FJ3503010L
Silicon P-channel MOSFET
For switching

FJ330301 in SMini3 type package

- Features
  - Low drive voltage: 2.5 V drive
  - Halogen-free / RoHS compliant
    (EU RoHS / UL-94 V-0 / MSL:Level 1 compliant)

- Marking Symbol: U1

- Packaging
  FJ3503010L Embossed type (Thermo-compression sealing):
  3 000 pcs / reel (standard)

- Absolute Maximum Ratings Ta = 25 °C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-source Voltage</td>
<td>VDS</td>
<td>-30</td>
<td>V</td>
</tr>
<tr>
<td>Gate-source Voltage</td>
<td>VGS</td>
<td>±12</td>
<td>V</td>
</tr>
<tr>
<td>Drain current</td>
<td>ID</td>
<td>-100</td>
<td>mA</td>
</tr>
<tr>
<td>Drain Current (Pulsed)</td>
<td>IDp</td>
<td>-200</td>
<td>mA</td>
</tr>
<tr>
<td>Total Power Dissipation</td>
<td>PD</td>
<td>150</td>
<td>mW</td>
</tr>
<tr>
<td>Channel Temperature</td>
<td>Tch</td>
<td>150</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>Tstg</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Publication date: October 2012 Ver. BED
## Electrical Characteristics  $Ta = 25\, ^\circ C \pm 3\, ^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-source Breakdown Voltage</td>
<td>$VDSS$</td>
<td>$ID = -1, mA, VGS = 0, V$</td>
<td>-30 V</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Zero Gate Voltage Drain Current</td>
<td>$IDSS$</td>
<td>$VDS = -30, V, VGS = 0, V$</td>
<td>-1.0 μA</td>
<td></td>
<td></td>
<td>μA</td>
</tr>
<tr>
<td>Gate-source Leakage Current</td>
<td>$IGSS$</td>
<td>$VGS = \pm 10, V, VDS = 0, V$</td>
<td>±10 μA</td>
<td></td>
<td></td>
<td>μA</td>
</tr>
<tr>
<td>Gate-source Threshold Voltage</td>
<td>$Vth$</td>
<td>$ID = -1.0, \mu A, VDS = -3.0, V$</td>
<td>-0.5-1.0</td>
<td>-1.5</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Drain-source On-state Resistance</td>
<td>$RDS(on)1$</td>
<td>$ID = -10, mA, VGS = -2.5, V$</td>
<td>7</td>
<td>17</td>
<td></td>
<td>Ω</td>
</tr>
<tr>
<td></td>
<td>$RDS(on)2$</td>
<td>$ID = -10, mA, VGS = -4.0, V$</td>
<td>4</td>
<td>7</td>
<td></td>
<td>Ω</td>
</tr>
<tr>
<td>Forward transfer admittance</td>
<td>$</td>
<td>Yfs</td>
<td>$</td>
<td>$ID = -10, mA, VDS = -3, V$</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>$Ciss$</td>
<td></td>
<td>12</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>$Coss$</td>
<td>$VDS = -3, V, VGS = 0, V, f = 1, MHz$</td>
<td>7</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Reverse Transfer Capacitance</td>
<td>$Crss$</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Turn-on Time *1</td>
<td>$ton$</td>
<td>$VDD = -3, V, VGS = 0, V$ to $-3, V$</td>
<td>100</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn-off Time *1</td>
<td>$toff$</td>
<td>$VDD = -3, V, VGS = -3, V$ to $0, V$</td>
<td>100</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.

*1 See Test circuit.
*1 Test circuit

Vin

0 V

-3 V

PW = 10 μs
D.C. ≤ 1 %

ID = -10 mA
RL = 300 Ω

Vin

50 Ω

S

G

VDD = -3 V

D

Vout

Vin

10 %

90 %

Vout

10 %

90 %

ton

toff

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Dynamic Input/Output Characteristics

**Capacitance - VDS**

- Ciss
- Coss
- Crss

**ID - VDS**

- Drain Current ID (A) vs. Drain-source Voltage VDS (V)

**ID - VGS**

- Drain Current ID (A) vs. Gate-source Voltage VGS (V)

**VDS - VGS**

- Drain-source On-state Resistance RDS(on) (Ω)

**RDS(on) - ID**

- Gate-source Voltage VGS (V) vs. Drain Current ID (A)

**Gate-source Voltage VGS (V)**

- 85 °C
- 25 °C
- Ta = - 30 °C

**Drain-source Voltage VDS (V)**

- ID = - 20 mA
- - 10 mA
- - 5 mA

**Gate-source Voltage VGS (V)**

- VGS = - 4.0 V

**Capacitance C (pF)**

- VDD = - 3 V

**Total Gate Charge Qg (nC)**

- 0.0
- 0.2
- 0.4
- 0.6
- 0.8
- 1.0

**Total Gate Charge Qg (nC)**

- 0.0
- 0.2
- 0.4
- 0.6
- 0.8
- 1.0
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Rth - tsw

Safe Operating Area

Operation in this area is limited by RDS(on).

Glass epoxy board (25.4 × 25.4 × 0.8 mm)
coated with copper foil,
which has more than 300 mm².
Land Pattern (Reference) (Unit: mm)
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