DATA SHEET: CKRF7520CK34
20GHz Super Low Noise FET in Hollow Plastic PKG

Features:
- Super Low noise figure and high associated gain:
  \( NF = 0.55 \text{dB TYP.}, \ Ga = 13.8 \text{dB TYP.} \)
  @VDS=2V, ID=10mA, f=20GHz

Description:
- Super Low Noise and High Gain
- Hollow (Air cavity) Plastic package

Applications:
K-band LNB (Low Noise Block)

Package:
- Micro-X plastic package

PIN Configuration:

<table>
<thead>
<tr>
<th>PIN No.</th>
<th>PIN Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Source</td>
</tr>
<tr>
<td>2</td>
<td>Drain</td>
</tr>
<tr>
<td>3</td>
<td>Source</td>
</tr>
<tr>
<td>4</td>
<td>Gate</td>
</tr>
</tbody>
</table>

Ordering Information:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Order Number</th>
<th>Package</th>
<th>Marking</th>
<th>Supplying Form</th>
</tr>
</thead>
</table>
| CKRF7520CK34-C1-J | CKRF7520CK34-C1-J | Micro-X plastic package | 16      | · Embossed 8 mm wide  
|               |                |                     |         | · Pin 4 (Gate) faces the perforation side of the tape  
|               |                |                     |         | · Qty 10Kpce/reel                                         |
Absolute Maximum Ratings:
(TA=+25°C, unless otherwise specified)

<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>4.0</td>
<td>V</td>
</tr>
<tr>
<td>Gate to Source Voltage</td>
<td>VGS</td>
<td>-3.0</td>
<td>V</td>
</tr>
<tr>
<td>Drain Current</td>
<td>ID</td>
<td>IDSS</td>
<td>mA</td>
</tr>
<tr>
<td>Gate Current</td>
<td>IG</td>
<td>80</td>
<td>μA</td>
</tr>
<tr>
<td>Total Power Dissipation</td>
<td>Ptot</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</td>
<td>Tstg</td>
<td>-55 to +125</td>
<td>°C</td>
</tr>
<tr>
<td>Operation temperature</td>
<td>Top</td>
<td>-55 to +125°*1</td>
<td>°C</td>
</tr>
</tbody>
</table>

*1: Relationship of Ambient Temperature and Total Power Dissipation, please refer to the Page 3

Recommended Operating Range:
(TA=+25°C, unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain to Source Voltage</td>
<td>VDS</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
<td>V</td>
</tr>
<tr>
<td>Drain Current</td>
<td>ID</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>mA</td>
</tr>
</tbody>
</table>

Electrical Characteristics:
(TA=+25°C, unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gate to Source Leak Current</td>
<td>IGSO</td>
<td>VGS=-3.0V</td>
<td>-</td>
<td>0.4</td>
<td>10</td>
<td>μA</td>
</tr>
<tr>
<td>Saturated Drain Current</td>
<td>IDSS</td>
<td>VDS=2V, VGS=0V</td>
<td>23</td>
<td>40</td>
<td>57</td>
<td>mA</td>
</tr>
<tr>
<td>Gate to Source Cut-off Voltage</td>
<td>VGS(off)</td>
<td>VDS=2V, ID=100μA</td>
<td>-1.10</td>
<td>-0.75</td>
<td>-0.39</td>
<td>V</td>
</tr>
<tr>
<td>Transconductance</td>
<td>Gm</td>
<td>VDS=2V, ID=10mA</td>
<td>47</td>
<td>62</td>
<td>-</td>
<td>mS</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>NF</td>
<td>VDS=2V, ID=10mA, f=20GHz</td>
<td>-</td>
<td>0.55</td>
<td>0.80</td>
<td>dB</td>
</tr>
<tr>
<td>Associated Gain</td>
<td>Ga</td>
<td>f=20GHz</td>
<td>11.5</td>
<td>13.8</td>
<td>-</td>
<td>dB</td>
</tr>
</tbody>
</table>
Typical Characteristics:
(TA=+25°C, unless otherwise specified)

- TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE
- DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE
- DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE
- MINIMUM NOISE FIGURE & ASSOCIATED GAIN vs. DRAIN CURRENT
S-Parameters:
S-parameters/Noise parameters are provided on the CDK Web site.

[Original Products] → [Low Noise GaAsFET for LNB] → [Device Parameters]


RF Measuring Layout Pattern:
RF Measuring Layout Patterns are provided on the CDK Web site.

[Original Products] → [Low Noise GaAsFET for LNB] → [Design Support] →
[Evaluation Board Information]


Package Dimensions:

![Package Dimensions Diagram]

(Top View)

(Bottom View)

(Side View)

PIN CONNECTIONS

1 : Source
2 : Drain
3 : Source
4 : Gate

UNIT : mm
Recommended Soldering Conditions:

Recommended Soldering Conditions are provided on the CDK Web site.

[Original Products] → [Low Noise GaAsFET for LNB] → [Design Support] → [others]

URL http://www.en.cdk.co.jp/products/highfrequency/rf/LNGaAsFET/LNB/designsupport/index.html
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[Caution in the gallium arsenide (GaAs) product handling]

This product uses gallium arsenide (GaAs) of the toxic substance appointed in laws and ordinances. GaAs vapor and powder are hazardous to human health if inhaled or ingested.

- Do not dispose in fire or break up this product.
- Do not chemically make gas or powder with this product.
- When discard this product, please obey the law of your country.
- Do not lick the product or in any way allow it to enter the mouth.

[CAUTION]

Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions should be used at all times.

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