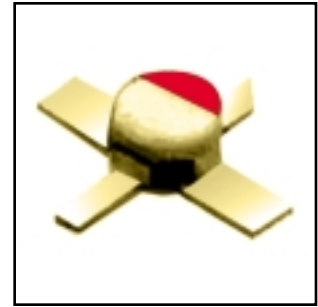


FHX04LG, 05LG, 06LG

Super Low Noise HEMT

FEATURES

- Low Noise Figure: 0.75dB (Typ.)@f=12GHz (FHX04)
- High Associated Gain: 10.5dB (Typ.)@f=12GHz
- $L_g \leq 0.25\mu\text{m}$, $W_g = 200\mu\text{m}$
- Gold Gate Metallization for High Reliability
- Cost Effective Ceramic Microstrip (SMT) Package
- Tape and Reel Packaging Available



DESCRIPTION

The FHX04LG, FHX05LG, FHX06LG is a High Electron Mobility Transistor(HEMT) intended for general purpose, low noise and high gain amplifiers in the 2-18GHz frequency range. The devices are packaged in cost effective, low parasitic, hermetically sealed metal-ceramic package for high volume telecommunication, TVRO, VSAT or other low noise applications.

Fujitsu's stringent Quality Assurance Program assures the highest reliability and consistent performance.

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

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	3.5	V
Gate-Source Voltage	V_{GS}	-3.0	V
Total Power Dissipation	P_t^*	180	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)

Fujitsu 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 -0.05 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}	$V_{DS} = 2V, V_{GS} = 0V$	15	30	60	mA
Transconductance	g_m	$V_{DS} = 2V, I_{DS} = 10mA$	35	45	-	mS
Pinch-off Voltage	V_p	$V_{DS} = 2V, I_{DS} = 1mA$	-0.2	-0.7	-1.5	V
Gate Source Breakdown Voltage	V_{GSO}	$I_{GS} = -10\mu A$	-3.0	-	-	V
Noise Figure	FHX04LG	NF	-	0.75	0.85	dB
Associated Gain						
Noise Figure	FHX05LG	NF	-	0.9	1.1	dB
Associated Gain						
Noise Figure	FHX06LG	NF	-	1.1	1.35	dB
Associated Gain						
Thermal Resistance	R_{th}	Channel to Case	-	300	400	°C/W

AVAILABLE CASE STYLES: LG

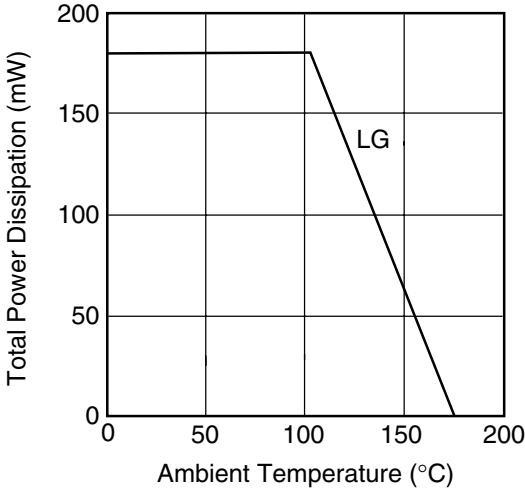
Note: RF parameters are measured on a sample basis as follows:

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)

