

# Low Noise GaAs FETs

August 2006 - Rev 03-Aug-06

CFB0103 Series



CFB0103 Series

**Product Specifications**  
**December 1997**

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## Low-Noise GaAs FETs

**Features**

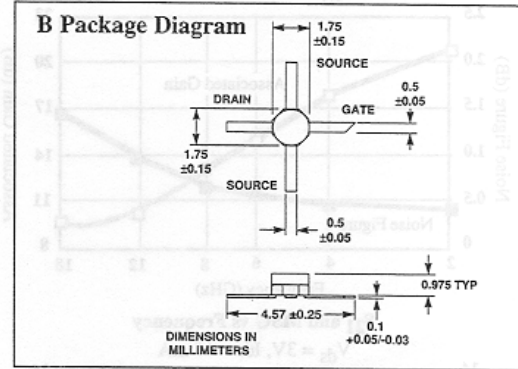
- High Gain
- Super Low-Noise
- Pseudomorphic HEMT
- 70 Mil Stripline Commercial Package

**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



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	Performance Specifications			
						Grade	Min	Typ	Max
NF <sub>opt</sub>	3.0	Bias	15.0	12.0	dB	L1	—	0.7	0.8
						L2	—	0.9	1.0
						L3	—	0.9	1.2
G <sub>a</sub>	3.0	Bias	15.0	12.0	dB	L1	9.5	10.0	—
						L2	9.0	9.5	—
						L3	8.0	9.0	—
S <sub>21</sub>   <sup>2</sup>	3.0	Bias	15.0	2.0	dB	13.9			
				10.0		9.8			
				18.0		7.0			
P <sub>1dB</sub>	6.0	Bias	40.0	12.0	dBm	19.0			
g <sub>m</sub>	Vds = 3.0V	Vgs = 0V			mS	90.0			
I <sub>dss</sub>	Vds = 3.0V	Vgs = 0V			mA	30.0	60.0	120.0	
V <sub>p</sub>	Vds = 3.0V	Ids = 1mA			Volts	-0.5	-1.3	-2.5	
BV <sub>gd</sub>	Igd = 100 μA				Volts	-5.5	-8.0		
R <sub>th</sub>					°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 <sub>opt</sub>	G <sub>A</sub> (dB)	Gamma Mag	Opt 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

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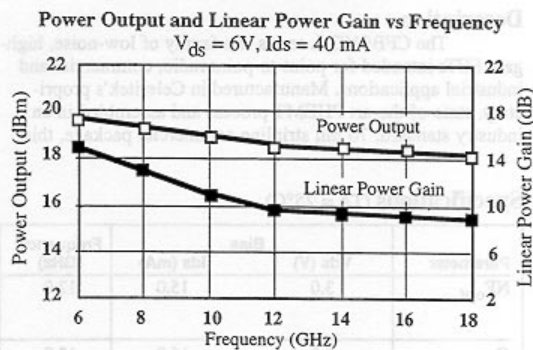
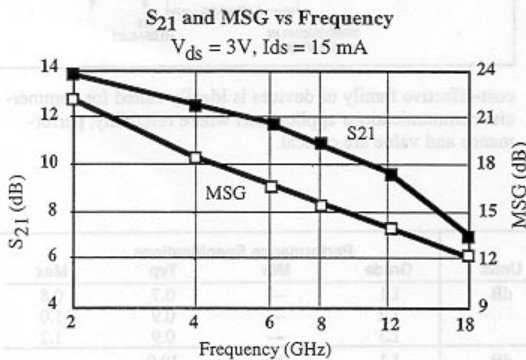
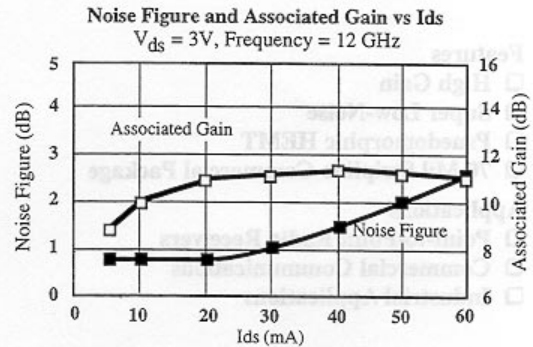
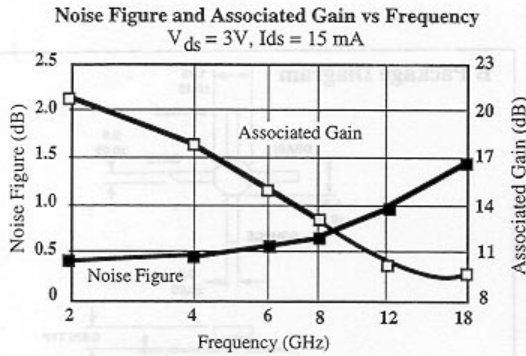
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### CFB0103 Series

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Typical Performance (TA = 25°C)



Typical Scattering Parameters (TA = 25°C, Vds = 3V, Ids = 15mA)

CFB0103

Frequency (GHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>		MSG (dB)		
	(Mag)	(Ang)	(dB)	(Mag)	(Ang)	(dB)	(Mag)	(Ang)			
2.0	0.97	-27	13.9	4.95	152	-30.3	0.03	73	0.54	-19	22.1
4.0	0.86	-63	12.5	4.22	118	-24.6	0.06	51	0.52	-45	18.6
6.0	0.75	-90	11.3	3.67	90	-22.1	0.08	37	0.49	-64	16.7
8.0	0.60	-103	11.0	3.55	63	-20.1	0.10	23	0.40	-78	15.5
10.0	0.54	-165	9.8	3.09	33	-19.2	0.11	5	0.28	-116	14.5
12.0	0.49	170	8.9	2.79	11	-19.0	0.11	-2	0.32	-130	14.0
14.0	0.51	128	8.2	2.57	-14	-18.2	0.12	-16	0.22	-157	13.2
16.0	0.58	110	7.3	2.32	-38	-17.8	0.13	-26	0.29	157	12.6
18.0	0.58	85	7.0	2.24	-62	-17.0	0.14	-40	0.34	144	12.0

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