

FEATURES

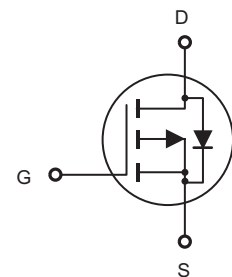
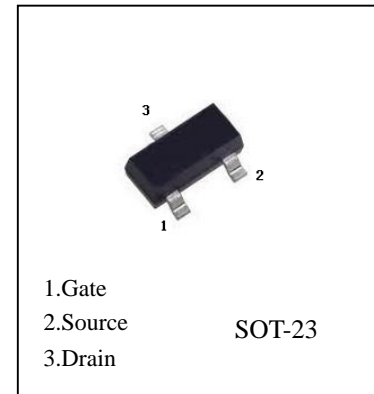
- High dense cell design for extremely low $R_{DS(ON)}$
- Rugged and reliable
- Case Material: Molded Plastic.

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

| Parameter | Symbol | Ratings | Units |
|---|-----------------------------------|-------------|-------|
| Drain-Source Voltage | V _{DS} | -20 | V |
| Gate-Source Voltage | V _{GS} | ±8 | V |
| Drain Current (Continuous) | I _D | -2.8 | A |
| Drain Current (Pulsed) ¹ | I _{DM} | -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 _{JA} | 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 On-Resistance | R _{DS(on)} | V _{GS} = -4.5V, I _D = -2.8A | | 80 | 120 | m |
| 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} = 6 | | 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

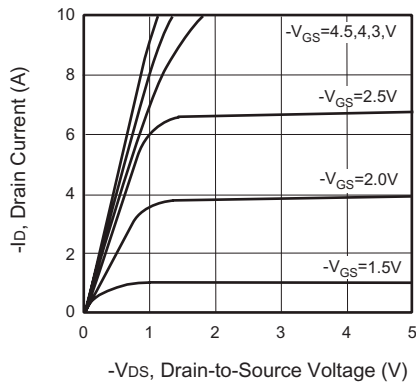


Figure 1. Output Characteristics

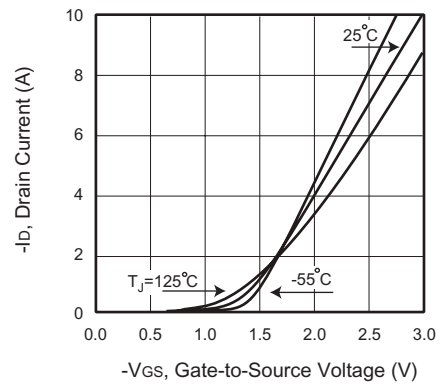


Figure 2. Transfer Characteristics

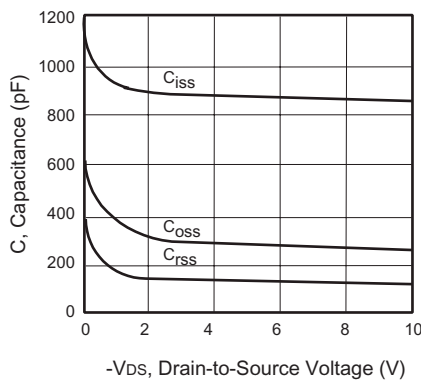


Figure 3. Capacitance

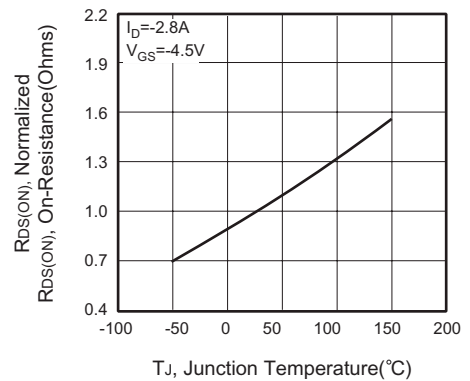


Figure 4. On-Resistance Variation with Temperature

SI2301 Typical Characteristics

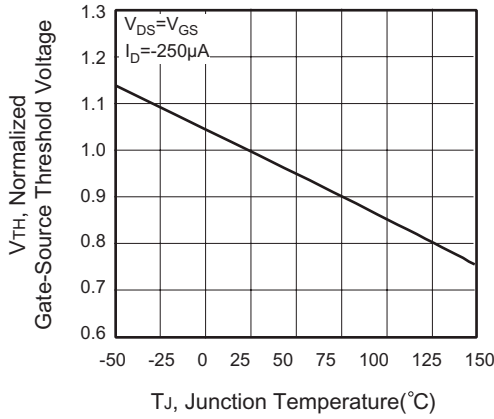


Figure 5. Gate Threshold Variation with Temperature

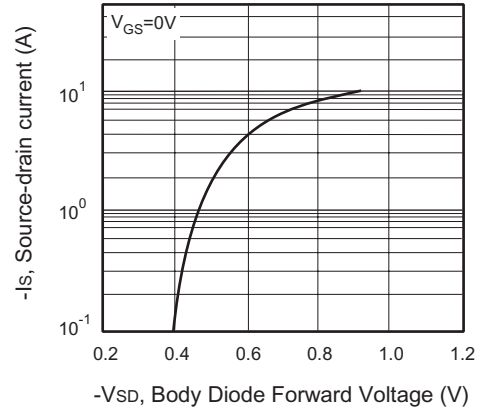


Figure 6. Body Diode Forward Voltage Variation with Source Current

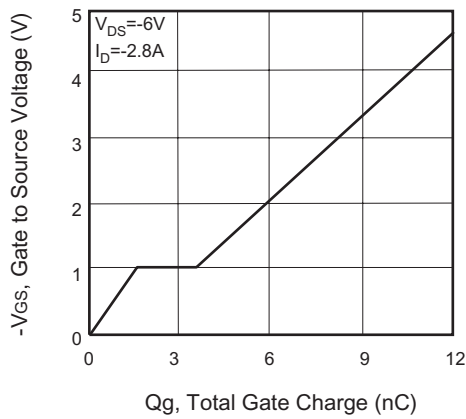


Figure 7. Gate Charge

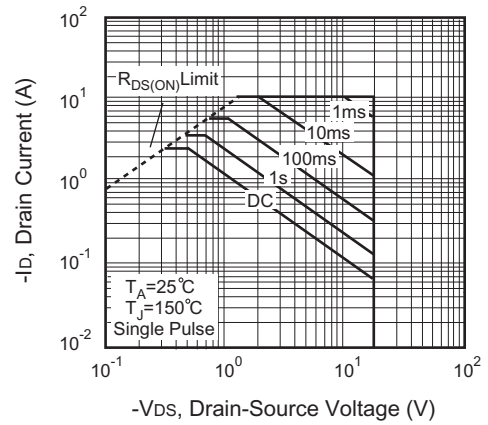


Figure 8. Maximum Safe Operating Area