

FEATURES

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

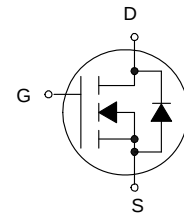
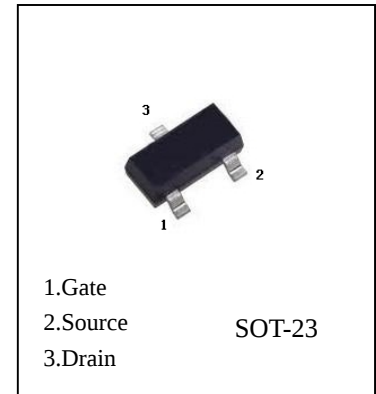
Absolute Maximum Ratings (TA=25°C, unless otherwise noted)

Parameter	Symbol	Ratings	Units
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±3	V
Drain Current (Continuous)	I _D	6	A
Drain Current (Pulsed) ¹	I _{DM}	18	A
Total Power Dissipation @TA=25 °C	P _D	1.25	W
Maximum Diode Forward Current	I _S	1.6	A
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-55 to +150	°C
Thermal Resistance Junction to Ambient (PCB mounted) ²	R _{θJA}	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
• Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V	-	-	1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±8V, V _{DS} =0V	-	-	±100	nA
•On Characteristics ³						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.6	0.8	1.2	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =2.8A	-	40	60	mΩ
		V _{GS} =2.5V, I _D =2A	-	50	115	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =3.6A	-	10	-	S
•Dynamic Characteristics ⁴						
C _{iss}	Input Capacitance	V _{DS} =6V, V _{GS} =0V, f=1MHz	-	426	-	PF
C _{oss}	Output Capacitance		-	79.5	-	PF
C _{rss}	Reverse Transfer Capacitance		-	56	-	PF

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

•Switching Characteristics ⁴						
Q _g	Total Gate Charge	V _{DS} =6V, I _D =2.8A, V _{GS} =4.5V		3.73	-	nC
Q _{gs}	Gate-Source Charge		-	0.75	-	
Q _{gd}	Gate-Drain Charge		-	1.04	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =6V, R _L =6Ω, I _D =1A, V _{GEN} =4.5V, R _G =6Ω	-	5.9	-	nS
t _r	Turn-on Rise Time		-	7.45	-	
t _{d(off)}	Turn-off Delay Time		-	16	-	
t _f	Turn-off Fall Time		-	3.96	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =-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

