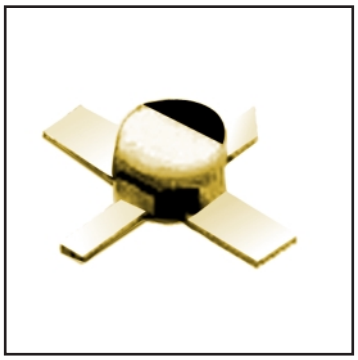
FHC40LG

Super Low Noise HEMT

FEATURES

- Low Noise Figure: 0.3dB (Typ.)@f=4GHz
- High Associated Gain: 15.5dB (Typ.)@f=4GHz
- Lg ≤ 0.15µm, Wg = 280µm
- Gold Gate Metallization for High Reliability
- Cost Effective Ceramic Microstrip (SMT) Package
- Tape and Reel Available



DESCRIPTION

The FH40LG is a Super High Electron Mobility Transistor (SuperHEMT™) intended for general purpose, ultra-low noise and high gain amplifiers in the 2-12GHz frequency range. This device is packaged in a cost effective, low parasitic, hermetically sealed metal-ceramic package for high volume telecommunication, DBS, TVRO, VSAT or other low noise applications.

Eudyna stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATING (Ambient Temperature Ta=25°C)

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V_{DS}		3.5	V
Gate-Source Voltage	V_{GS}		-3.0	V
Total Power Dissipation	P_{tot}	Note	290	mW
Storage Temperature	T_{stg}		-65 to +175	°C
Channel Temperature	T_{ch}		175	°C

Note: Mounted on Al_2O_3 board (30 x 30 x 0.65mm)

Eudyna recommends the following conditions for the reliable operation of GaAs FETs:

1. The drain-source operating voltage (V_{DS}) should not exceed 2 volts.
2. The forward and reverse gate currents should not exceed 0.2 and -0.075 mA respectively with gate resistance of 4000Ω.
3. The operating channel temperature (T_{ch}) should not exceed 80°C.

ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

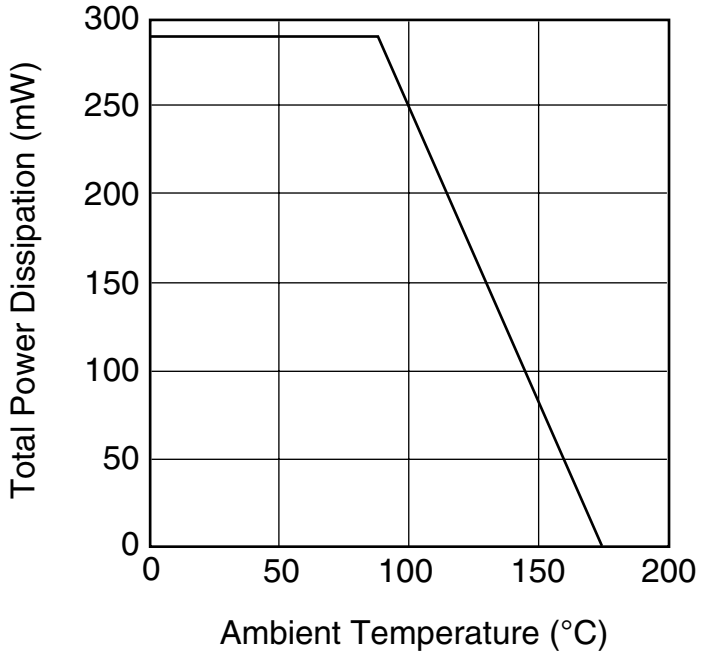
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	V_{DS} = 2V, V_{GS} = 0V	10	40	85	mA
Transconductance	g_m	V_{DS} = 2V, I_{DS} =10mA	45	65	-	mS
Pinch-off Voltage	V_p	V_{DS} = 2V, I_{DS} =1mA	-0.1	-1.0	-2.0	V
Gate Source Breakdown Voltage	V_{GSO}	I_{GS} = -10µA	-3.0	-	-	V
Noise Figure	NF	V_{DS} = 2V, I_{DS} = 10mA, f = 4GHz	-	0.30	0.40	dB
Associated Gain	G_{as}		14.0	15.5	-	dB
Thermal Resistance	R_{th}	Channel to Case	-	220	300	°C/W

