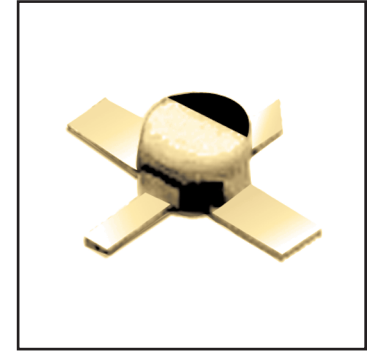


FHX76LP

Super Low Noise HEMT

FEATURES

- Low Noise Figure: NF=0.40dB (Typ.)@f=12GHz
- High Associated Gain: Gas=13.5dB (Typ.)@f=12GHz
- High Reliability
- Small Size SMT Package
- Tape and Reel Packaging Available



DESCRIPTION

The FHX76LP is a low noise SuperHEMT™ product designed for DBS receiver applications. This device uses a small ceramic package.

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

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

Parameter	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V _{DS}		3.5	V
Gate-Source Voltage	V _{GS}		-3.0	V
Total Power Dissipation	P _t	Note	180	mW
Storage Temperature	T _{STG}		-65 to 150	°C
Channel Temperature	T _{CH}		150	°C

Note: Mounted on Al₂O₃ board (30 x 30 x 0.65mm)

FHX76LP is designed for a low noise front-end amplifier.

Eudyna Devices Inc. does not recommend using this device at large signal operation due to the reliability concern.

1. The drain-source operating voltage should not exceed 2V and drain current should be 10mA.
2. The forward and reverse gate currents should not exceed 30uA and -30 uA respectively.
3. If usage conditions other than the aforementioned are expected, please contact to sales representative.

ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

Item	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I _{DSS}	V _{DS} = 2V, V _{GS} =0V	10	30	60	mA
Transconductance	gm	V _{DS} = 2V, I _{DS} =10mA	35	50	-	mS
Pinch-Off Voltage	V _p	V _{DS} = 2V, I _{DS} =1mA	-0.1	-0.7	-1.5	V
Gate-Source Breakdown Voltage	V _{GSO}	I _{GS} = -10μA	-3.0	-	-	V
Noise Figure	NF	V _{DS} = 2V, I _{DS} = 10mA,	-	0.40	0.50	dB
Associated Gain	Gas	f=12GHz	12.0	13.5	-	dB
Thermal Resistance	R _{th}	Channel to Case	-	300	400	°C/W

CASE STYLES: LP

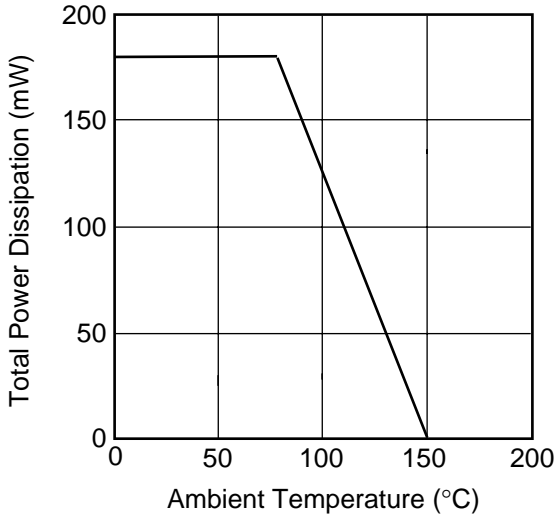
Note: RF parameters for LP devices are measured on a sample basis as follows:

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)

