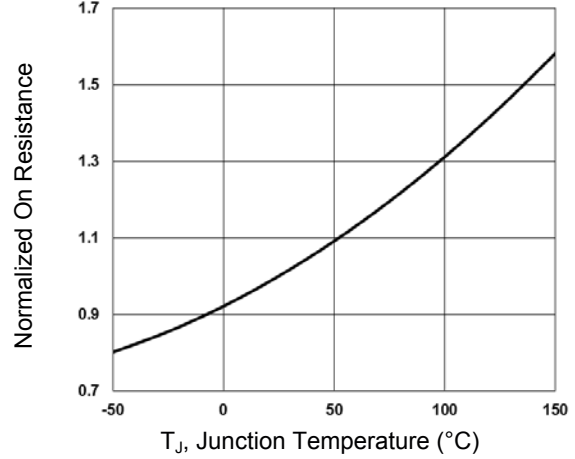


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

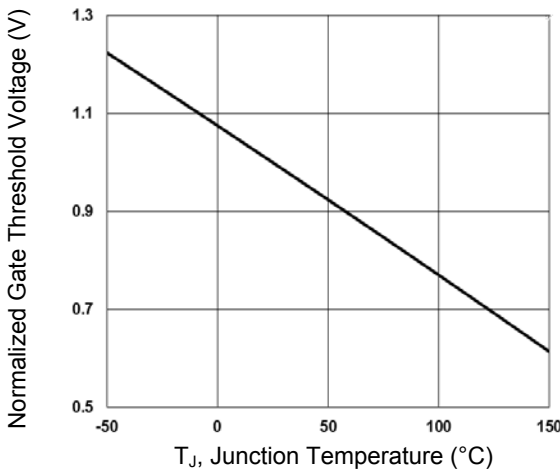


Figure 3. Normalized V_{th} vs. T_J

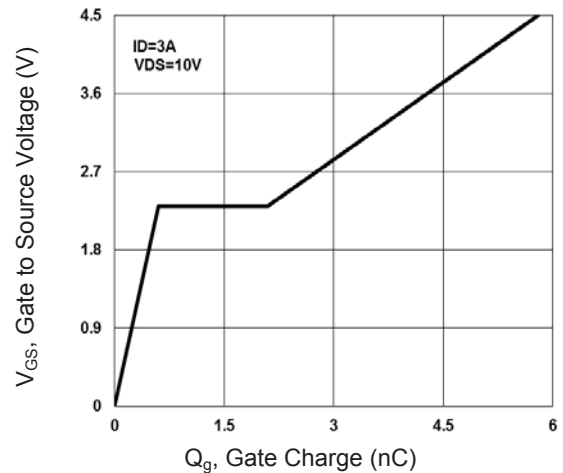


Figure 4. Gate Charge Waveform

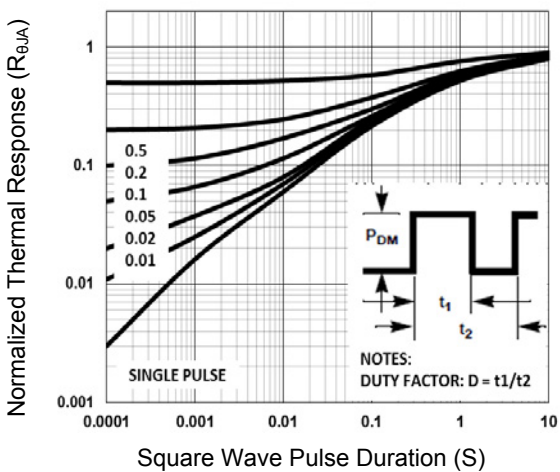


Figure 5. Normalized Transient Impedance

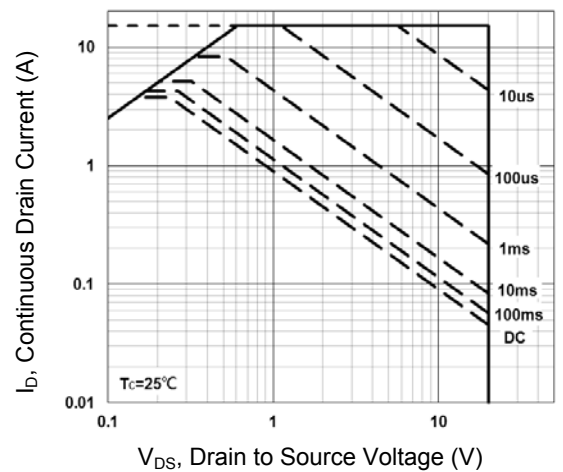
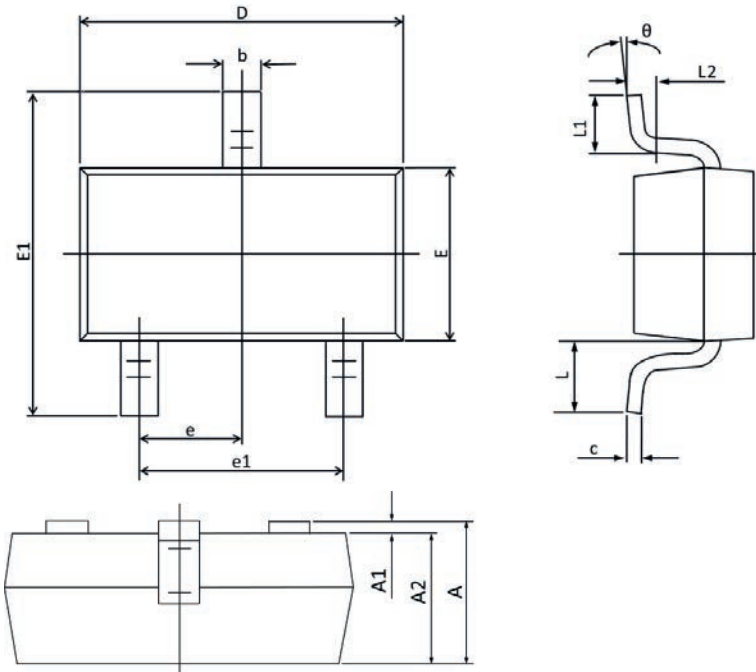


Figure 6. Maximum Safe Operation Area

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	1.250	1.840	0.049	0.072
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
L2	0.25 TYP.		0.01 TYP.	
θ	0°	8°	0°	8°

Order Information

Device	Package	Marking	Carrier	Quantity
SSF2302	SOT-23	2302	Tape & Reel	3,000 pcs / Reel