SI2301

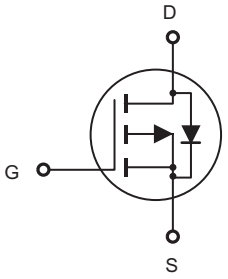
P-Channel MOSFET

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 (TA=25°C, unless otherwise noted)

Parameter	Symbol	Ratings	Units
Drain-Source Voltage	VDS	-20	V
Gate-Source Voltage	VGS	±3	V
Drain Current (Continuous)	ID	-2.3	A
Drain Current (Pulsed) [1]	IDM	-10	A
Total Power Dissipation @TA=25 °C	PD	1.25	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 to +150	°C
Thermal Resistance Junction to Ambient (PCB mounted)[2]	$R_{\theta JA}$	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 = -250μA	-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	IGSSR	V_{GS} = -8V, V_{DS} = 0V			-100	nA
On Characteristics [c]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = -250μA	-0.45		-1	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -2.8A		80	120	mΩ
		V_{GS} = -2.5V, I_D = -2.0A		110	150	mΩ
Forward Transconductance	g_{FS}	V_{DS} = -5V, I_D = -2.8A		8		S
Dynamic Characteristics [d]						
Input Capacitance	C_{iss}	V_{DS} = -6V, V_{GS} = 0V, f = 1.0 MHz		880		pF
Output Capacitance	C_{oss}			270		pF
Reverse Transfer Capacitance	C_{rss}			175		pF
Switching Characteristics [d]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -6V, I_D = -1A, V_{GS} = -4.5V, R_{GEN} = 6Ω		11	20	ns
Turn-On Rise Time	t_r			5	10	ns
Turn-Off Delay Time	$t_{d(off)}$			32	65	ns
Turn-Off Fall Time	t_f			23	45	ns

Total Gate Charge	Q_g	V_{DS} = -6V, I_D = -2.8A, V_{GS} = -4.5V		11	14.5	nC
Gate-Source Charge	Q_{gs}			1.5		nC
Gate-Drain Charge	Q_{gd}			2.1		nC
Drain-Source Diode Characteristics and Maximun Ratings						
Drain-Source Diode Forward Current [3]	I_S				-0.75	A
Drain-Source Diode Forward Voltage [4]	V_{SD}	V_{GS} = 0V, I_S = -0.75A			-1.2	V

1.Repetitive Rating : Pulse width limited by maximum junction temperatu. 2.Surface Mounted on FR4 Board,t<5 sec.
3.Pulse Test : Pulse Width < 300μs, Duty Cycle < 2%. 4.Guaranteed by design, not subject to production testing.