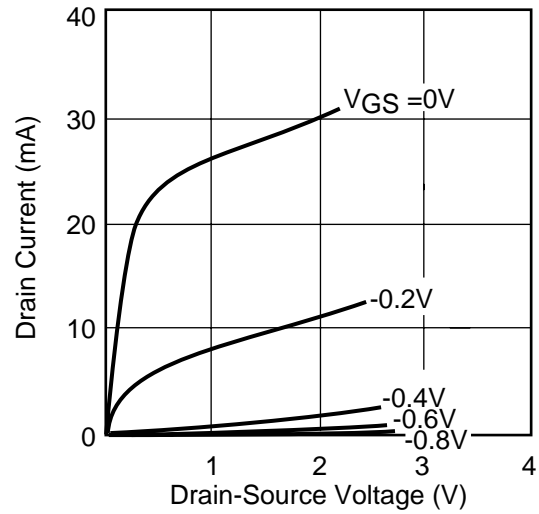
FHX76LP

Super Low Noise HEMT

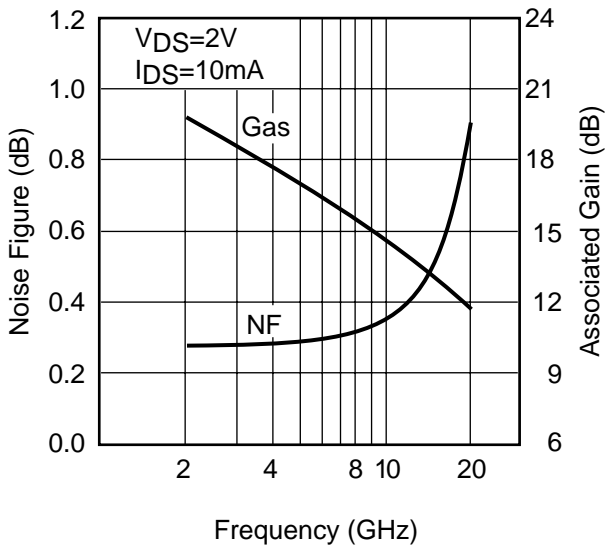
POWER DERATING CURVE



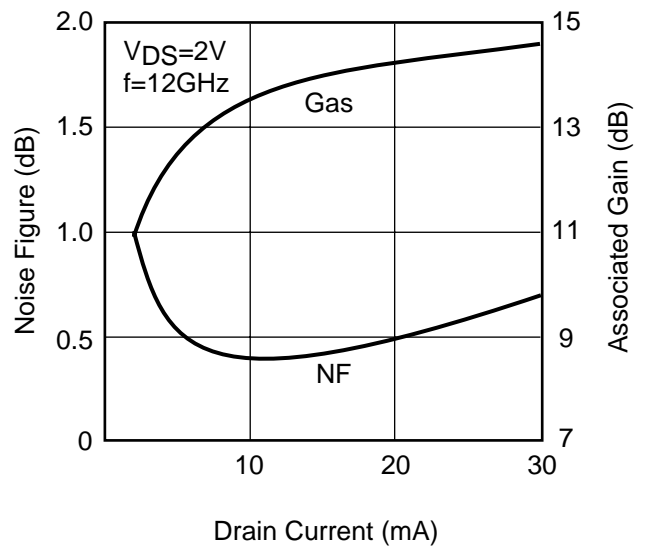
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



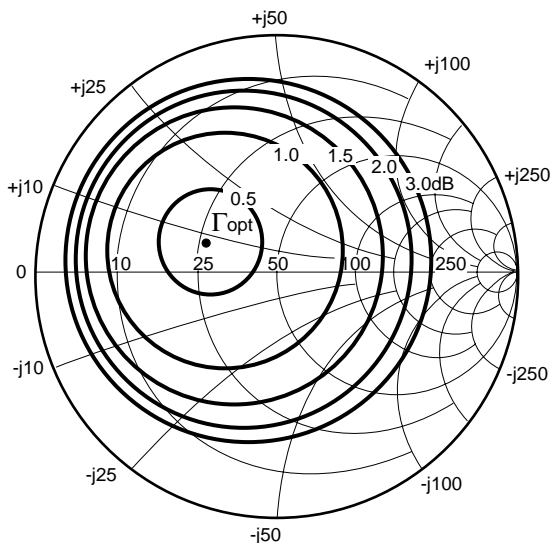
NF & Gas vs. FREQUENCY



NF & Gas vs. IDS



TYPICAL NOISE FIGURE CIRCLE



f=12GHz
 $V_{DS}=2V$
 $I_{DS}=10mA$

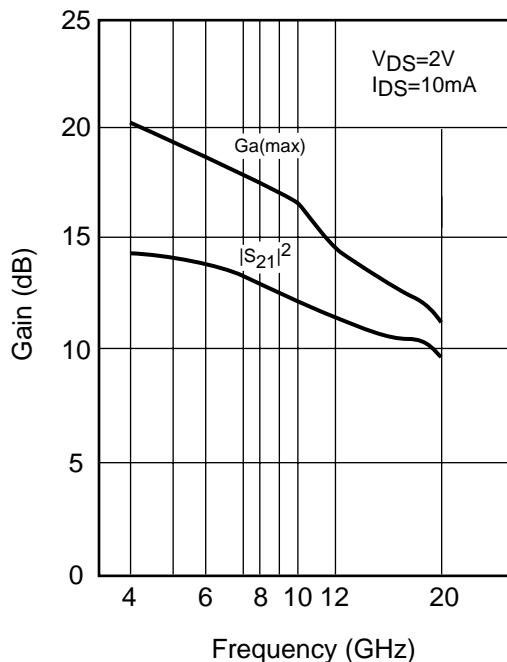
$\Gamma_{opt}=0.32 \angle 153.8^\circ$
 $R_n/50=0.06$
 $NF_{min}=0.40dB$

