FL5252050R
Silicon P-channel MOSFET (FET)
Silicon epitaxial planar type (SBD)

For switching
For DC-DC Converter

■ Features
  • Low drain-source ON resistance: RDS (on) typ. = 100 mΩ (VGS = -4.0 V)
  • Low drive voltage: 2.5 V drive
  • Halogen-free / RoHS compliant
    (EU RoHS / UL-94 V-0 / MSL: Level 1 compliant)

■ Marking Symbol: Y0

■ Packaging
  Embossed type (Thermo-compression sealing) 3,000 pcs/reel (standard)

■ Absolute Maximum Ratings  Ta = 25 °C

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<th>項目</th>
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<th>Rating</th>
<th>Unit</th>
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<td>V</td>
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<tr>
<td>Gate to Source Voltage</td>
<td>VGS</td>
<td>±10</td>
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<td>Drain current</td>
<td>ID</td>
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<td>VR</td>
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<td>Junction temperature</td>
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</tr>
<tr>
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<td>PD</td>
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<tr>
<td>Operating ambient temperature*1</td>
<td>Topr</td>
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<tr>
<td>Storage temperature</td>
<td>Tstg</td>
<td>-55 to +125</td>
<td>°C</td>
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Note: *1 Measuring on ceramic substrate at 40 mm × 38 mm × 0.1 mm
PD absolute maximum rating without a heat shink: 300 mW

Panasonic Mini5-G3-B
JEITA SC-74A
Code MO-178

Internal Connection

Pin Name
1. Gate  4. Cathode
2. Source 5. Drain
3. Anode

Established: 2011-06-17
Revised: 2013-10-28
## Electrical Characteristics

Ta = 25 °C ± 3 °C

### MOS FET (P-ch.)

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<th>Parameter</th>
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<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
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<tbody>
<tr>
<td>Drain to Source Breakdown Voltage</td>
<td>VDSS</td>
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<td>VDS = -20 V, VGS = 0</td>
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<td>μA</td>
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<tr>
<td>Gate-source Leakage Current</td>
<td>IGSS</td>
<td>VGS = ±8 V, VDS = 0</td>
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<td>±10</td>
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<td>μA</td>
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<tr>
<td>Gate-source Threshold Voltage</td>
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<td>-0.4</td>
<td>-0.85</td>
<td>-1.3</td>
<td>V</td>
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<tr>
<td>Drain-source On-State Resistance</td>
<td>RDS(on1)</td>
<td>ID = -1.0 A, VGS = -4.0 V</td>
<td>100</td>
<td>130</td>
<td></td>
<td>mΩ</td>
</tr>
<tr>
<td></td>
<td>RDS(on2)</td>
<td>ID = -0.5 A, VGS = -2.5 V</td>
<td>130</td>
<td>200</td>
<td></td>
<td>mΩ</td>
</tr>
<tr>
<td>Forward transfer admittance</td>
<td>[Yfs]</td>
<td>ID = -1.0 A, VDS = -10 V</td>
<td>3.0</td>
<td></td>
<td></td>
<td>S</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>Ciss</td>
<td></td>
<td>400</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>Coss</td>
<td>VDS = -10 V, VGS = 0, f = 1 MHz</td>
<td>40</td>
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<td></td>
<td>pF</td>
</tr>
<tr>
<td>Reverse Transfer Capacitance</td>
<td>Crss</td>
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<td>35</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
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<td>Turn-on time **1</td>
<td>ton</td>
<td>VDD = -10 V, VGS = 0 to -4 V</td>
<td>35</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ID = -1.0 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn-off time **1</td>
<td>toff</td>
<td>VDD = -10 V, VGS = -4 to 0 V</td>
<td>100</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ID = -1.0 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 Measuring methods for transistors.
2. *1 Turn-on, Turn-off measurement circuit

