

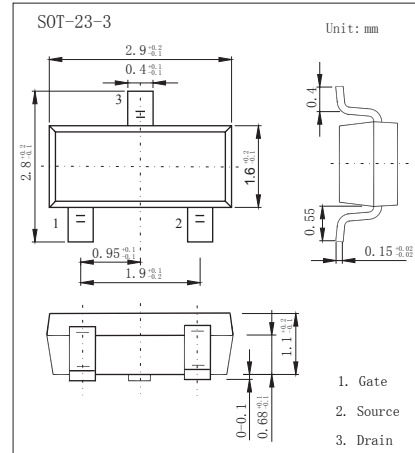
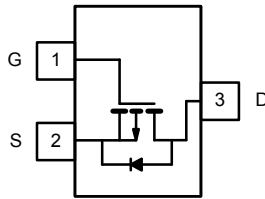


**SOT-23-3 Plastic-Encapsulate MOSFETS**

**SI2303 P-Channel Enhancement MOSFET**

■ Features

- $V_{DS} (V) = -30V$
- $R_{DS(ON)} < 200m\Omega$  ( $V_{GS} = -10V$ )
- $R_{DS(ON)} < 380m\Omega$  ( $V_{GS} = -4.5V$ )



■ Absolute Maximum Ratings  $T_a = 25^\circ C$

| Parameter  | Symbol     | Rating             | Unit       |              |
|--|------------|--------------------|------------|--------------|
| Drain-Source Voltage   | $V_{DS}$   | -30                | V          |              |
| Gate-Source Voltage  | $V_{GS}$   | $\pm 20$           |            |              |
| Continuous Drain Current<br>( $T_J = 150^\circ C$ ) *1                     | $I_D$      | $T_a = 25^\circ C$ | -1.7       | A            |
|  |            | $T_a = 70^\circ C$ | -1.4       |              |
| Pulsed Drain Current   | $I_{DM}$   | -10                |            |              |
| Power Dissipation  | $P_D$      | $T_a = 25^\circ C$ | 1.25       | W            |
|  |            | $T_a = 70^\circ C$ | 0.8        |              |
| Thermal Resistance..Junction- to-Ambient<br>(surface mounted on FR4 board) | $R_{thJA}$ |                    | 100        | $^\circ C/W$ |
|  |            |                    | 166        |              |
| Junction Temperature   | $T_J$      | 150                | $^\circ C$ |              |
| Storage Temperature Range  | $T_{stg}$  | -55 to 150         |            |              |

\*1 Surface Mounted on 1" x 1" FR4 Board.