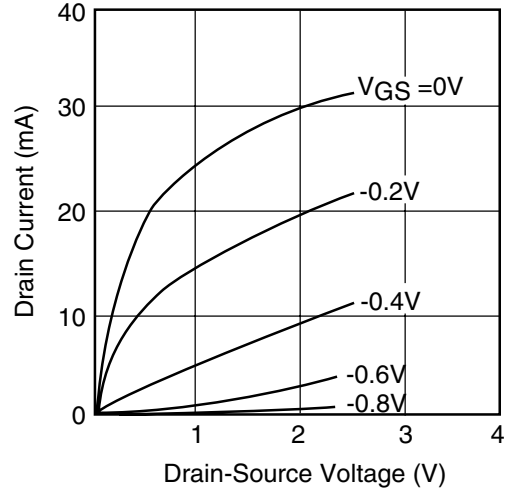
FHX04LG, 05LG, 06LG

Super Low Noise HEMT

POWER DERATING CURVE

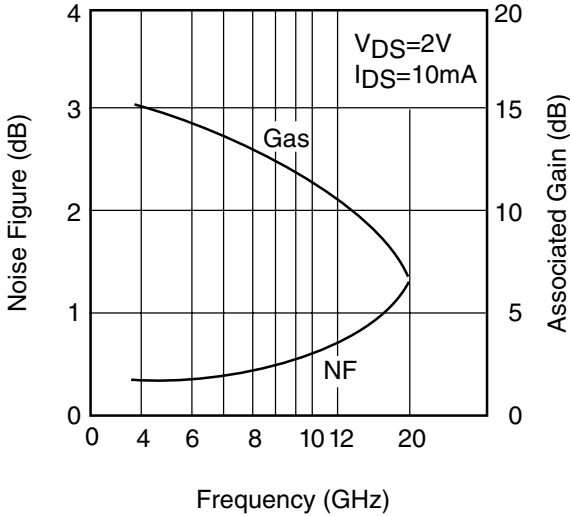


DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



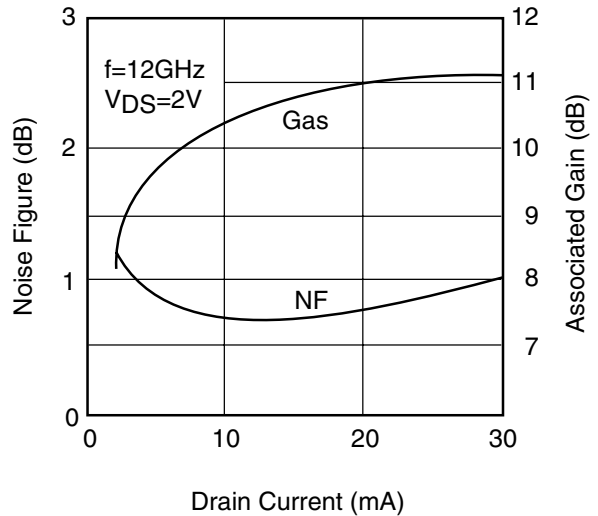
NF & Gas vs. FREQUENCY

FHX04LG



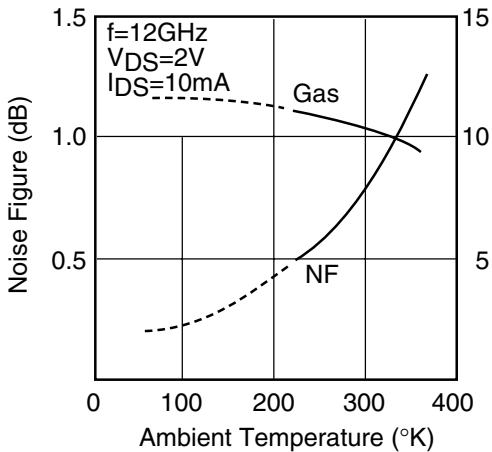
NF & Gas vs. I_{DS}

FHX04LG

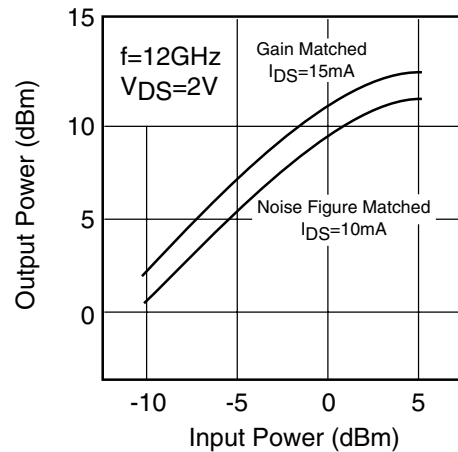


NF & Gas vs. TEMPERATURE

FHX04LG



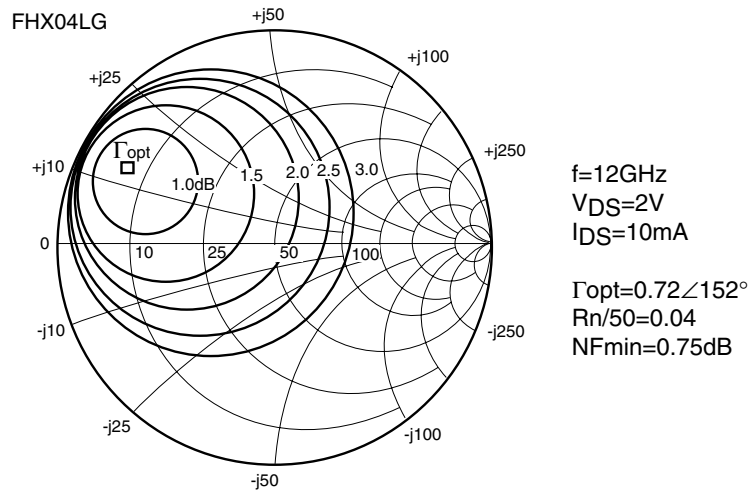
OUTPUT POWER vs. INPUT POWER



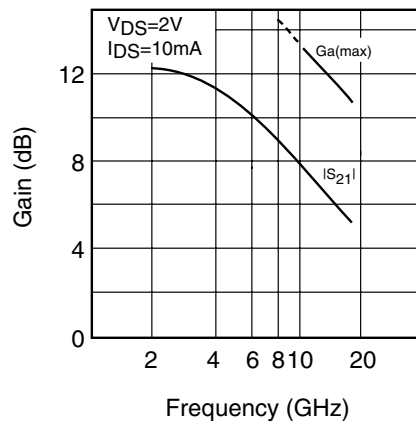
