SI2302

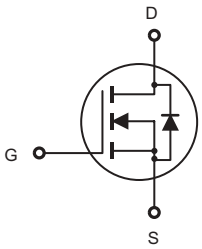
N-Channel MOSFET

FEATURES

- High dense cell design for extremely low $R_{DS(ON)}$
- Rugged and reliable
- Case Material: Molded Plastic.

1.Gate
2.Source
3.Drain

SOT-23



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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-source Voltage	V_{GS}	±8	V
Drain Current (Continuous)	I_D	2.1	A
Drain Current (Pulsed) [a]	I_{DM}	10	A
Total Power Dissipation @TA=25°C	P_D	0.4	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 to +150	°C
Thermal Resistance Junction to Ambient (PCB mounted)[b]	$R_{\theta JA}$	100	°C/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 10μA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V			1	μA
Gate Body Leakage Current, Forward	I_{GSSF}	V_{GS} = 8V, V_{DS} = 0V			100	nA
Gate Body Leakage Current, Reverse	I_{GSSR}	V_{GS} = -8V, V_{DS} = 0V			-100	nA
On Characteristics [c]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = 50μA	0.65		1.2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 3.6A		55	72	mΩ
		V_{GS} = 2.5V, I_D = 3.1A		82	110	mΩ
Forwand Transconductance	g_{FS}	V_{DS} = 5V, I_D = 3.6A		8.5		S
Dynamic Characteristics [d]						
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1.0 MHz		237		pF
Output Capacitance	C_{oss}			120		pF
Reverse Transfer Capacitance	C_{rss}			45		pF
Switching Characteristics [d]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10V, I_D = 3.6A, V_{GS} = 4.5V, R_{GEN} = 6Ω		23	45	ns
Turn-On Rise Time	t_r			11	30	ns
Turn-Off Delay Time	$t_{d(off)}$			34	70	ns
Turn-On Fall Time	t_f			36	70	ns

Total Gate Charge	Q_g	V_{DS} = 10V, I_D = 3.6A, V_{GS} = 4.5V		6	10	nC
Gate-Source Charge	Q_{gs}			1.4		nC
Gate-Drain Charge	Q_{gd}			1.8		nC
Drain-Source Diode Characteristics and Maximun Ratings						
Drain-Source Diode Forward Current [c]	I_S				0.94	A
Drain-Source Diode Forward Voltage [d]	V_{SD}	V_{GS} = 0V, I_S = 0.94A			1.2	V

a.Repetitive Rating : Pulse width limited by maximum junction temperature. b.Surface Mounted on FR4 Board,t<10 sec.
c.Pulse Test : Pulse Width < 300μs, Duty Cycle < 2%. d.Guaranteed by design, not subject to production testing.