NOISE PARAMETERS

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

Freq. (GHz)	Γ_{opt}		NFmin (dB)	Rn/50
	(MAG)	(ANG)		
2	0.79	12.5	0.28	.24
4	0.62	30.0	0.29	.20
6	0.50	54.1	0.30	.16
8	0.41	83.6	0.32	.12
10	0.35	117.3	0.35	.08
12	0.32	153.8	0.40	.06
14	0.30	-168.0	0.48	.06
16	0.29	-129.5	0.60	.09
18	0.29	-91.8	0.72	.14
20	0.29	-56.3	0.91	.19

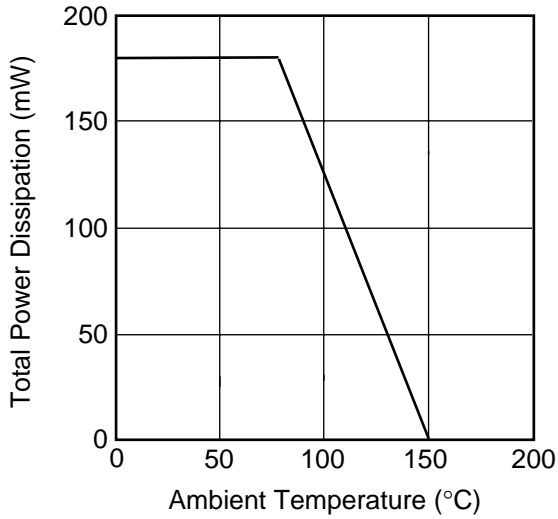
Ga(max) AND $|S_{21}|$ vs. FREQUENCY



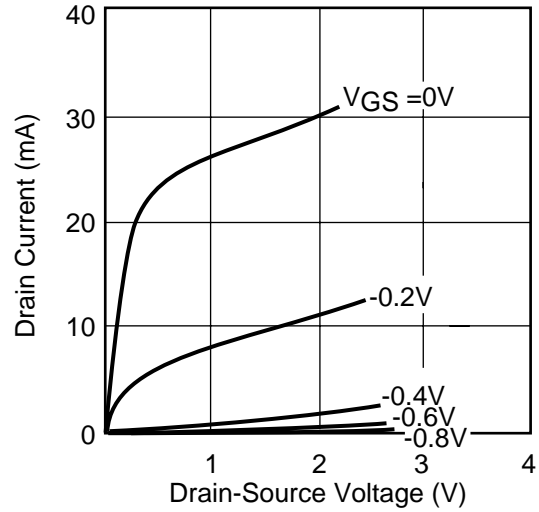
FHX76LP

Super Low Noise HEMT

POWER DERATING CURVE



DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



S-PARAMETERS

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

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1000	.987	-14.8	5.535	164.2	.014	80.2	.585	-11.4
2000	.965	-29.4	5.463	148.8	.027	70.2	.567	-22.9
3000	.925	-44.6	5.334	133.2	.041	57.7	.538	-34.7
4000	.878	-58.3	5.154	118.8	.049	50.0	.511	-45.2
5000	.828	-72.9	5.019	104.3	.059	40.6	.480	-56.4
6000	.776	-87.8	4.825	89.8	.067	32.4	.446	-68.4
7000	.719	-102.8	4.606	75.6	.075	23.2	.413	-80.6
8000	.669	-116.6	4.354	61.9	.079	15.2	.394	-92.6
9000	.631	-129.4	4.130	49.5	.083	6.3	.374	-102.4
10000	.590	-141.7	3.982	37.0	.086	.2	.365	-112.5
11000	.548	-155.3	3.849	24.7	.088	-7.6	.335	-121.9
12000	.507	-169.6	3.689	12.4	.091	-14.2	.323	-134.1
13000	.482	177.0	3.545	-.2	.095	-20.8	.313	-145.0
14000	.459	164.7	3.425	-11.9	.096	-28.7	.315	-155.9
15000	.439	152.3	3.330	-24.4	.098	-36.4	.324	-165.4
16000	.419	138.7	3.264	-37.1	.102	-44.1	.322	-174.3
17000	.404	123.9	3.238	-50.3	.103	-54.6	.321	175.4
18000	.383	107.3	3.176	-63.5	.108	-63.4	.316	165.3
19000	.377	93.2	3.101	-78.0	.105	-74.5	.320	153.2
20000	.348	76.5	3.028	-92.3	.110	-87.6	.301	146.1

NOTE:* The data includes bonding wires.

n: number of wires

Gate n=1 (0.1mm length, 25µm Dia Au wire)

Drain n=1 (0.1mm length, 25µm Dia Au wire)

Source n=4 (0.2mm length, 25µm Dia Au wire)