SI2301 Typical Characteristics

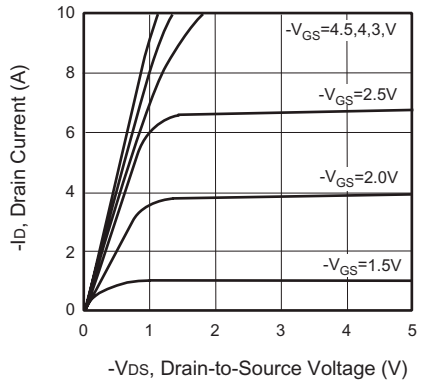


Figure 1. Output Characteristics

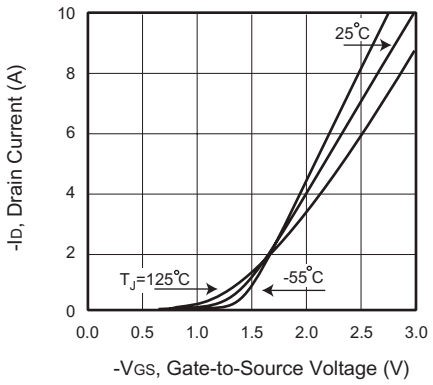


Figure 2. Transfer Characteristics

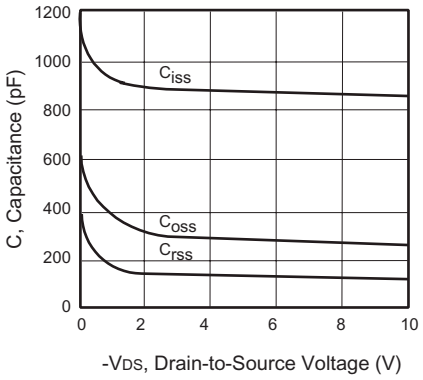


Figure 3. Capacitance

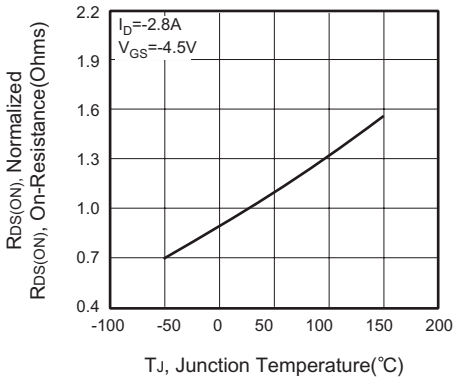


Figure 4. On-Resistance Variation with Temperature

SI2301 Typical Characteristics

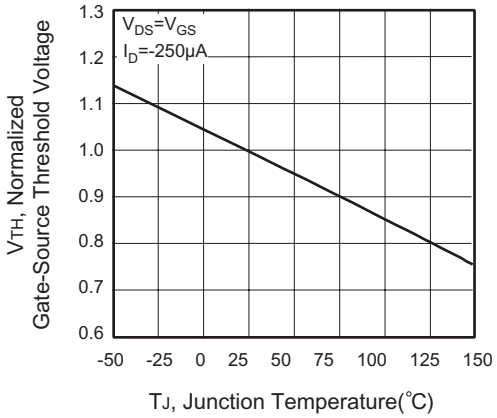


Figure 5. Gate Threshold Variation with Temperature

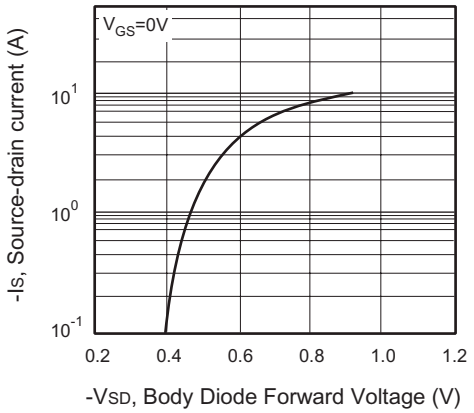


Figure 6. Body Diode Forward Voltage Variation with Source Current

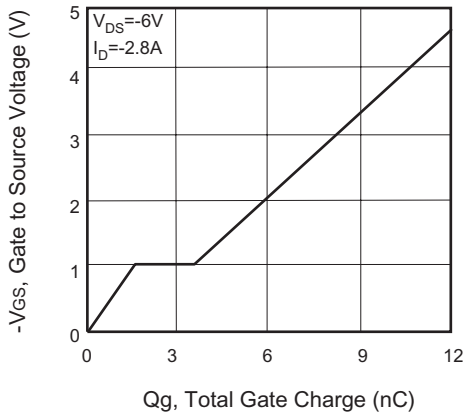


Figure 7. Gate Charge

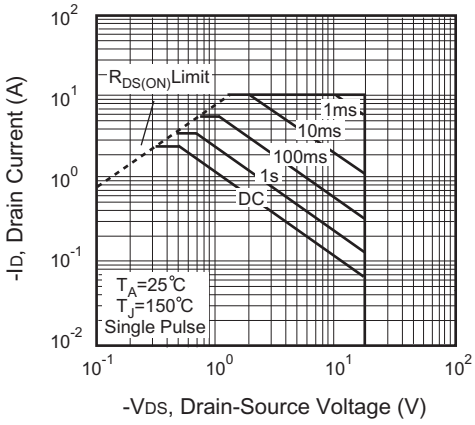


Figure 8. Maximum Safe Operating Area