AVAILABLE CASE STYLES: LG

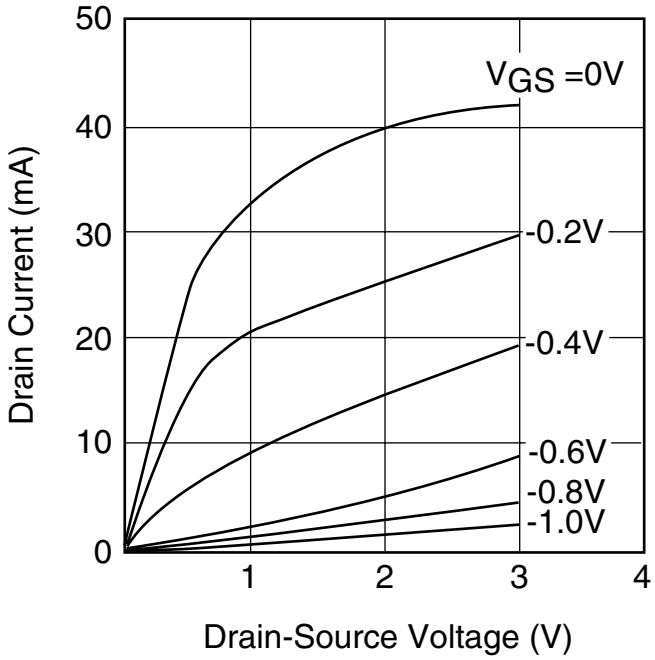
Note: RF parameters for LG devices are measured on a sample basis as follows:

Lot qty.			Sample qty.	Accept/Reject
1200	or	less	125	(0,1)
1201	to	3200	200	(0,1)
3201	to	10000	315	(1,2)
10001	or	over	500	(1,2)

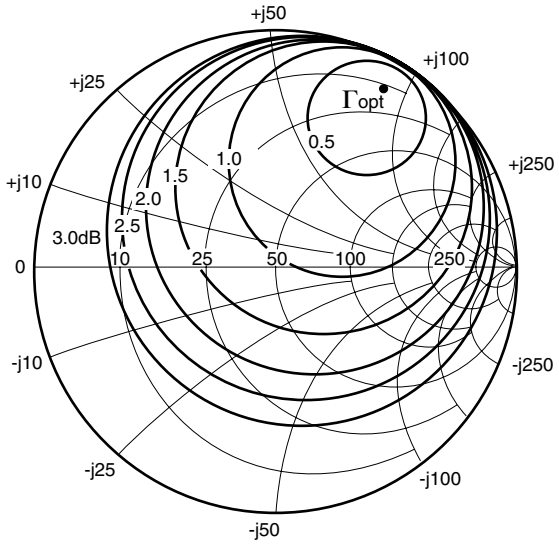
POWER DERATING CURVE



DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



TYPICAL NOISE FIGURE CIRCLE



f=4GHz
V_{DS}=2V
I_{DS}=10mA

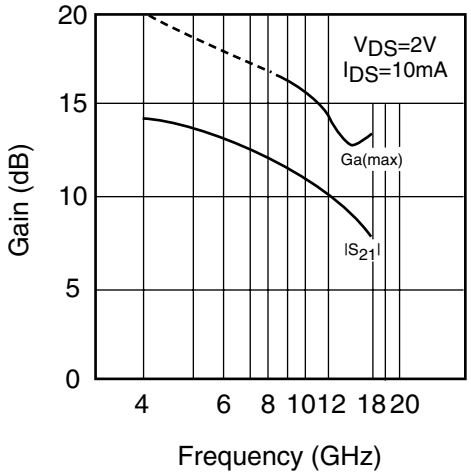
Γopt=0.87∠57°
Rn/50=0.18
NFmin=0.30dB

NOISE PARAMETERS

V_{DS}=2V, I_{DS}=10MA

Freq. (GHz)	Γopt (MAG)	Γopt (ANG)	NFmin (dB)	Rn/50
2	0.86	31.0	0.28	0.19
4	0.87	57.0	0.30	0.18
6	0.86	83.0	0.34	0.13
8	0.81	108.0	0.39	0.09
10	0.74	132.0	0.47	0.05
12	0.63	156.0	0.55	0.03
14	0.49	179.0	0.67	0.04
16	0.33	-158.0	0.81	0.07
18	0.13	-136.0	1.00	0.11