### SBD

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<thead>
<tr>
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<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
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<tr>
<td>Forward voltage</td>
<td>VF</td>
<td>IF = 700 mA</td>
<td>0.45</td>
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<td></td>
<td>V</td>
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<td>Reverse current</td>
<td>IR</td>
<td>VR = 20 V</td>
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<td>200</td>
<td></td>
<td>μA</td>
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<td>Terminal capacitance</td>
<td>Ct</td>
<td>VR = 10 V, f = 1 MHz</td>
<td>12</td>
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<td>pF</td>
</tr>
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<td>trr</td>
<td>IF = IR = 100 mA, Irr = 10 mA</td>
<td>4.3</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

**Note:** Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 Measuring methods for diodes.
*1 Turn-on, Turn-off measurement circuit

VDD = -10 V
ID = -1 A
RL = 10 Ω

PW = 10 µs
D.C. ≤ 1 %

Vout

Vn

50 Ω

Vout

Vn

90 %
10 %

90 %
10 %

t on
t off
**MOS FET**

**FL5252050R**

### Technical Data (reference)

#### Ciss, Coss, Crss

- **Drain-source Voltage VDS (V):**
  - -10
  - -1
  - -0.1
  - 0
  - 0.1
  - 0.2
  - 0.3
  - 0.4
  - 0.5
  - 0.6

- **Capacitance C (pF):**
  - -100
  - -10
  - -1
  - -0.1
  - 0
  - 0.1
  - 0.2
  - 0.3
  - 0.4

- **Drain-source Voltage VDS (V):**
  - -2.5
  - -2
  - -1.5
  - -1
  - -0.5
  - 0
  - 0.5
  - 1
  - 1.5
  - 2

#### ID - VDS

- **Drain-source voltage VDS (V):**
  - -2.0 V
  - -1.0 V
  - -0.6 V

- **Drain current ID (A):**
  - -2.0 mA
  - -1.0 mA
  - -0.6 mA

#### ID - VGS

- **Gate-source voltage VGS (V):**
  - -4.0 V
  - -2.5 V
  - -2.0 V
  - -1.5 V
  - -1.0 V

- **Drain current ID (A):**
  - -0.06 A
  - -0.04 A
  - -0.02 A

#### VDS - VGS

- **Gate-source Voltage VGS (V):**
  - -5
  - -4
  - -3
  - -2
  - -1
  - 0
  - 1

- **Drain-source Voltage VDS (V):**
  - -2.0 V
  - -1.0 V
  - -0.6 V

- **Drain Current ID (A):**
  - -2.0 mA
  - -1.0 mA
  - -0.6 mA

#### RDS(on) - ID

- **Drain-source On-state Resistance RDS(on) (mΩ):**
  - -2.5 V
  - -1.0 V
  - -0.5 V

- **Gate-source Voltage VGS (V):**
  - -4.0 V

- **Drain Current ID (A):**
  - 10 mA
  - 1 mA
  - 0.1 mA

- **Drain-source Voltage VDS (V):**
  - -10
  - -1
  - -0.1
  - 0

- **Gate-source Voltage VGS (V):**
  - -5
  - -4
  - -3
  - -2
  - -1
  - 0
  - 1
**Product Standards**

**MOS FET**

**FL5252050R**

### Technical Data (reference)

#### Gate-source Threshold Voltage

- **Vth (V)**
  - Temperature (°C): -50, 0, 50, 100, 150
  - Values: 0, 0.5, 1

#### Drain-source On-resistance

- **RDS(on) (mΩ)**
  - VGS = -2.5 V
  - VGS = -4.0 V

#### Total Power Dissipation

- **PD (W)**
  - Measuring on ceramic substrate at 40 mm × 38 mm × 0.1 mm.
  - Values: 0, 0.1, 1, 10, 100, 1000

#### Thermal Resistance

- **Rth (°C/W)**
  - Pulse Width tsw (s): 0.01, 0.1, 1, 10, 100, 1000
  - Values: 0.1, 1, 10, 100, 1000

#### Safe Operating Area

- **Drain-source Voltage VDS (V)**
  - **Drain Current ID (A)**

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**Established**: 2011-06-17

**Revised**: 2013-10-28
Mini5-G3-B

Land Pattern (Reference) (Unit: mm)
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