

CFB0103 Series

Low-Noise GaAs FETs

**Product Specifications**
December 1997

(1 of 2)

Low-Noise GaAs FETs**Features**

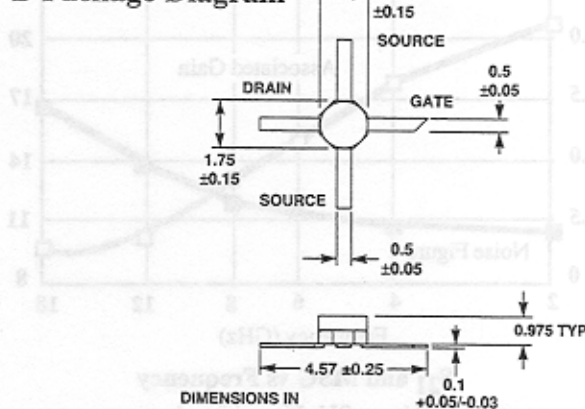
- ☐ High Gain
- ☐ Super Low-Noise
- ☐ Psuedomorphic HEMT
- ☐ 70 Mil Stripline Commercial Package

Applications

- ☐ Point-to-Point Radio Receivers
- ☐ Commercial Communications
- ☐ Industrial Applications

Description

The CFB0103-L series is a family of low-noise, high-gain FETs intended for point-to-point radio, commercial and industrial applications. Manufactured in Celeritek's proprietary, state-of-the-art PHEMT process and assembled in an industry standard, 70 mil stripline commercial package, this

B Package Diagram

cost-effective family of devices is ideally suited for commercial communications applications where reliability, performance and value are critical.

Specifications (TA = 25°C)

Parameter	Vds (V)	Bias Ids (mA)	Frequency (GHz)	Units	Grade	Performance Specifications	Min	Typ	Max
NF _{opt}	3.0	15.0	12.0	dB	L1	—	—	0.7	0.8
					L2	—	—	0.9	1.0
					L3	—	—	0.9	1.2
G _a	3.0	15.0	12.0	dB	L1	9.5	10.0	—	—
					L2	9.0	9.5	—	—
					L3	8.0	9.0	—	—
S ₂₁ ²	3.0	15.0	2.0	dB			13.9		
			10.0	dB			9.8		
			18.0	dB			7.0		
P _{1dB}	6.0	40.0	12.0	dBm			19.0		
g _m	Vds = 3.0V	Vgs = 0V		mS			90.0		
I _{dss}	Vds = 3.0V	Vgs = 0V		mA		30.0	60.0	120.0	
V _p	Vds = 3.0V	Ids = 1mA		Volts		-0.5	-1.3	-2.5	
BV _{gd}	Igd = 100 μA			Volts		-5.5	-8.0		
R _{th}				°C/W			250		

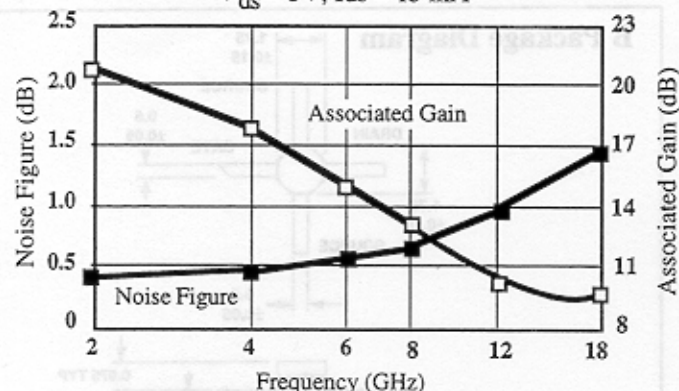
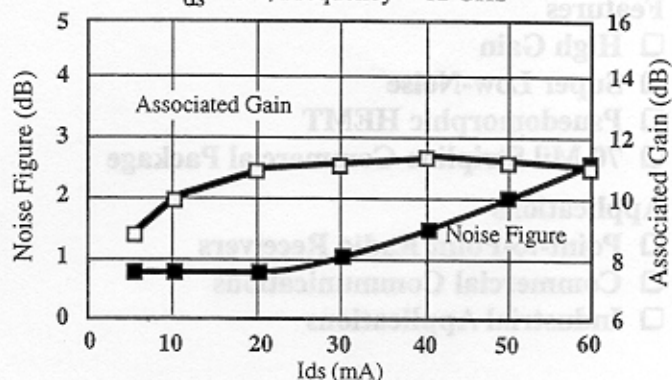
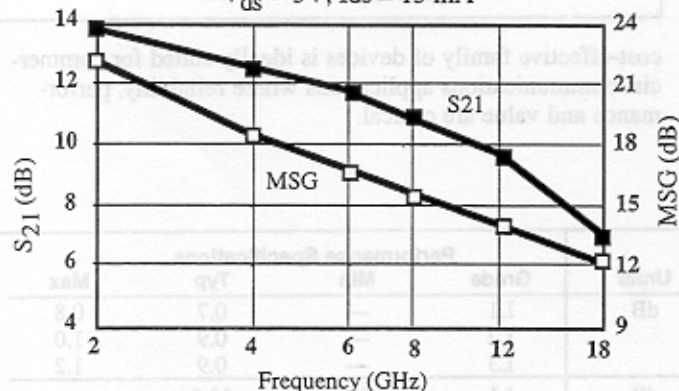
Absolute Maximum Ratings