■ Electrical Characteristics Ta = 25°C

| Parameter                             | Symbol              | Test Conditions   | Min   | Typ  | Max   | Unit |
|---------------------------------------|---------------------|---|---|------|-------|------|
| Drain-Source Breakdown Voltage        | V <sub>DSS</sub>    | I <sub>D</sub> =-250 μA, V <sub>GS</sub> =0V                        | -30   |      |       | V    |
| Zero Gate Voltage Drain Current       | I <sub>DSS</sub>    | V <sub>D</sub> =-30V, V <sub>GS</sub> =0V                           |   |      | -1    | μA   |
|                                       |                     | V <sub>D</sub> =-30V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C     |   |      | -10   |      |
| Gate-Body leakage current             | I <sub>GSS</sub>    | V <sub>D</sub> =0V, V <sub>GS</sub> =±20V                           |   |      | ±100  | nA   |
| Gate Threshold Voltage                | V <sub>GS(th)</sub> | V <sub>D</sub> =V <sub>GS</sub> I <sub>D</sub> =-250 μA             | -1.0  |      | -3.0  | V    |
| Static Drain-Source On-Resistance *1  | R <sub>DS(on)</sub> | V <sub>GS</sub> =-10V, I <sub>D</sub> =-1.7A                        |   |      | 200   | mΩ   |
|                                       |                     | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1.3A                       |   |      | 380   |      |
| On state drain current *1             | I <sub>D(ON)</sub>  | V <sub>GS</sub> =-10V, V <sub>D</sub> ≥-5V                          | -6  |      |       | A    |
| Forward Transconductance *1           | g <sub>FS</sub>     | V <sub>D</sub> =-10V, I <sub>D</sub> =-1.7A                         |   | 2.4  |       | S    |
| Input Capacitance *2                  | C <sub>iss</sub>    | V <sub>GS</sub> =0V, V <sub>D</sub> =-15V, f=1MHz                   |   | 226  |       | pF   |
| Output Capacitance *2                 | C <sub>oss</sub>    |   |   | 87   |       |      |
| Reverse Transfer Capacitance *2       | C <sub>rss</sub>    |   |   | 19   |       |      |
| Total Gate Charge *2                  | Q <sub>g</sub>      |   |   | 5.8  | 10    |      |
| Gate Source Charge *2                 | Q <sub>gs</sub>     | V <sub>GS</sub> =-10V, V <sub>D</sub> =-4.5V, I <sub>D</sub> =-1.7A |   | 0.8  |       | nC   |
| Gate Drain Charge *2                  | Q <sub>gd</sub>     |   |   | 1.5  |       |      |
| Turn-On DelayTime *3                  | t <sub>d(on)</sub>  |   | V <sub>GS</sub> =-10V, V <sub>D</sub> =-15V, R <sub>L</sub> =15Ω, R <sub>GEN</sub> =6Ω<br><br>I <sub>D</sub> =-1.0A |      | 9.0   |      |
| Turn-On Rise Time *3                  | t <sub>r</sub>      |   |   | 9.0  | 20    |      |
| Turn-Off DelayTime *3                 | t <sub>d(off)</sub> |   |   | 18   | 35    |      |
| Turn-Off Fall Time *3                 | t <sub>f</sub>      |   |   | 6.0  | 20    |      |
| Maximum Body-Diode Continuous Current | I <sub>S</sub>      |   |   |      | -1.25 | A    |
| Diode Forward Voltage                 | V <sub>SD</sub>     | I <sub>S</sub> =-1.25A, V <sub>GS</sub> =0V                         |   | -0.8 | -1.2  | V    |

\*1 Pulse test: PW ≤ 300us duty cycle ≤ 2%.

