

FMM5701X

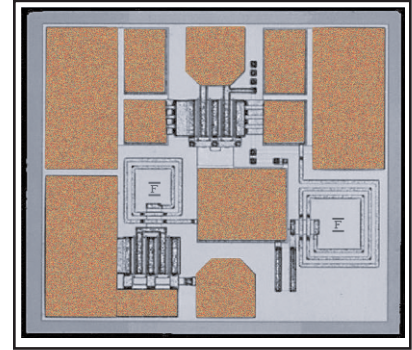
24GHz Low Noise Amplifier MMIC

FEATURES

- Low Noise Figure: NF=1.4dB (Typ.) @ f=24GHz
- High Associated Gain: G_{AS} =13.5dB (Typ.) @ f=24GHz
- Wide Frequency Band: 18-28GHz

DESCRIPTION

The FMM5701X is a LNA MMIC designed for applications in the 18-28GHz frequency range. This product is well suited for satellite communications and radio link applications where low noise and high gain is required.



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

ABSOLUTE MAXIMUM RATING (Ambient Temperature $T_a=25^\circ\text{C}$)

Item	Symbol	Condition	Rating	Unit
Drain Voltage	V_{DD}		7.0	V
Gate Voltage	V_{GG}		-3.0	V
Storage Temperature	T_{stg}		-65 to +175	$^\circ\text{C}$
Channel Temperature	T_{ch}		+175	$^\circ\text{C}$

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

1. The drain-source operating voltage (V_{DD}) should not exceed 5 volts.
2. The drain-source operating current (I_D) should not exceed 12mA.
3. This product should be hermetically packaged.

ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_a=25^\circ\text{C}$)

Item	Symbol	Conditions (2)	Limits			Unit
			Min.	Typ.	Max.	
Noise Figure	NF	$V_{DD} = 5V$ $I_D = 12mA$ f=24GHz	-	1.5	1.8	dB
Associated Gain	G_{AS}	f=24GHz	12.0	13.5	-	dB

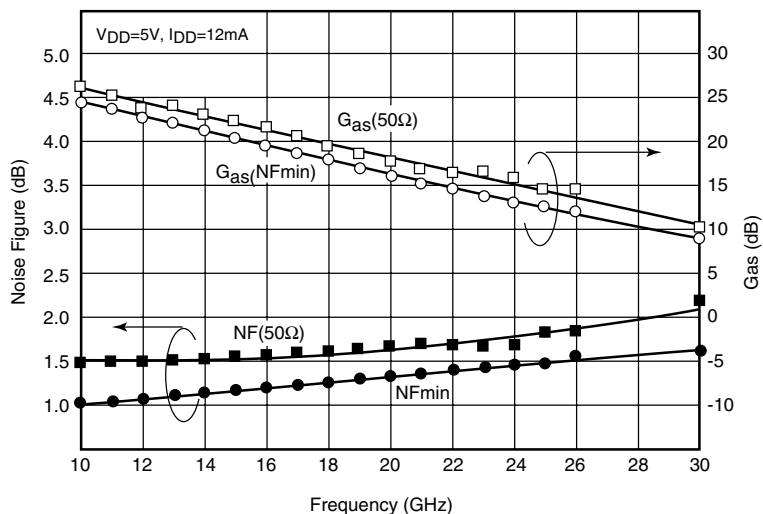
Note 1: RF parameters sample size 10pcs. criteria (accept/reject) = (2/3)

Note 2: Tuned for Γ_{opt}

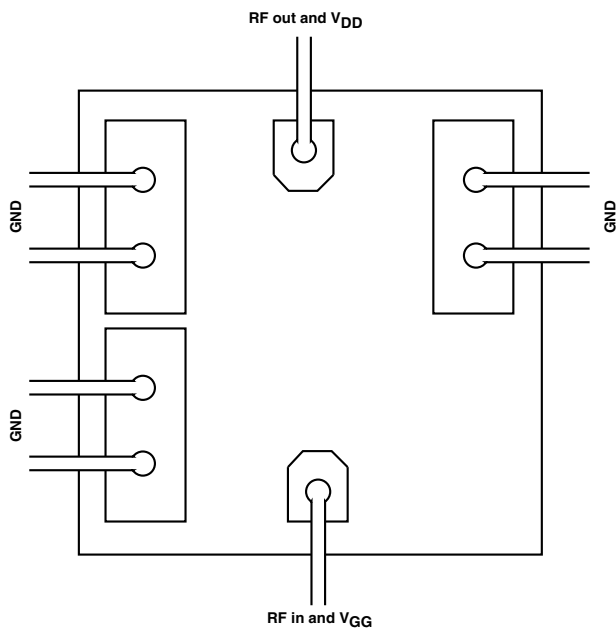
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NOISE FIGURE & G_{as} vs. FREQUENCY



BONDING LAYOUT



NOISE PARAMETERS

$V_{DD}=5V$, $I_{DD}=12mA$

Freq. (GHz)	Γ_{opt}		NFmin (dB)	Rn
	(MAG)	(ANG)		
2	0.793	13.4	0.78	0.47
4	0.670	26.9	0.84	0.39
6	0.582	38.5	0.90	0.34
8	0.526	54.4	0.97	0.27
10	0.492	69.1	1.03	0.23
12	0.475	84.7	1.09	0.19
14	0.468	101.6	1.16	0.14
16	0.464	120.1	1.22	0.10
18	0.458	140.4	1.28	0.07
20	0.441	162.9	1.35	0.05
22	0.408	-172.2	1.41	0.05
24	0.352	-144.5	1.47	0.07
26	0.266	-113.9	1.54	0.11
28	0.212	-88.5	1.60	0.16
30	0.202	-58.0	1.66	0.23

S-PARAMETERS

$V_{DD} = 5V, I_{DS} = 12mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
15000	.469	-131.8	8.289	130.9	.017	23.3	.350	-132.7
16000	.492	-137.9	7.642	115.7	.018	16.6	.330	-138.4
17000	.512	-145.8	6.987	101.5	.020	10.9	.311	-144.1
18000	.542	-153.9	6.487	87.3	.021	7.0	.296	-149.0
19000	.568	-162.7	5.950	73.6	.023	2.3	.287	-154.2
20000	.598	-172.5	5.456	60.1	.025	-3.6	.283	-160.2
21000	.615	178.2	5.027	47.5	.026	-7.5	.273	-165.6
22000	.640	168.3	4.634	34.5	.028	-10.9	.268	-170.8
23000	.663	158.5	4.258	22.0	.030	-15.1	.265	-176.5
24000	.683	148.6	3.919	9.9	.032	-17.9	.262	178.5
25000	.702	138.7	3.638	-2.2	.035	-21.1	.265	172.7
26000	.722	128.8	3.318	-14.3	.038	-27.0	.267	166.4
27000	.732	119.0	3.033	-25.1	.040	-28.3	.265	162.1
28000	.737	109.4	2.820	-35.8	.044	-31.7	.266	155.5
29000	.756	99.4	2.595	-47.7	.048	-37.4	.271	150.6
30000	.762	90.3	2.370	-57.4	.051	-40.3	.270	144.9

NOTE:* The data includes bonding wires.

n: number of wires RF IN n=1 (0.3mm length, 25 μ m Dia Au wire)
RF OUT n=1 (0.3mm length, 25 μ m Dia Au wire)
GND n=6 (0.3mm length, 25 μ m Dia Au wire)

