

FEATURES

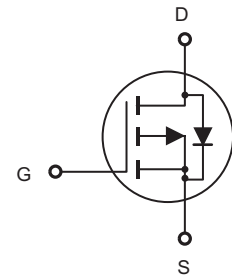
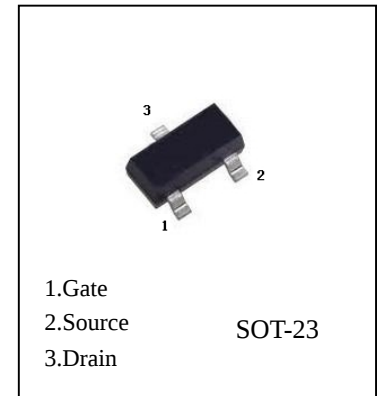
- High dense cell design for extremely low $R_{DS(ON)}$
- Rugged and reliable
- Case Material: Molded Plastic.

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

Parameter	Symbol	Ratings	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=25oC	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 _{θJA}	100	°C/W

SI2301

P-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 = -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	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 = -250μA	-0.45			V
Static Drain-Source	R _{DS(on)}	V _{GS} = -4.5V, I _D = -2.8A		80	120	mΩ
On-Resistance		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 < 300 μ s, Duty Cycle < 2%. 4.Guaranteed by design, not subject to production testing.

SI2301 Typical Characteristics

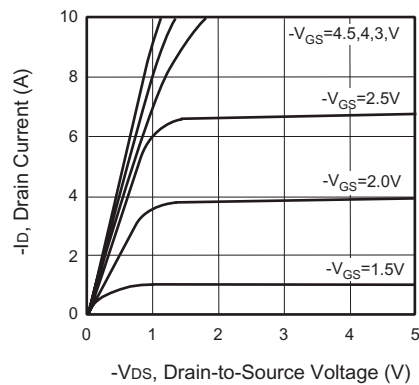


Figure 1. Output Characteristics

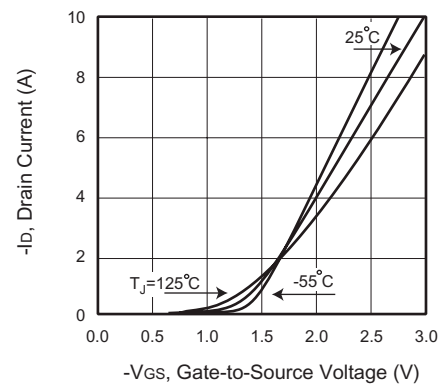


Figure 2. Transfer Characteristics

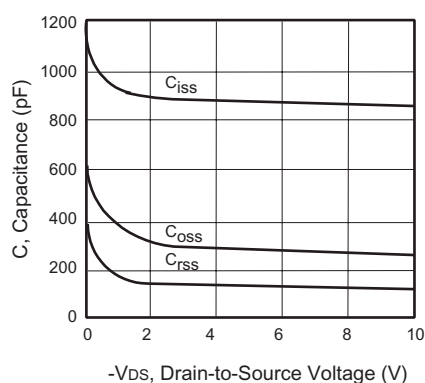


Figure 3. Capacitance

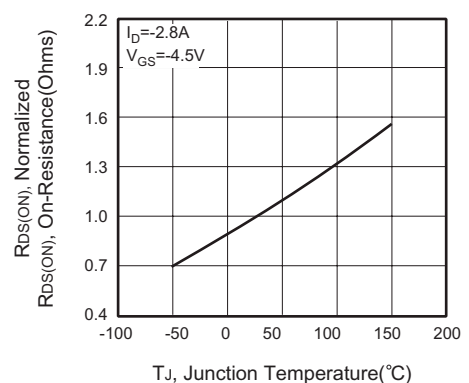


Figure 4. On-Resistance Variation with Temperature

SI2301 Typical Characteristics

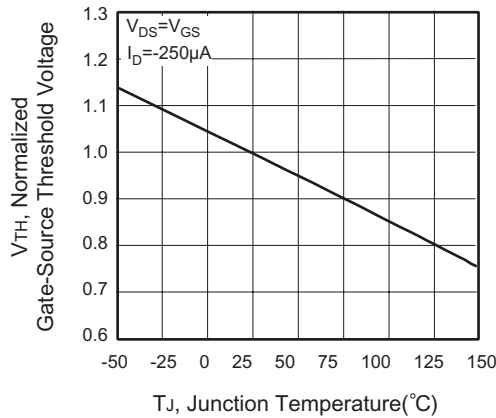


Figure 5. Gate Threshold Variation with Temperature

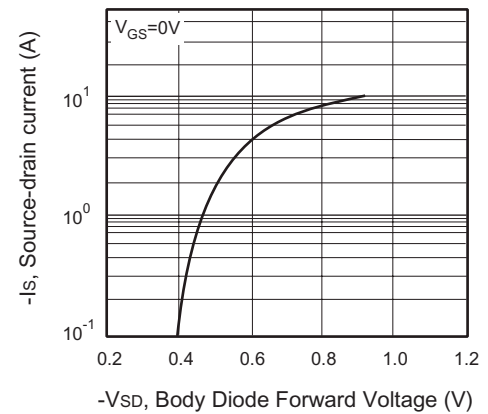


Figure 6. Body Diode Forward Voltage Variation with Source Current

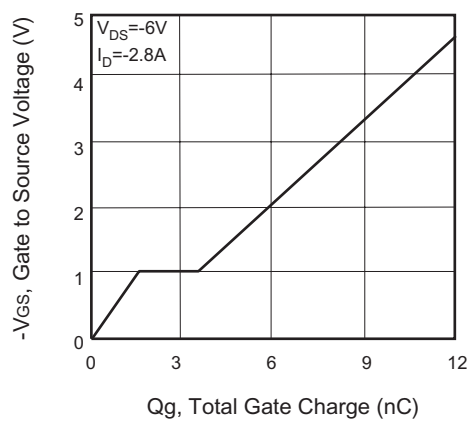


Figure 7. Gate Charge

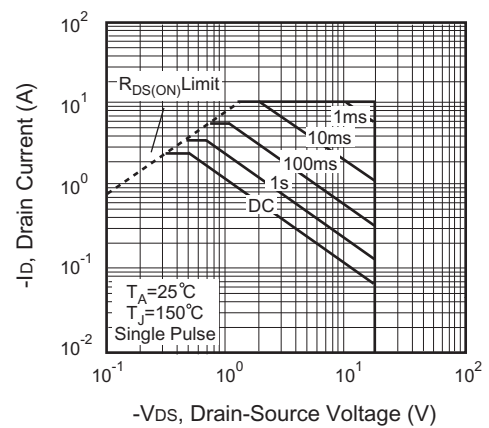


Figure 8. Maximum Safe Operating Area