

## DESCRIPTION

The MGF4714CP low-noise HEMT(High Electron Mobility Transistor) is designed for use in L to Ku band amplifiers.

The plastic mold package offer high cost performance, and has a configuration suitable for microstrip circuits.

The MGF4714CP is mounted in Super 12 tape.

## FEATURES

- Low noise figure  
NFmin.=1.00dB(MAX.) @f=12GHz
- High associated gain  
Gs=11.0dB(MIN.) @f=12GHz

## APPLICATION

L to Ku band low noise amplifiers.

## QUALITY GRADE

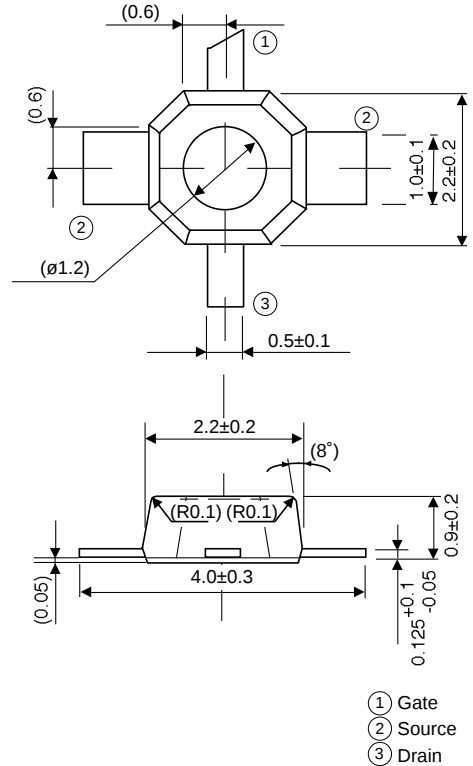
- GG

## RECOMMENDED BIAS CONDITIONS

- $V_{DS}=2V, I_D=10mA$
- Refer to Bias Procedure

## OUTLINE DRAWING

Unit: millimeters



GD-22

## ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

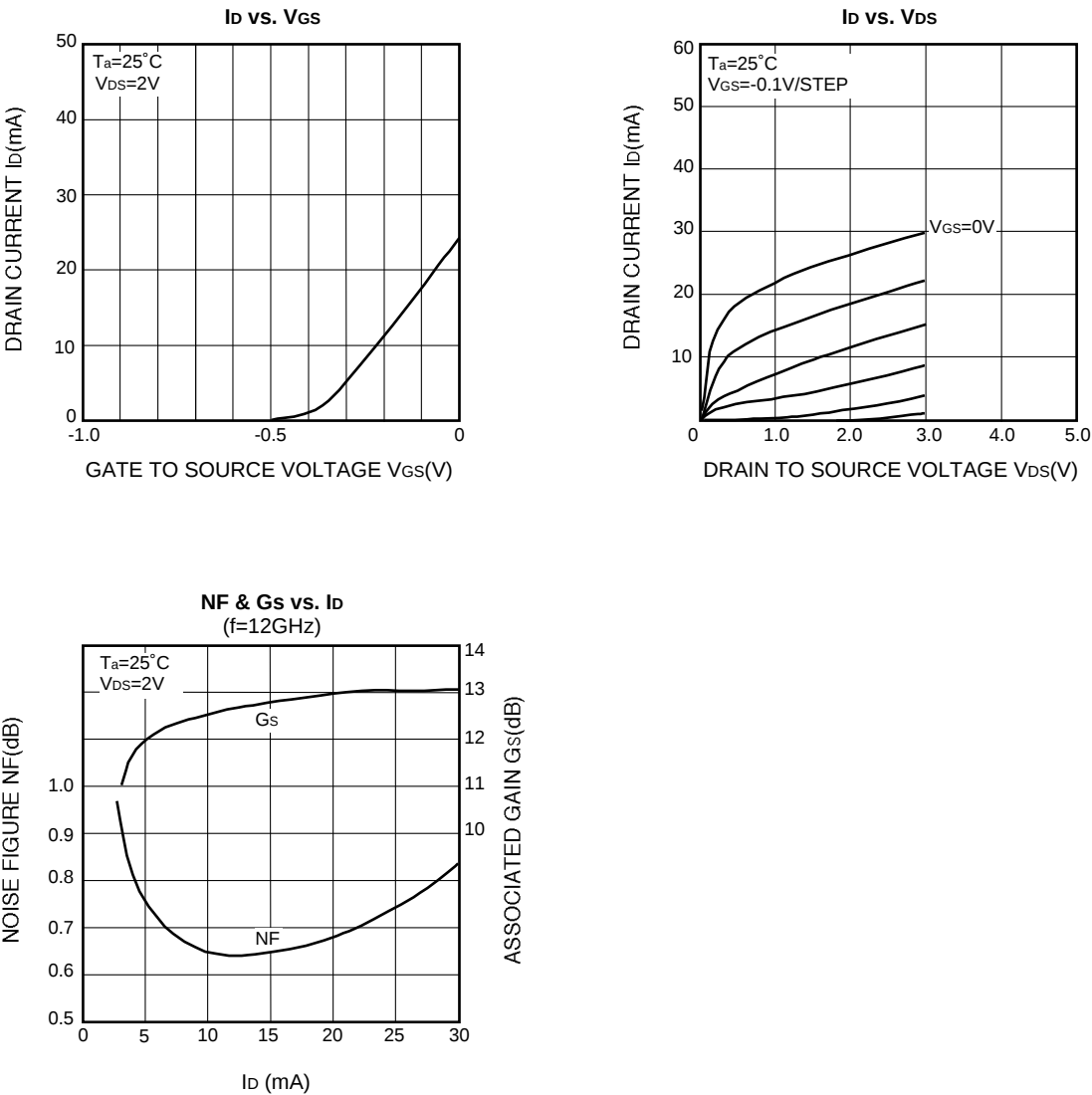
| Symbol    | Parameter               | Ratings     | Unit |
|-----------|-------------------------|-------------|------|
| $V_{GDO}$ | Gate to drain voltage   | -4          | V    |
| $V_{GSO}$ | Gate to source voltage  | -4          | V    |
| $I_D$     | Drain current           | 60          | mA   |
| $P_T$     | Total power dissipation | 50          | mW   |
| $T_{ch}$  | Channel temperature     | 125         | °C   |
| $T_{stg}$ | Storage temperature     | -65 to +125 | °C   |

