TOSHIBA Transistor  Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

**RN2970FS,RN2971FS**

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Two devices are incorporated into a fine pitch Small Mold (6 pin) package.
- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enables the manufacture of ever more compact equipment and saves assembly cost.
- Complementary to RN1970FS, RN1971FS

**Equivalent Circuit and Bias Resistor Values**

**Absolute Maximum Ratings (Ta = 25°C) (Q1, Q2 common)**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector-base voltage</td>
<td>V_CBO</td>
<td>−20 V</td>
<td></td>
</tr>
<tr>
<td>Collector-emitter voltage</td>
<td>V_CE0</td>
<td>−20 V</td>
<td></td>
</tr>
<tr>
<td>Emitter-base voltage</td>
<td>V_EBO</td>
<td>−5 V</td>
<td></td>
</tr>
<tr>
<td>Collector current</td>
<td>I_C</td>
<td>−50 mA</td>
<td></td>
</tr>
<tr>
<td>Collector power dissipation</td>
<td>P_C (Note 1)</td>
<td>50 mW</td>
<td></td>
</tr>
<tr>
<td>Junction temperature</td>
<td>T_J</td>
<td>150 °C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>T_stg</td>
<td>−55~150 °C</td>
<td></td>
</tr>
</tbody>
</table>

**Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)**

**Note:** Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”, “Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

**Note 1:** Total rating
(Q1,Q2 common)

INPUT ON VOLTAGE VI(ON) (V)

INPUT OFF VOLTAGE VI(OFF) (V)

COLLECTOR CURRENT IC (mA)

COLLECTOR CURRENT IC (μA)

Ta=100°C

EMITTER COMMON

VCE=-0.2V

VCE=-5V

RN2970FS, RN2971FS
Handling Precaution

When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static materials.
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