FHX04LG, 05LG, 06LG

Super Low Noise HEMT

TYPICAL NOISE FIGURE CIRCLE



Ga(max) AND $|S_{21}|$ vs. FREQUENCY FHX04LG



NOISE PARAMETERS

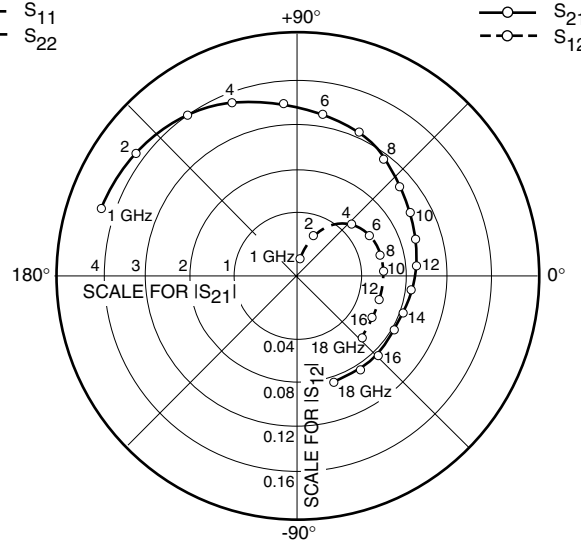
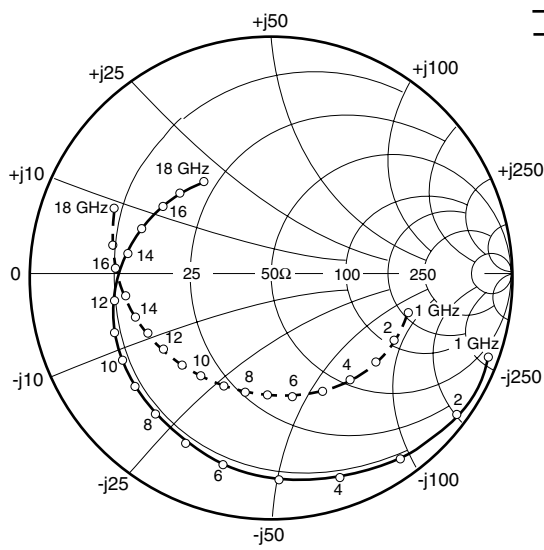
FHX04LG

$V_{DS}=2\text{V}, I_{DS}=10\text{mA}$

Freq. (GHz)	Γ_{opt}		NFmin (dB)	Rn/50
	(MAG)	(ANG)		
2.0	0.99	29.0	0.33	0.43
4.0	0.97	53.0	0.35	0.30
6.0	0.93	77.0	0.45	0.20
8.0	0.87	101.0	0.55	0.12
10.0	0.80	127.0	0.66	0.07
12.0	0.72	152.0	0.75	0.04
14.0	0.63	178.0	0.88	0.03
16.0	0.53	-156.0	1.05	0.05
18.0	0.42	-129.0	1.30	0.09