Parameter	Symbol	Rating
Drain-Source Voltage	Vds	8V
Gate-Source Voltage	Vgs	-5V
Drain Current	Ids	Idss
Continuous Dissipation	Pt	800mW
RF Power In	Pin	+17 dBm
Channel Temperature	Tch	175°C
Storage Temperature	Tstg	-65°C to +175°C

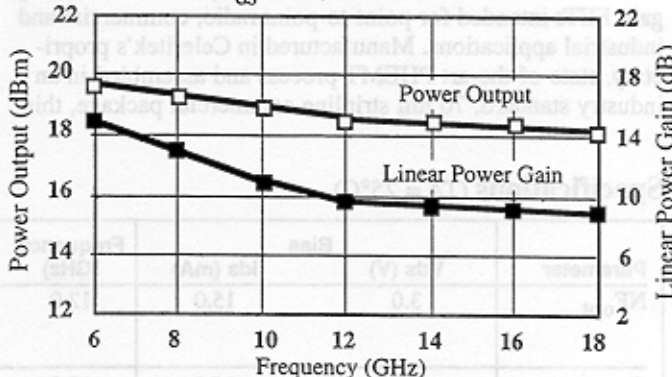
Typical Noise Parameters (Vds = 3V, Ids = 15 mA)

Freq (GHz)	NF _{opt}	G _a (dB)	Gamma Opt Mag	Ang	Rn/50
2.0	0.45	21.9	0.83	27	0.52
4.0	0.48	17.8	0.70	55	0.36
6.0	0.54	14.8	0.60	78	0.23
8.0	0.63	12.7	0.52	99	0.15
10.0	0.75	11.2	0.47	120	0.11
12.0	0.90	10.3	0.44	142	0.09
14.0	1.09	9.8	0.41	168	0.11
16.0	1.31	9.4	0.40	-160	0.15
18.0	1.56	9.2	0.39	-120	0.21

Typical Performance (TA = 25°C)

Noise Figure and Associated Gain vs Frequency
 $V_{ds} = 3V$, $I_{ds} = 15\text{ mA}$ Noise Figure and Associated Gain vs I_{ds}
 $V_{ds} = 3V$, Frequency = 12 GHz S_{21} and MSG vs Frequency $V_{ds} = 3V$, $I_{ds} = 15\text{ mA}$ 

Power Output and Linear Power Gain vs Frequency

 $V_{ds} = 6V$, $I_{ds} = 40\text{ mA}$ Typical Scattering Parameters (TA = 25°C, $V_{ds} = 3V$, $I_{ds} = 15\text{ mA}$)

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Frequency (GHz)	S_{11}		S_{21}		S_{12}		S_{22}		MSG
	(Mag)	(Ang)	(dB)	(Mag)	(dB)	(Mag)	(Ang)	(Mag)	(dB)
2.0	0.97	-27	13.9	4.95	-30.3	0.03	73	0.54	-19
4.0	0.86	-63	12.5	4.22	-24.6	0.06	51	0.52	-45
6.0	0.75	-90	11.3	3.67	-22.1	0.08	37	0.49	-64
8.0	0.60	-103	11.0	3.55	-20.1	0.10	23	0.40	-78
10.0	0.54	-165	9.8	3.09	-19.2	0.11	5	0.28	-116
12.0	0.49	170	8.9	2.79	-19.0	0.11	-2	0.32	-130
14.0	0.51	128	8.2	2.57	-18.2	0.12	-16	0.22	-157
16.0	0.58	110	7.3	2.32	-17.8	0.13	-26	0.29	157
18.0	0.58	85	7.0	2.24	-17.0	0.14	-40	0.34	144

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