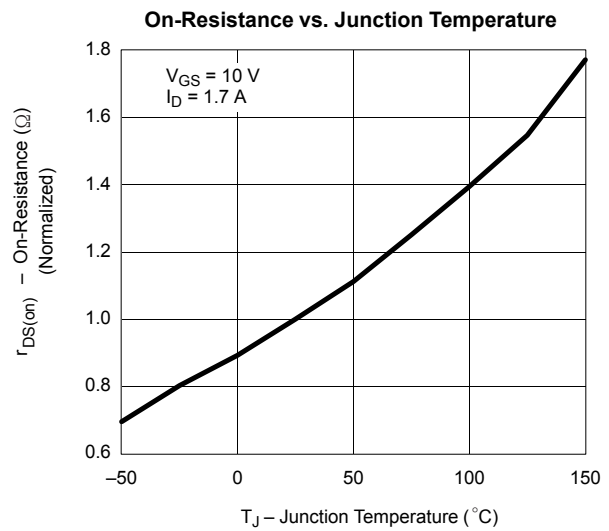
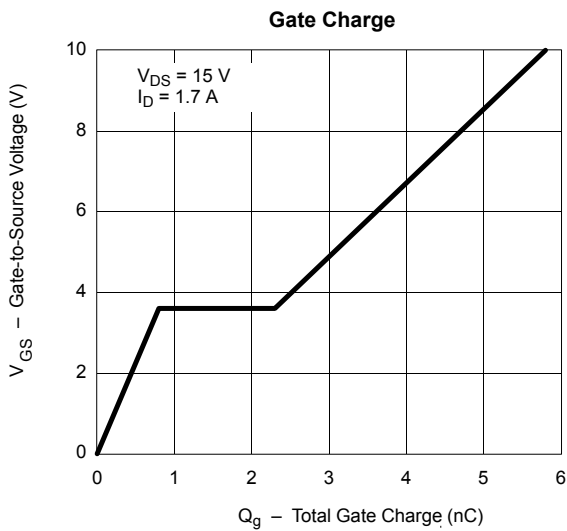
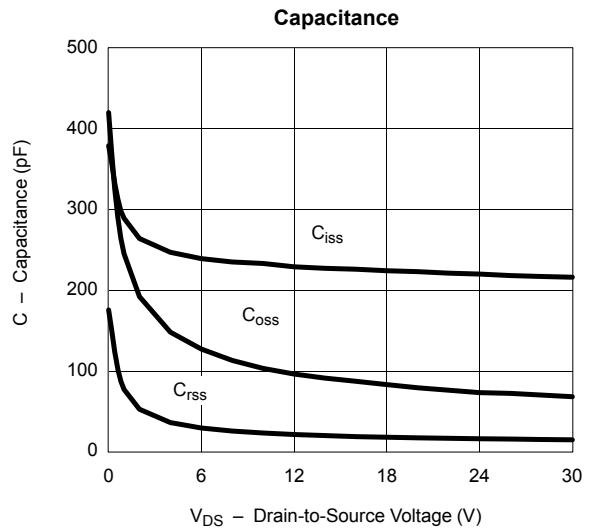
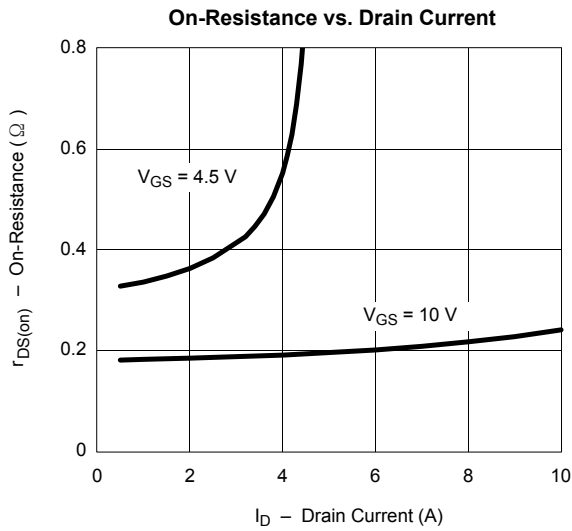
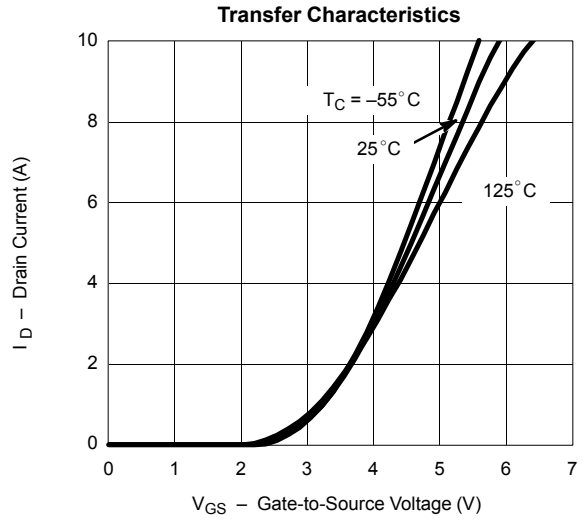
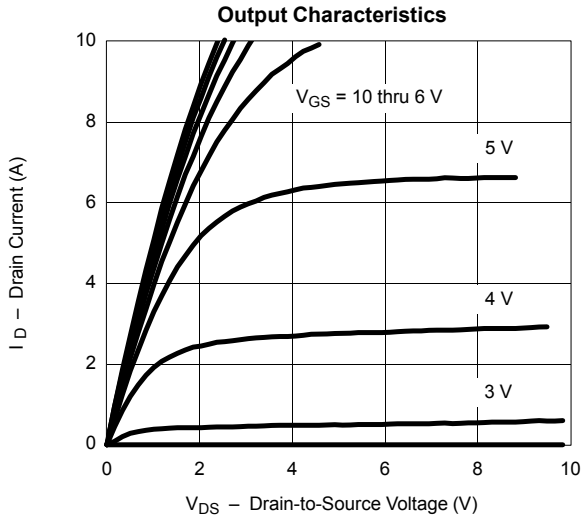
\*2 For DESIGN AID ONLY, not subject to production testing.

\*3 Switching time is essentially independent of operating temperature.

■ Marking

|         |     |
|---------|-----|
| Marking | A3* |
|---------|-----|

■ Typical Characteristics



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