

**FEATURES**

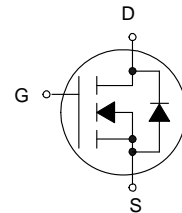
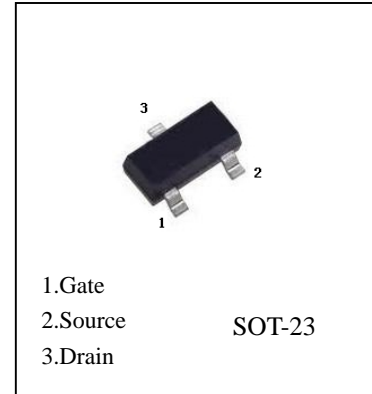
- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Fully Characterized Avalanche Voltage and Current

Absolute Maximum Ratings (TA=25°C, unless otherwise noted)

Parameter	Symbol	Ratings	Units
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	± 8	V
Drain Current (Continuous)	I <sub>D</sub>	6	A
Drain Current (Pulsed) <sup>1</sup>	I <sub>DM</sub>	18	A
Total Power Dissipation @TA=25 °C	PD	1.25	W
Maximum Diode Forward Current	I <sub>S</sub>	1.6	A
Operating Junction and Storage Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-55 to +150	°C
Thermal Resistance Junction to Ambient (PCB mounted) <sup>2</sup>	R <sub>JA</sub>	140	°C/W

1: Repetitive Rating: Pulse width limited by the maximum junction temperature. 2: 1-in2 2oz Cu PCB board

**SI2300**  
N-Channel MOSFET



Electrical Characteristics (TA=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
<b>• Off Characteristics</b>						
B <sub>V</sub> D <sub>SS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	20	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V	-	-	1	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>•On Characteristics<sup>3</sup></b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	0.6	0.8	1.2	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.8A	-	40	60	m
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =2A	-	50	115	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =3.6A	-	10	-	S
<b>•Dynamic Characteristics<sup>4</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =6V, V <sub>GS</sub> =0V, f=1MHz	-	426	-	PF
C <sub>oss</sub>	Output Capacitance		-	79.5	-	PF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	56	-	PF

Electrical Characteristics (TA=25°C, unless otherwise noted)

•Switching Characteristics <sup>4</sup>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =6V, I <sub>D</sub> =2.8A, V <sub>GS</sub> =4.5V		3.73	-	nC
Q <sub>gs</sub>	Gate-Source Charge			0.75	-	
Q <sub>gd</sub>	Gate-Drain Charge			1.04	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =6V, R <sub>L</sub> =6Ω, I <sub>D</sub> =1A, V <sub>GEN</sub> =4.5V, R <sub>G</sub> =6Ω		5.9	-	nS
t <sub>r</sub>	Turn-on Rise Time			7.45	-	
t <sub>d(off)</sub>	Turn-off Delay Time			16	-	
t <sub>f</sub>	Turn-off Fall Time			3.96	-	
• Drain-Source Diode Characteristics						
V <sub>SD</sub>	Drain-Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =-1.6A	-		1.2	V

3 : Pulse Test : Pulse Width < 300µs, Duty Cycle < 2%. 4: Guaranteed by design, not subject to production testing