SI2302 Typical Characteristics

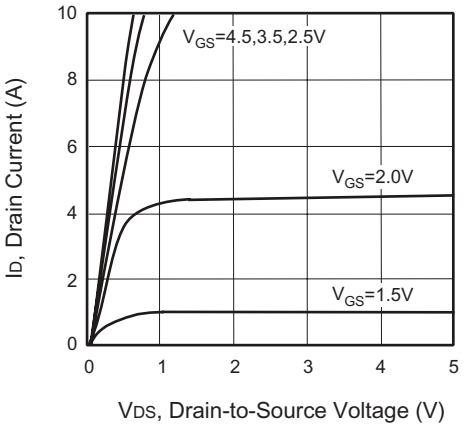


Figure 1. Output Characteristics

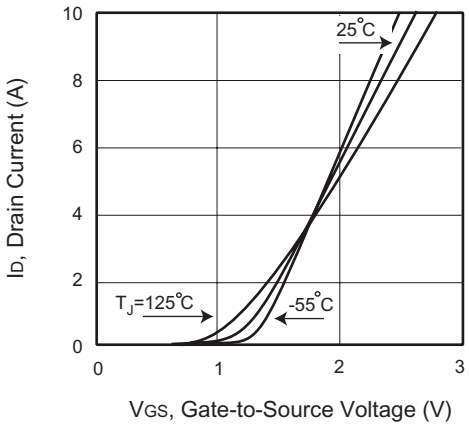


Figure 2. Transfer Characteristics

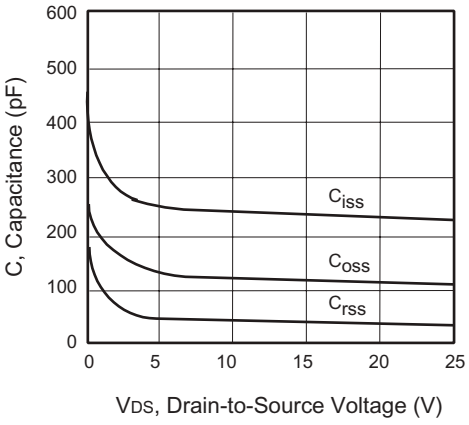


Figure 3. Capacitance

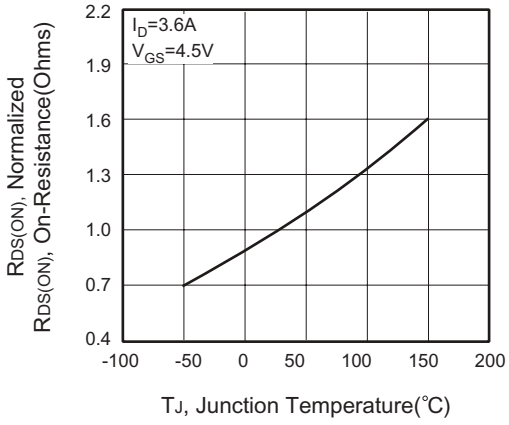


Figure 4. On-Resistance Variation with Temperature

SI2302 Typical Characteristics

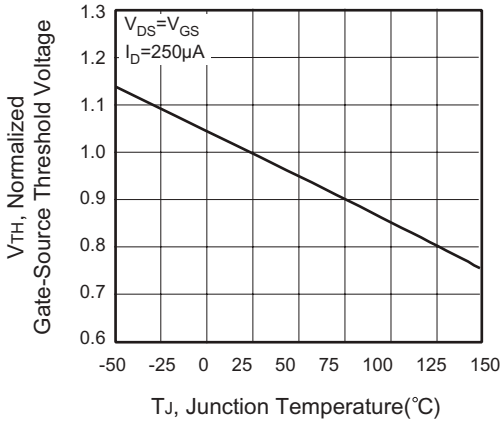


Figure 5. Gate Threshold Variation with Temperature

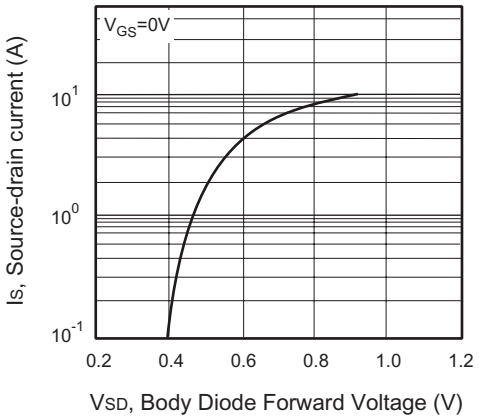


Figure 6. Body Diode Forward Voltage Variation with Source Current

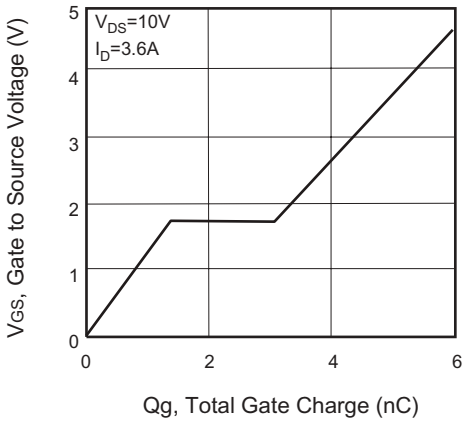


Figure 7. Gate Charge

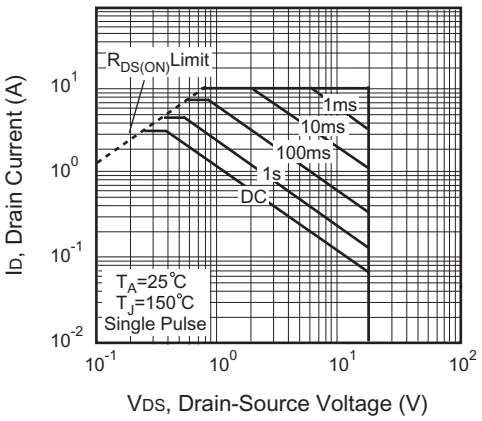


Figure 8. Maximum Safe Operating Area