FC5913010R
Dual N-channel MOSFET
For switching

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

- Marking Symbol: V3

- Basic Part Number
  Dual FK330301 (Source Common type)

- Packaging
  FC5913010R Embossed type (Thermo-compression sealing):
  8,000 pcs / reel (standard)

- Absolute Maximum Ratings  \( Ta = 25 \, ^\circ C \)

<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>125</td>
<td>mW</td>
</tr>
<tr>
<td>Channel Temperature</td>
<td>Tch</td>
<td>150</td>
<td>\degree C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-55 to +150</td>
<td>\degree C</td>
</tr>
</tbody>
</table>

Internal Connection

Pin Name

1. Gate(FET1)  4. Drain(FET2)
2. Source(FET1,2)  5. Drain(FET1)
3. Gate(FET2)
Electrical Characteristics  \( Ta = 25 \, ^\circ C \pm 3 \, ^\circ C \)

**FET1, FET2**

<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</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></td>
<td>1.0</td>
<td></td>
<td>( \mu \text{A} )</td>
</tr>
<tr>
<td>Gate-source Leakage Current</td>
<td>IGSS</td>
<td>VGS = ( \pm 10 , \text{V} ), VDS = 0 V</td>
<td></td>
<td></td>
<td>( \pm 10 )</td>
<td>( \mu \text{A} )</td>
</tr>
<tr>
<td>Gate-source Threshold Voltage</td>
<td>Vth</td>
<td>ID = 1.0 ( \mu \text{A} ), VDS = 3.0 V</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
<td>( \text{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>3</td>
<td>6</td>
<td></td>
<td>( \Omega )</td>
</tr>
<tr>
<td></td>
<td>RDS(on)2</td>
<td>ID = 10 mA, VGS = 4.0 V</td>
<td>2</td>
<td>3</td>
<td></td>
<td>( \Omega )</td>
</tr>
<tr>
<td>Forward transfer admittance</td>
<td>[Yfs]</td>
<td>ID = 10 mA, VDS = 3.0 V</td>
<td>20</td>
<td>55</td>
<td></td>
<td>( \text{S} )</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>Ciss</td>
<td>VDS = 3 V, VGS = 0 V</td>
<td></td>
<td>12</td>
<td></td>
<td>( \text{pF} )</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>Coss</td>
<td>VDS = 3 V, VGS = 0 V, ( f = 1 , \text{MHz} )</td>
<td></td>
<td>7</td>
<td></td>
<td>( \text{pF} )</td>
</tr>
<tr>
<td>Reverse Transfer Capacitance</td>
<td>Crss</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>( \text{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></td>
<td>100</td>
<td></td>
<td>( \text{ns} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ID = 10 mA</td>
<td></td>
<td></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></td>
<td>100</td>
<td></td>
<td>( \text{ns} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ID = 10 mA</td>
<td></td>
<td></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.
Test circuit

Vin

VDD = 3 V

ID = 10 mA
RL = 300 Ω

Vin

G

50 Ω

S

VDD

Vout

PW = 10 μs
D.C. ≤ 1 %

Vin

Vout

ton

toff

90 %

10 %

90 %
Gate-source Threshold Voltage: $V_{th}$ (V)

Drain-source On-state Resistance: $R_{DS(\text{on})}$ ($\Omega$)

Temperature $T_a$ (°C)

Gate-source Threshold Voltage $V_{th}$ (V)

Drain-source On-state Resistance $R_{DS(\text{on})}$ ($\Omega$)

Temperature $T_a$ (°C)

Total Power Dissipation $P_D$ (W)

Temperature $T_a$ (°C)

Thermal Resistance $R_{th}$ (°C/W)

Pulse Width $t_{sw}$ (s)

Drain Current $I_D$ (A)

Drain-source Voltage $V_{DS}$ (V)

Operation in this area is limited by $R_{DS(\text{on})}$

$T_a = 25$ °C

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

IDp = 0.2 A

Safe Operating Area
SSMini5-F4-B

Land Pattern (Reference) (Unit: mm)
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