Product Standards

FC694309ER
Dual N-channel MOSFET
For switching circuits

Features
- Low drive voltage: 1.5 V drive
- Halogen-free / RoHS compliant
  (EU RoHS / UL-94 V-0 / MSL : Level 1 compliant)

Marking Symbol: X9

Basic Part Number
- Dual FK330309 (Individual)

Packaging
- Embossed type (Thermo-compression sealing): 8,000 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 to Source Voltage</td>
<td>VDS</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>Gate to Source Voltage</td>
<td>VGS</td>
<td>±6</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>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>Tstg</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Note *1: Pulse test: Ensure that the channel temperature does not exceed 150 °C
### 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>( V_{DSS} )</td>
<td>( ID = 1 , mA, \ V_{GS} = 0 , V )</td>
<td>30</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Zero Gate Voltage Drain Current</td>
<td>( I_{DSS} )</td>
<td>( V_{DS} = 30 , V, \ V_{GS} = 0 , V )</td>
<td></td>
<td>10</td>
<td></td>
<td>( \mu A )</td>
</tr>
<tr>
<td>Gate-source Leakage Current</td>
<td>( I_{GS} )</td>
<td>( V_{GS} = \pm 6 , V, \ V_{DS} = 0 , V )</td>
<td>( \pm 10 )</td>
<td></td>
<td></td>
<td>( \mu A )</td>
</tr>
<tr>
<td>Gate-source Threshold Voltage</td>
<td>( V_{th} )</td>
<td>( ID = 1 , mA, \ V_{DS} = 10 , V )</td>
<td>0.3</td>
<td>1.3</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Drain-source On-state Resistance</td>
<td>( R_{DS(on)1} )</td>
<td>( ID = 10 , mA, \ V_{GS} = 2.5 , V )</td>
<td>1</td>
<td>4</td>
<td></td>
<td>( \Omega )</td>
</tr>
<tr>
<td></td>
<td>( R_{DS(on)2} )</td>
<td>( ID = 10 , mA, \ V_{GS} = 1.5 , V )</td>
<td>4</td>
<td>12</td>
<td></td>
<td>( \Omega )</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>( C_{iss} )</td>
<td>( V_{DS} = 10 , V, \ V_{GS} = 0 , V )</td>
<td></td>
<td>13</td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>( C_{oss} )</td>
<td>( f = 1 , MHz )</td>
<td></td>
<td>7</td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Reverse Transfer Capacitance</td>
<td>( C_{rss} )</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn-on Delay Time,(^1)</td>
<td>( t_{on} )</td>
<td>( V_{DD} = 3 , V, \ V_{GS} = 0 , to , 3 , V )</td>
<td>20</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( ID = 10 , mA, \ RL = 300 , \Omega )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn-off Delay Time,(^1)</td>
<td>( t_{off} )</td>
<td>( V_{DD} = 3 , V, \ V_{GS} = 3 , to , 0 , V )</td>
<td>100</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( ID = 10 , mA, \ RL = 300 , \Omega )</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. \(^1\) Measurement circuit for Turn-on Delay Time / Turn-off Delay Time
*1 Measurement circuit for Turn-on Delay Time / Turn-off Delay Time

VDD = 3 V

PW = 10 μs  
D.C. ≤ 1 %

Vin

ID = 10 mA  
RL = 300 Ω

Vout

S

G

50 Ω

Doc No.  TT4-EA-14543
Revision. 2

Established : 2013-02-19
Revised    : 2013-02-27
**Technical Data (reference)**

- **Capacitance - VDS**
  - Ciss
  - Coss
  - Crss

- **Body Diode Forward Voltage VSD**

- **Drain Current ID**

- **Gate-source Voltage VGS**

- **Drain-source Voltage VDS**

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

- **Gate-source Voltage VGS**

- **Drain Current ID**

- **Total Gate Charge Qg**

- **Dynamic Input/Output Characteristics**

**Panasonic**

**MOS FET**

**FC694309ER**
Technical Data (reference)

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

  - $V_{th} - T_a$

  - Temperature $T_a$ (°C)

- **Drain-source On-state Resistance** $R_{DS(on)}$ (Ω)

  - $R_{DS(on)} - T_a$

  - Temperature $T_a$ (°C)

- **Total Power Dissipation** $P_D$ (W)

  - $P_D - T_a$

  - Temperature $T_a$ (°C)

- **Thermal Resistance** $R_{th}$ (°C/W)

  - $R_{th} - t_{sw}$

  - Pulse Width $t_{sw}$ (s)

- **Safe Operating Area**

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

  - Drain Current $I_D$ (A)

  - Operation in this area is limited by $R_{DS(on)}$.

- **Established**: 2013-02-19
- **Revised**: 2013-02-27
**Land Pattern (Reference) (Unit: mm)**

- 0 to 0.05
- 0.20 ± 0.05
- 0.55 ± 0.05
- 1.20 ± 0.05
- 1.60 ± 0.05
- 1.00 ± 0.05
- 0.13 ± 0.05
- 0.08 ± 0.05
- 0.27
- 0 to 0.05
- 0.13 ± 0.05
- 0.08 ± 0.05
- 0.27
- 0 to 0.05
- 0.13 ± 0.05
- 0.08 ± 0.05
- 0.27

**Notes:**
- (5°)
- (0.5)
- (0.5)
- (0.27)
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