Ga(max) AND $|S_{21}|$ vs. FREQUENCY



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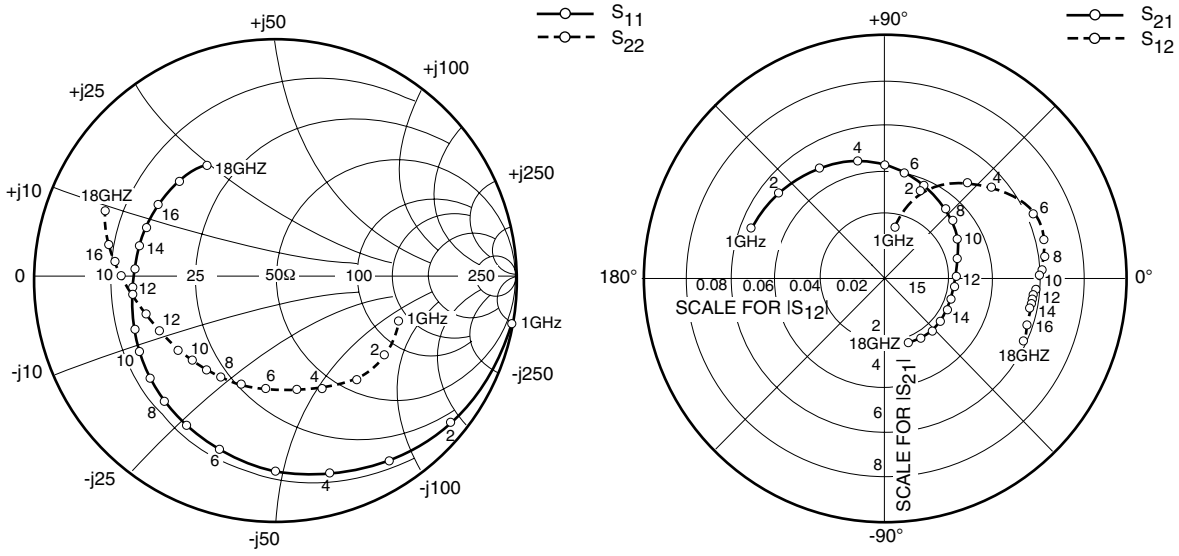


S-PARAMETERS

V_{DS} = 2V, I_{DS} = 10mA

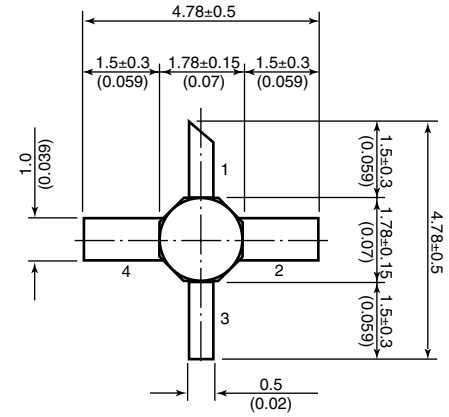
FREQUENCY	S11		S21		S12		S22	
(GHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.980	-20.6	5.620	159.7	0.017	75.8	0.541	-17.8
2.0	0.942	-40.7	5.401	140.7	0.033	61.6	0.523	-35.0
3.0	0.887	-59.4	5.051	122.6	0.045	49.5	0.501	-51.2
4.0	0.838	-76.9	4.685	105.8	0.054	38.5	0.480	-66.6
5.0	0.786	-93.2	4.334	89.9	0.060	28.5	0.461	-81.3
6.0	0.742	-108.3	3.984	74.9	0.063	20.2	0.448	-95.4
7.0	0.705	-122.1	3.654	60.6	0.063	12.9	0.449	-108.9
8.0	0.672	-133.7	3.340	47.6	0.063	7.2	0.463	-120.3
9.0	0.651	-143.9	3.110	35.8	0.062	3.2	0.481	-130.1
10.0	0.633	-153.9	2.954	23.7	0.061	-0.2	0.498	-138.8
11.0	0.611	-164.1	2.786	11.8	0.059	-2.9	0.513	-147.6
12.0	0.595	-174.8	2.641	0.0	0.058	-5.1	0.535	-157.0
13.0	0.588	176.0	2.518	-11.6	0.057	-6.7	0.562	-165.3
14.0	0.579	167.6	2.412	-23.0	0.057	-7.9	0.597	-172.8
15.0	0.569	159.3	2.342	-34.6	0.057	-10.1	0.634	-179.7
16.0	0.555	150.5	2.290	-46.6	0.058	-12.9	0.667	173.6
17.0	0.536	140.3	2.272	-59.4	0.059	-17.0	0.697	166.4
18.0	0.525	129.9	2.233	-72.6	0.060	-22.4	0.727	158.8

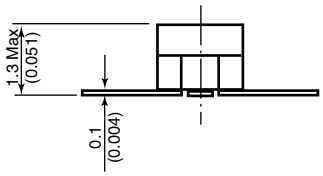
Download S-Parameters, click here

Eudyna

Case Style "LG"

Metal-Ceramic Hermetic Package





1. **Gate**
2. **Source**
3. **Drain**
4. **Source**

Unit: mm(inches)