MGF4714CP

PLASTIC MOLD PACKAGED LOW NOISE InGaAs HEMT

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

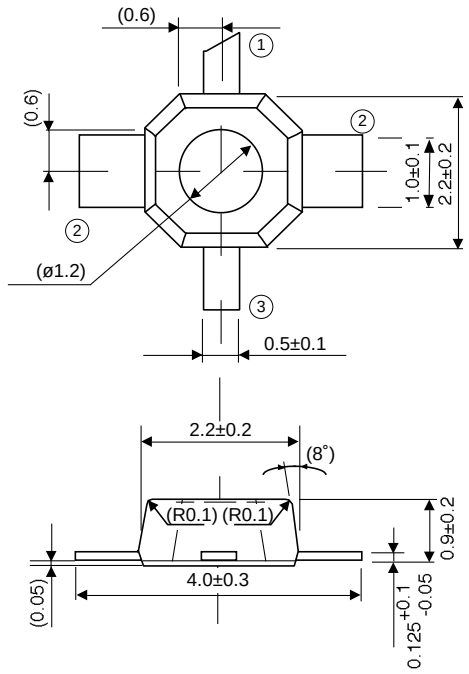
• GG

RECOMMENDED BIAS CONDITIONS

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

OUTLINE DRAWING

Unit:millimeters



GD-22

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

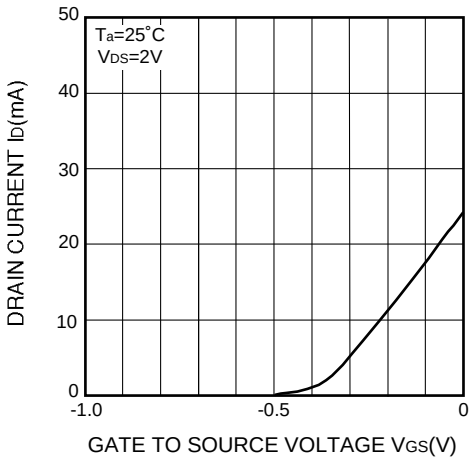
Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-4	V
V_{GSO}	Gate to source voltage	-4	V
I_D	Drain current	60	mA
P_T	Total power dissipation	50	mW
T_{ch}	Channel temperature	125	°C
T_{stg}	Storage temperature	-65 to +125	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

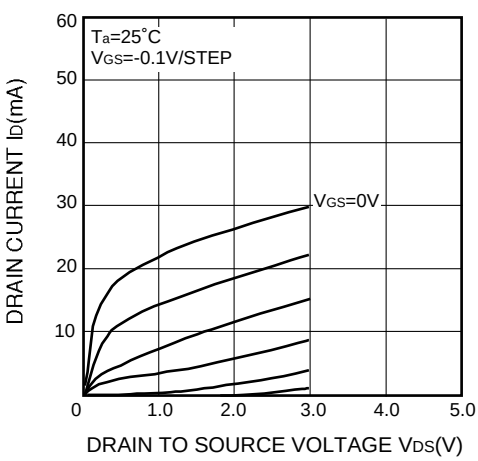
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)GDO}$	Gate to drain breakdown voltage	I_G=-10μA	-3	–	–	V
I_{GSS}	Gate to source leakage current	V_{GS}=-2V,V_{DS}=0V	–	–	50	μA
I_{DSS}	Saturated drain current	V_{GS}=0V,V_{DS}=2V	15	–	60	mA
$V_{GS(off)}$	Gate to source cut-off voltage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

TYPICAL CHARACTERISTICS (Ta=25˚C)

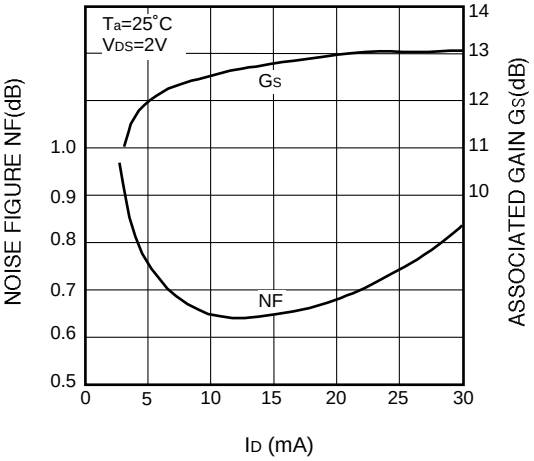
ID vs. VGS



ID vs. VDS



NF & Gs vs. ID
(f=12GHz)



PLASTIC MOLD PACKAGED LOW NOISE InGaAs HEMT

S PARAMETERS (Ta=25˚C,V_{DS}=2V,I_D=10mA)

Freq. (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,V_{DS}=2V,I_D=10mA)

Freq. (GHz)	Γopt		Rn (Ω)	NFmin. (dB)	Gs (dB)
	Magn.	Angle(deg.)			
12	0.32	163	2.52	0.65	12.5