N-Channel JFET
25 V, 20 to 40 mA, 40 mS, Dual CPH6

CPH6904

Features
- Composite Type with 2 J-FET Contained in a CPH6 Package Currently in Use, Improving the Mounting Efficiency Greatly
- The CPH6904 is Formed with Two Chips, Being Equivalent to the CPH3910, Placed in One Package
- This is a Pb-Free Device

Product & Package Information
- Package: CPH6
- JEITA, JEDEC: SC-74, SOT-26, SOT-457
- Minimum Packing Quantity: 3,000 pcs./reel

ABSOLUTE MAXIMUM RATINGS (at \( T_A = 25^\circ C \))

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{DSX} )</td>
<td>Drain–to–Source Voltage</td>
<td>25</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>( V_{GDS} )</td>
<td>Gate–to–Drain Voltage</td>
<td>–25</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>( I_G )</td>
<td>Gate Current</td>
<td>10</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>( I_D )</td>
<td>Drain Current</td>
<td>50</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>( P_D )</td>
<td>Allowable Power Dissipation</td>
<td>1 unit</td>
<td>400 mW</td>
<td></td>
</tr>
<tr>
<td>( P_T )</td>
<td>Total Power Dissipation</td>
<td>700</td>
<td>mW</td>
<td></td>
</tr>
<tr>
<td>( T_{ch} )</td>
<td>Channel Temperature</td>
<td>150</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>( T_{stg} )</td>
<td>Storage Temperature</td>
<td>–55 to +150</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

MARKING DIAGRAM

ELECTRICAL CONNECTION

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Device</th>
<th>Package</th>
<th>Shipping¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPH6904–TL–E</td>
<td>CPH6 (Pb–Free)</td>
<td>3 000 / Tape &amp; Reel</td>
</tr>
</tbody>
</table>

¹For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD9011/D.
### ELECTRICAL CHARACTERISTICS (at $T_A = 25^\circ C$)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{BR\text{GDS}}$</td>
<td>Gate–to–Drain Breakdown Voltage</td>
<td>$I_G = -10 \mu A, V_{DS} = 0 \text{ V}$</td>
<td>−25</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>$I_{GS}$</td>
<td>Gate–to–Source Leakage Current</td>
<td>$V_{GS} = -10 \text{ V}, V_{DS} = 0 \text{ V}$</td>
<td></td>
<td>−1.0</td>
<td></td>
<td>nA</td>
</tr>
<tr>
<td>$V_{GS\text{(off)}}$</td>
<td>Cutoff Voltage</td>
<td>$V_{DS} = 5 \text{ V}, I_D = 100 \mu A$</td>
<td>−0.6</td>
<td>−1.2</td>
<td>−1.8</td>
<td>V</td>
</tr>
<tr>
<td>$I_{DSS}$</td>
<td>Drain Current</td>
<td>$V_{DS} = 5 \text{ V}, V_{GS} = 0 \text{ V}$</td>
<td>20.0</td>
<td></td>
<td>40.0</td>
<td>mA</td>
</tr>
<tr>
<td>$</td>
<td>y_{fs}</td>
<td>$</td>
<td>Forward Transfer Admittance</td>
<td>$V_{DS} = 5 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ kHz}$</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>$C_{iss}$</td>
<td>Input Capacitance</td>
<td>$V_{DS} = 5 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$</td>
<td></td>
<td>6.0</td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>$C_{rss}$</td>
<td>Reverse Transfer Capacitance</td>
<td>$V_{DS} = 5 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$</td>
<td></td>
<td>2.3</td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>$N_F$</td>
<td>Noise Figure</td>
<td>$V_{DS} = 5 \text{ V}, V_{GS} = 0 \text{ V}, f = 100 \text{ MHz}$</td>
<td></td>
<td>2.1</td>
<td>2.8</td>
<td>dB</td>
</tr>
</tbody>
</table>

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
TYPICAL PERFORMANCE CHARACTERISTICS

Figure 1. $I_D - V_{DS}$

$V_{GS} = 0$ V
- $-0.2$ V
- $-0.4$ V
- $-0.6$ V
- $-0.8$ V
- $-1.0$ V

$V_{DS}$, Drain-to-Source Voltage (V)

$ID$, Drain Current (mA)

Figure 2. $I_D - V_{DS}$

$V_{GS} = 0$ V
- $-0.2$ V
- $-0.4$ V
- $-0.6$ V
- $-0.8$ V
- $-1.0$ V

$V_{DS}$, Drain-to-Source Voltage (V)

$ID$, Drain Current (mA)

Figure 3. $I_D - V_{GS}$

$V_{DS} = 5$ V
- $30$ mA
- $20$ mA
- $25$ mA
- $40$ mA

$V_{GS}$, Gate-to-Source Voltage (V)

$ID$, Drain Current (mA)

Figure 4. $I_D - V_{GS}$

$V_{DS} = 5$ V
- $25$°C
- $75$°C

$V_{GS}$, Gate-to-Source Voltage (V)

$ID$, Drain Current (mA)

Figure 5. $|Y_{fs}| - I_D$

$V_{DS} = 5$ V
- $f = 1$ kHz
$|Y_{fs}|$, Forward Transfer Admittance (mS)

$ID$, Drain Current (mA)

Figure 6. $|Y_{fs}| - I_{DSS}$

$V_{DS} = 5$ V
- $V_{GS} = 0$ V
- $f = 1$ kHz
$|Y_{fs}|$, Forward Transfer Admittance (mS)

$I_{DSS}$, Drain Current (mA)
TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

Figure 7. $V_{\text{GS(off)}} - I_{DSS}$

Figure 8. $C_{\text{iss}} - V_{DS}$

Figure 9. $C_{\text{rss}} - V_{DS}$

Figure 10. $P_D, P_T - T_A$