

FEATURES

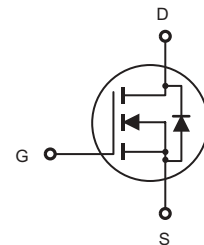
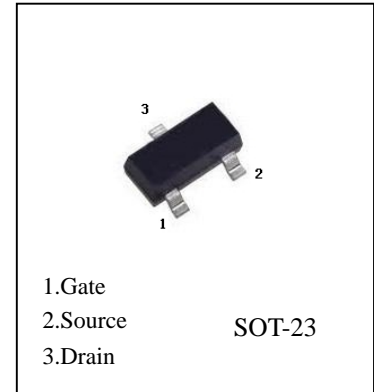
- High dense cell design for extremely low $R_{DS(ON)}$
- Rugged and reliable
- Case Material: Molded Plastic.

Absolute Maximum Ratings (TA=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 _{JA}	100	°C/W

SI2302

N-Channel MOSFET



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	m
		V _{GS} = 2.5V, I _D = 3.1A		82	110	m
Forward 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} = 6		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 Maximum 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

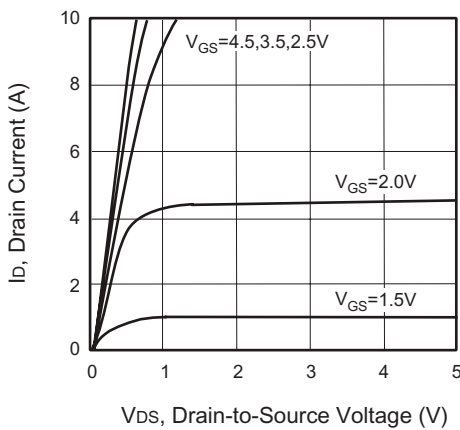


Figure 1. Output Characteristics

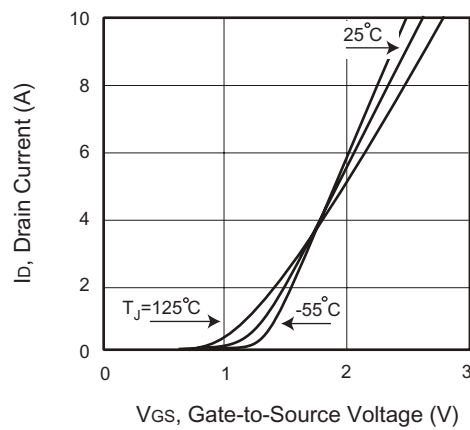


Figure 2. Transfer Characteristics

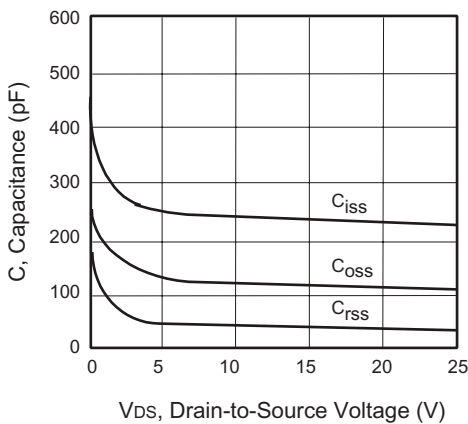


Figure 3. Capacitance

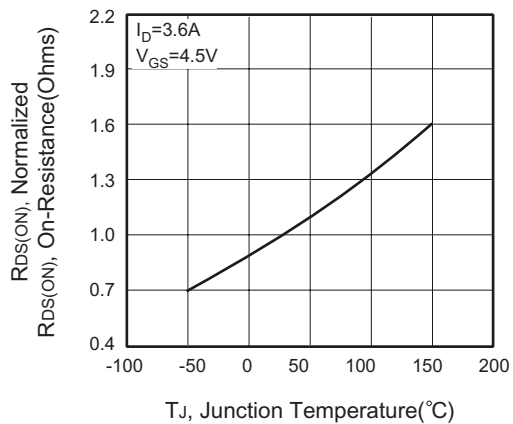


Figure 4. On-Resistance Variation with Temperature

SI2302 Typical Characteristics

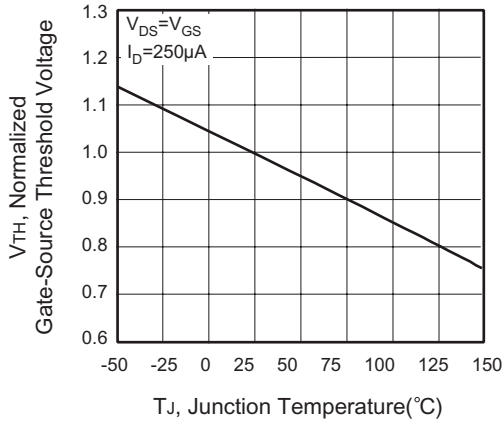


Figure 5. Gate Threshold Variation with Temperature

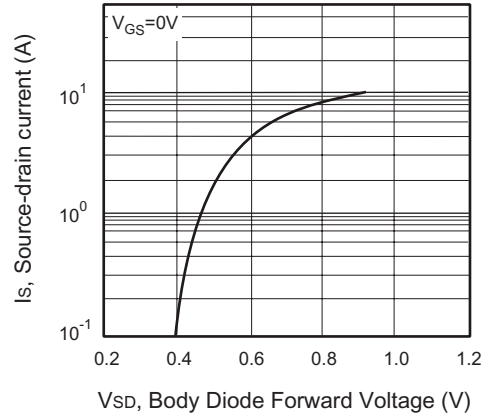


Figure 6. Body Diode Forward Voltage Variation with Source Current

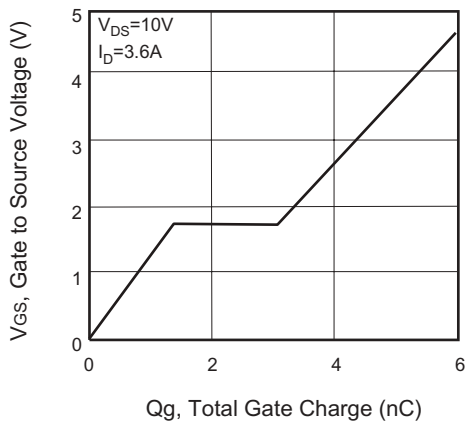


Figure 7. Gate Charge

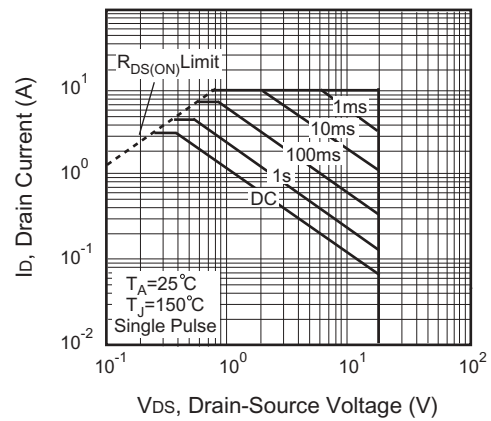


Figure 8. Maximum Safe Operating Area

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