

**Product Specifications**  
May 1994

(1 of 2)

**Low-Noise GaAs FETs****Features**

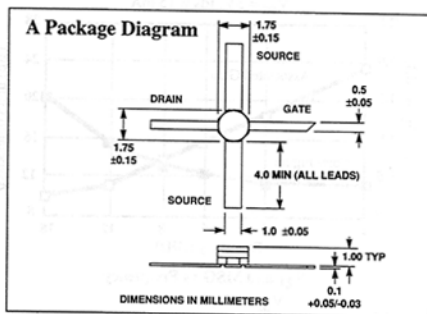
- High Gain
- Super Low-Noise
- Pseudomorphic HEMT
- 70 Mil Hermetic Package

**Applications**

- Satellite Receivers
- Point-to-Point Radio Receivers
- Commercial Communications
- Defense Electronics

**Description**

The CFA0103-L series is a family of low-noise, high-gain FETs intended for satellite and point-to-point radio receiver applications. Manufactured in Celeritek's proprietary, state-of-the-art PHEMT process and assembled in an industry



standard, 70 mil hermetic package, this high reliability family of devices is ideally suited for operation-critical applications where reliability and performance are required.

**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	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	15.0	12.0	dB	L1	10.0	11.0	—
					L2	10.0	11.0	—
					L3	8.0	9.0	—
S <sub>21</sub>   <sup>2</sup>	3.0	15.0	2.0	dB	—	13.0	—	
			10.0	dB	—	9.6	—	
			18.0	dB	—	7.2	—	
P <sub>1dB</sub>	6.0	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	—	

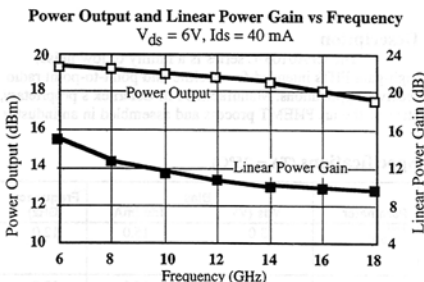
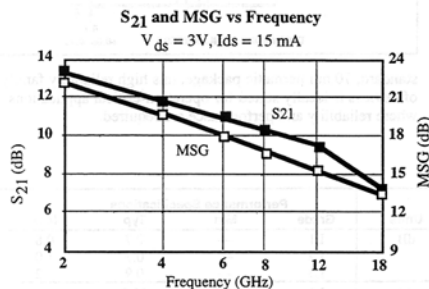
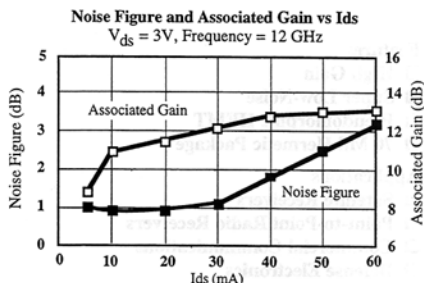
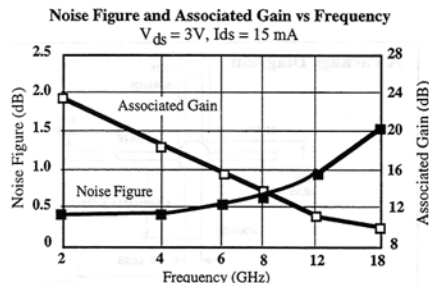
**Absolute Maximum Ratings**

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	0.39	23.6	0.87	36	0.42
4.0	0.47	18.3	0.77	71	0.34
6.0	0.57	15.2	0.69	100	0.27
8.0	0.69	13.0	0.63	124	0.22
10.0	0.84	11.5	0.58	147	0.18
12.0	1.00	10.6	0.53	171	0.16
14.0	1.18	10.1	0.49	-163	0.15
16.0	1.38	9.9	0.46	-132	0.16
18.0	1.60	9.8	0.42	-94	0.18

### Typical Performance (TA = 25°C)



### Typical Scattering Parameters (TA = 25°C, V<sub>ds</sub> = 3V, I<sub>ds</sub> = 15 mA)

#### CFA0103

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)	(Mag)	(Ang)		
2.0	0.97	-32	13.5	4.73	149	-31.1	0.03	69	0.56	-22	22.3	
4.0	0.88	-69	11.9	3.94	113	-25.8	0.05	45	0.55	-50	18.9	
6.0	0.79	-96	10.7	3.43	84	-23.6	0.07	27	0.54	-70	17.1	
8.0	0.66	-129	10.6	3.39	55	-22.0	0.08	10	0.46	-84	16.3	
10.0	0.59	-170	9.6	3.02	22	-21.4	0.09	-13	0.36	-121	15.5	
12.0	0.57	162	9.0	2.82	-4	-21.6	0.08	-21	0.42	-138	15.3	
14.0	0.57	123	8.5	2.66	-35	-21.0	0.09	-40	0.35	-166	14.8	
16.0	0.57	104	7.7	2.43	-66	-20.9	0.09	-56	0.47	151	14.3	
18.0	0.51	80	7.2	2.29	-100	-21.3	0.09	-79	0.59	128	14.3	

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