### SI2300 Typical Characteristics

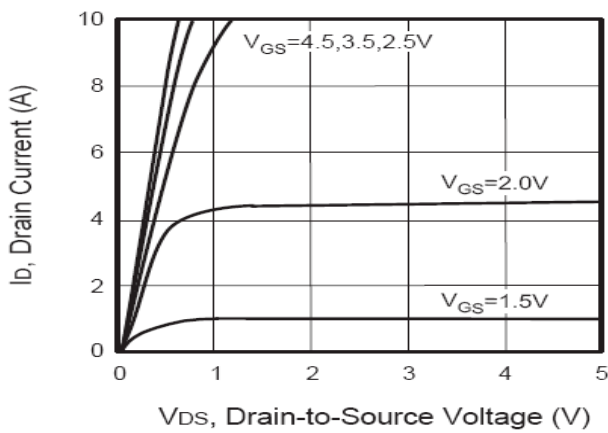


Figure 1. Output Characteristics

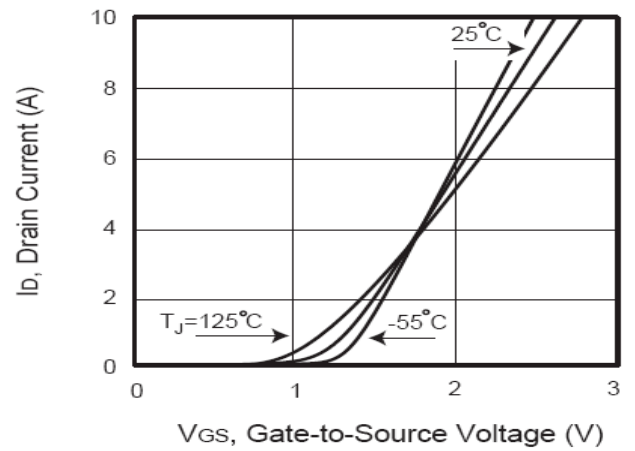
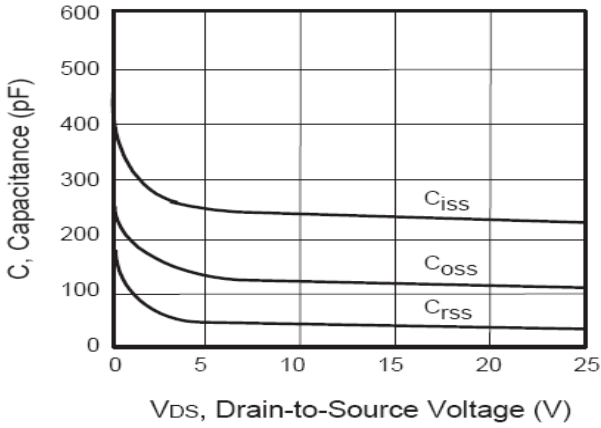
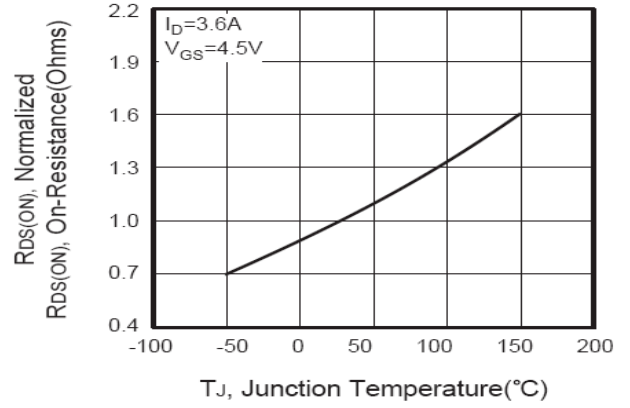


Figure 2. Transfer Characteristics

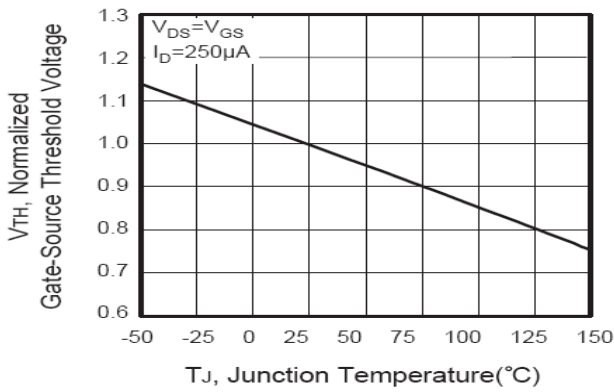
**SI2300** Typical Characteristics



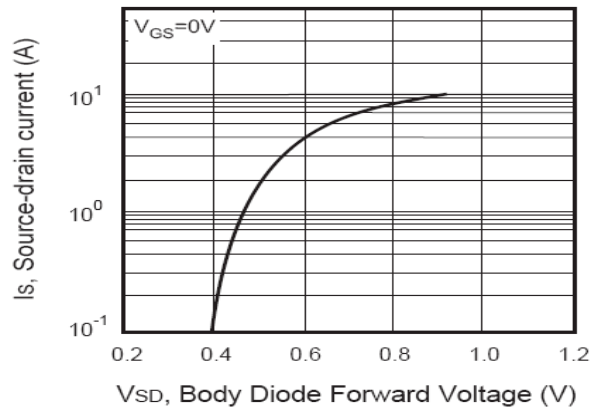
**Figure 3. Capacitance**



**Figure 4. On-Resistance Variation with Temperature**



**Figure 5. Gate Threshold Variation with Temperature**



**Figure 6. Body Diode Forward Voltage Variation with Source Current**