FHX04LG, 05LG, 06LG

Super Low Noise HEMT



S-PARAMETERS

FHX04LG

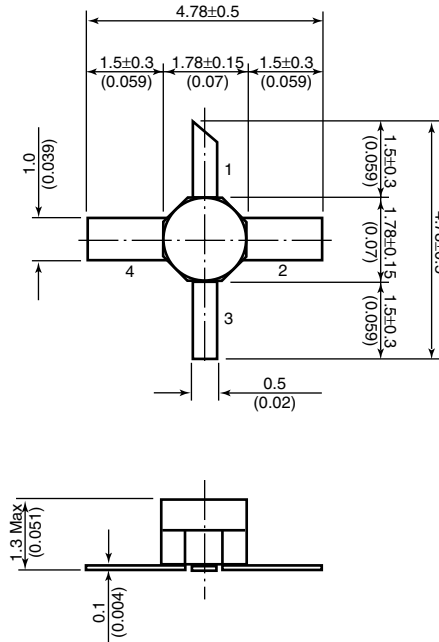
$V_{DS} = 2V, I_{DS} = 10mA$

FREQUENCY (GHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.0	0.990	-19.3	4.232	162.1	0.016	75.1	0.576	-14.3
2.0	0.965	-37.5	4.115	144.1	0.030	64.8	0.563	-28.1
3.0	0.928	-55.2	3.923	127.4	0.042	53.3	0.546	-41.2
4.0	0.886	-72.1	3.737	110.9	0.052	41.9	0.525	-54.4
5.0	0.844	-88.3	3.518	95.6	0.059	32.2	0.505	-67.6
6.0	0.804	-103.4	3.302	80.8	0.063	23.9	0.489	-80.7
7.0	0.771	-117.4	3.090	66.4	0.066	16.6	0.484	-93.0
8.0	0.741	-129.6	2.876	53.1	0.065	11.5	0.487	-104.5
9.0	0.717	-140.3	2.703	40.7	0.066	4.9	0.497	-115.1
10.0	0.695	-150.8	2.592	28.6	0.065	-0.3	0.503	-124.9
11.0	0.675	-161.2	2.476	16.4	0.064	-3.0	0.517	-135.7
12.0	0.650	-171.5	2.374	4.2	0.064	-6.4	0.534	-145.8
13.0	0.630	178.9	2.277	-7.8	0.063	-9.3	0.552	-156.1
14.0	0.607	170.2	2.176	-19.1	0.064	-12.5	0.585	-164.6
15.0	0.585	161.8	2.144	-30.7	0.065	-16.4	0.617	-171.7
16.0	0.557	151.8	2.151	-43.2	0.066	-22.2	0.642	177.8
17.0	0.522	140.9	2.142	-56.9	0.067	-29.4	0.673	169.5
18.0	0.480	128.4	2.136	-71.2	0.068	-39.2	0.694	159.7

FHX04LG, 05LG, 06LG

Super Low Noise HEMT

Case Style "LG" Metal-Ceramic Hermetic Package



For further information please contact:

FUJITSU COMPOUND SEMICONDUCTOR, INC.

2355 Zanker Rd.

San Jose, CA 95131-1138, U.S.A.

Phone: (408) 232-9500

FAX: (408) 428-9111

www.fcsi.fujitsu.com

FUJITSU MICROELECTRONICS EUROPE, GmbH

Quantum Devices Division

Network House

Norreys Drive

Maidenhead, Berkshire SL6 4FJ

Phone:+44 (0)1628 504800

FAX:+44 (0)1628 504888

CAUTION

Fujitsu Compound Semiconductor Products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put these products into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

Fujitsu Limited reserves the right to change products and specifications without notice. The information does not convey any license under rights of Fujitsu Limited or others.

© 1998 FUJITSU COMPOUND SEMICONDUCTOR, INC.

Printed in U.S.A. FCSI0598M200

FUJITSU



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.