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| Symbol        | Parameter                       | Test conditions           | Limits |     |      | Unit    |
|---------------|---------------------------------|---------------------------|--------|-----|------|---------|
|               |                                 |                           | Min    | Typ | Max  |         |
| $V_{(BR)GDO}$ | Gate to drain breakdown voltage | $I_G=-10\mu A$            | -3     | —   | —    | V       |
| $I_{GSS}$     | Gate to source leakage current  | $V_{GS}=-2V, V_{DS}=0V$   | —      | —   | 50   | $\mu A$ |
| $I_{DSS}$     | Saturated drain current         | $V_{GS}=0V, V_{DS}=2V$    | 15     | —   | 60   | mA      |
| $V_{GS(off)}$ | Gate to source cut-off voltage  | $V_{DS}=2V, I_D=500\mu A$ | -0.1   | —   | -1.5 | V       |
| gm            | Transconductance                | $V_{DS}=2V, I_D=10mA$     | —      | 55  | —    | mS      |
| GS            | Associated gain                 | $V_{DS}=2V, I_D=10mA$     | 11.0   | —   | —    | dB      |
| NFmin.        | Minimum noise figure            | $f=12GHz$                 | —      | —   | 1.00 | dB      |

PLASTIC MOLD PACKAGED LOW NOISE InGaAs HEMT

TYPICAL CHARACTERISTICS (Ta=25°C)



PLASTIC MOLD PACKAGED LOW NOISE InGaAs HEMT

**S PARAMETERS** (Ta=25°C, Vds=2V, Id=10mA)

| Freq.<br>(GHz) | S11   |        | S21   |       | S12   |       | S22   |        |
|----------------|-------|--------|-------|-------|-------|-------|-------|--------|
|                | Mag.  | Angle  | Mag.  | Angle | Mag.  | Angle | Mag.  | Angle  |
| 1              | 0.990 | -16.5  | 5.491 | 162.9 | 0.022 | 64.0  | 0.655 | -13.6  |
| 2              | 0.952 | -32.9  | 5.292 | 147.0 | 0.040 | 66.1  | 0.630 | -26.0  |
| 3              | 0.912 | -48.0  | 5.146 | 133.9 | 0.057 | 59.0  | 0.596 | -37.2  |
| 4              | 0.858 | -63.8  | 4.963 | 119.4 | 0.073 | 47.0  | 0.546 | -49.8  |
| 5              | 0.798 | -81.0  | 4.777 | 104.3 | 0.084 | 36.9  | 0.493 | -64.5  |
| 6              | 0.731 | -98.1  | 4.497 | 89.9  | 0.095 | 27.8  | 0.444 | -79.4  |
| 7              | 0.681 | -115.1 | 4.217 | 75.9  | 0.099 | 19.2  | 0.397 | -94.6  |
| 8              | 0.645 | -128.8 | 3.951 | 64.8  | 0.101 | 13.4  | 0.364 | -107.2 |
| 9              | 0.615 | -143.3 | 3.683 | 52.8  | 0.102 | 7.2   | 0.344 | -121.6 |
| 10             | 0.591 | -157.5 | 3.450 | 41.1  | 0.102 | 1.4   | 0.335 | -136.7 |
| 11             | 0.573 | -171.9 | 3.225 | 29.5  | 0.099 | -4.0  | 0.338 | -152.7 |
| 12             | 0.564 | 174.9  | 3.027 | 18.5  | 0.098 | -9.8  | 0.341 | -166.5 |
| 13             | 0.570 | 163.1  | 2.833 | 8.3   | 0.096 | -12.9 | 0.356 | -178.1 |
| 14             | 0.575 | 155.1  | 2.666 | -0.7  | 0.095 | -14.1 | 0.375 | 175.1  |
| 15             | 0.578 | 146.3  | 2.529 | -9.9  | 0.092 | -16.6 | 0.395 | 166.3  |
| 16             | 0.580 | 137.0  | 2.410 | -20.3 | 0.094 | -20.2 | 0.432 | 158.1  |
| 17             | 0.585 | 127.2  | 2.310 | -30.2 | 0.091 | -25.1 | 0.454 | 149.5  |
| 18             | 0.593 | 118.1  | 2.193 | -40.3 | 0.093 | -31.4 | 0.476 | 143.2  |

**NOISE PARAMETERS** (Ta=25°C, Vds=2V, Id=10mA)

| Freq.<br>(GHz) | $\Gamma_{opt}$ |             | Rn<br>(W) | NFmin.<br>(dB) | Gs<br>(dB) |
|----------------|----------------|-------------|-----------|----------------|------------|
|                | Magn.          | Angle(deg.) |           |                |            |
| 12             | 0.32           | 163         | 2.52      | 0.65           | 12.5       |