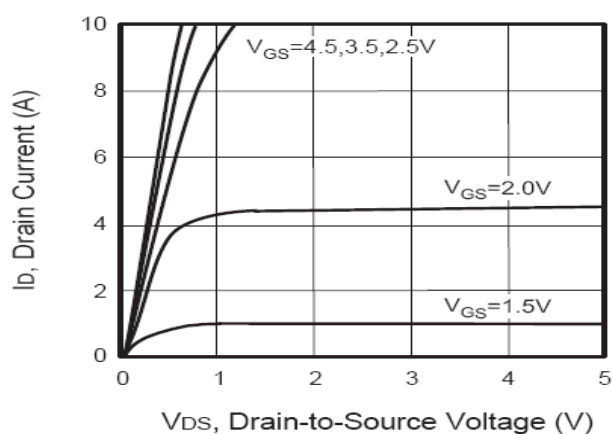


Figure 1. Output Characteristics

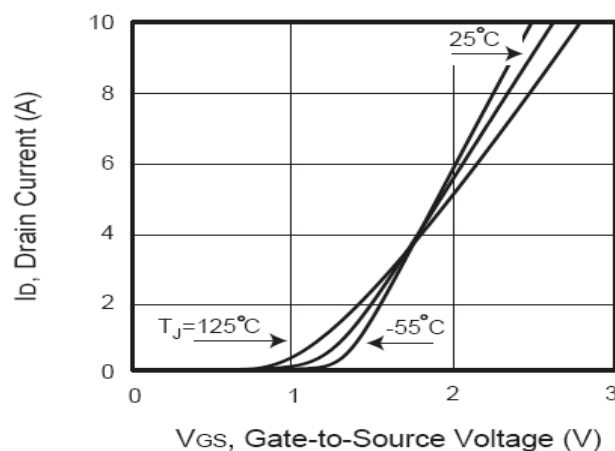


Figure 2. Transfer Characteristics

SI2300 Typical Characteristics

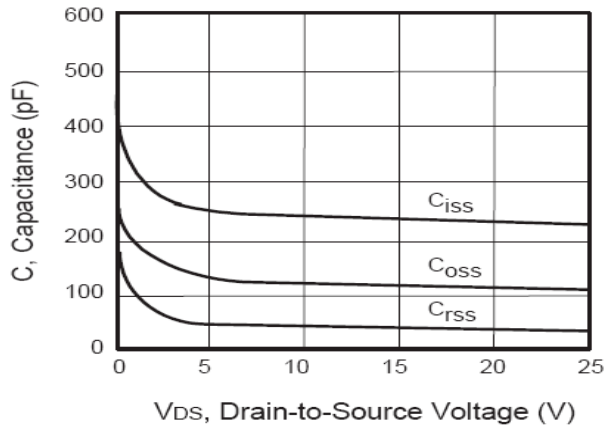


Figure 3. Capacitance

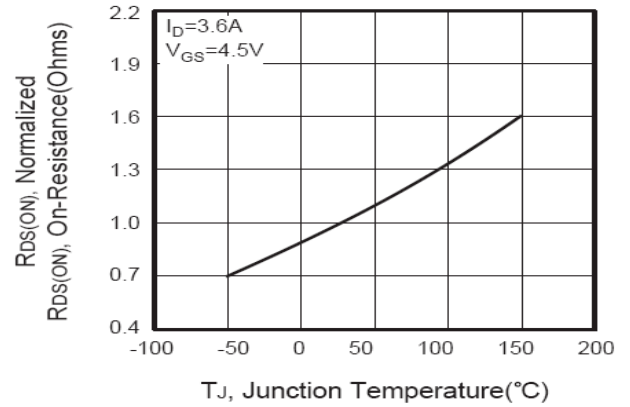


Figure 4. On-Resistance Variation with Temperature

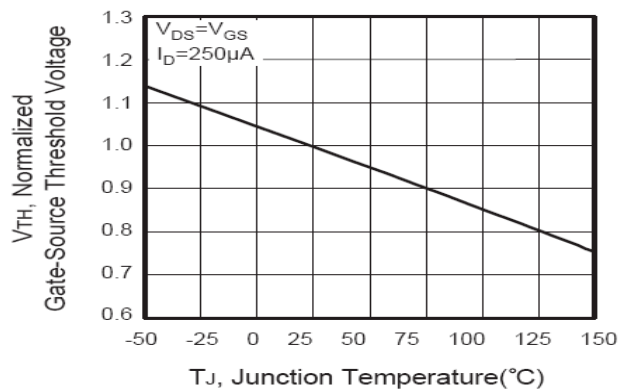


Figure 5. Gate Threshold Variation with Temperature

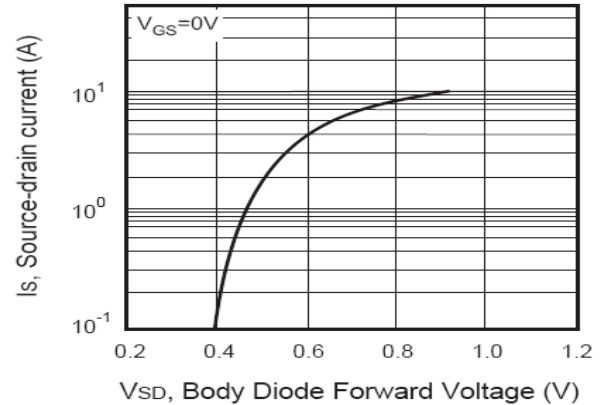


Figure 6. Body Diode Forward Voltage Variation with Source Current