

General Purpose GaAs FETs



CFB0101 Series

Product Specifications December 1997

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General Purpose GaAs FETs

Features

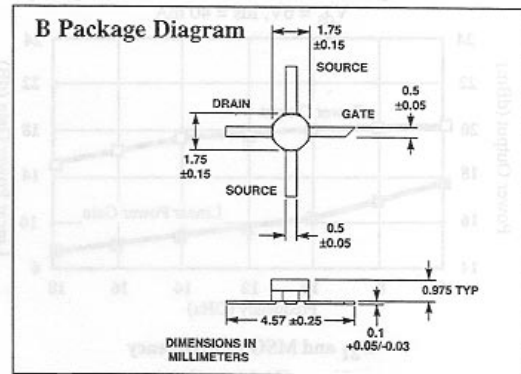
- High Gain
- 19 dBm Power Output
- Ion Implanted Material
- 70 Mil Stripline Commercial Package

Applications

- Point-to-Point Radios
- Test Equipment
- General Purpose Commercial Applications
- Industrial Applications

Description

The CFB0101-G series is a family of high-gain FETs intended for general purpose applications. Manufactured in Celeritek's proprietary 0.25 micron ion-implanted process, and assembled in an industry standard 70 mil stripline pack-



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

Specifications (TA = 25°C)

Parameter	Bias		Frequency (GHz)	Units	Performance Specifications			
	V _{ds} (V)	I _{ds} (mA)			Grade	Min	Typ	Max
P _{1dB}	6.0	40.0	12.0	dBm	G1	19.0	19.5	—
G _L	6.0	40.0	12.0	dB	G2	18.0	18.5	—
					G3	17.0	17.5	—
S ₂₁ ²	6.0	40.0	2.0	dB			14.0	
			10.0	dB			8.5	
			18.0	dB			4.9	
NF _{opt}	6.0	40.0	12.0	dB			2.8	
g _m	V _{ds} = 3.0V	V _{gs} = 0V		mS			60.0	
I _{dss}	V _{ds} = 3.0V	V _{gs} = 0V		mA		40.0	60.0	120.0
V _p	V _{ds} = 3.0V	I _{ds} = 1mA		Volts		-0.7	-1.3	-2.5
BV _{gd}	I _{gd} = 100 μA			Volts		-5.5	-8.0	
R _{th}				°C/W			250	

Absolute Maximum Ratings

Parameter	Symbol	Rating
Drain-Source Voltage	V _{ds}	8V
Gate-Source Voltage	V _{gs}	-5V
Drain Current	I _{ds}	I _{dss}
Continuous Dissipation	P _t	800mW
RF Power In	P _{in}	+17 dBm
Channel Temperature	T _{ch}	175°C
Storage Temperature	T _{stg}	-65°C to +175°C

Typical Noise Parameters (V_{ds} = 6V, I_{ds} = 40 mA)

Freq (GHz)	NF _{opt}	G _A (dB)	Gamma Mag	Opt Ang	Rn/50
2.0	1.06	21.2	0.76	39	1.51
4.0	1.33	17.0	0.60	80	0.62
6.0	1.68	14.6	0.50	119	0.14
8.0	2.00	12.7	0.46	157	0.04
10.0	2.30	11.5	0.46	175	0.16
12.0	2.60	10.7	0.50	-133	0.54
14.0	3.00	10.2	0.56	-100	1.07
16.0	3.49	10.0	0.62	-70	1.71
18.0	4.09	9.8	0.67	-42	2.38

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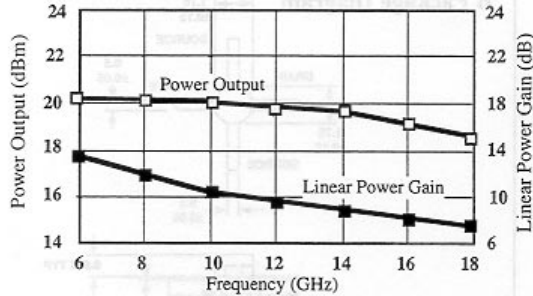
CFB0101 Series

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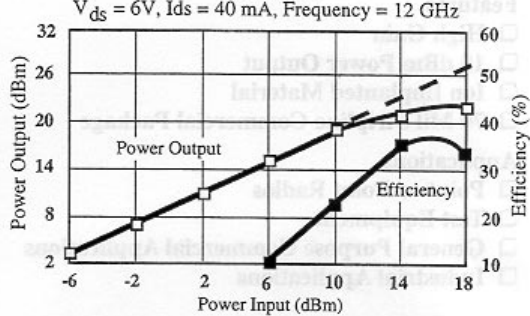
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Typical Performance (TA = 25°C)

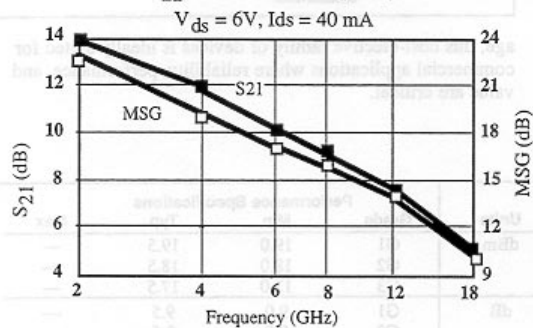
Power Output and Linear Power Gain vs Frequency
V_{ds} = 6V, I_{ds} = 40 mA



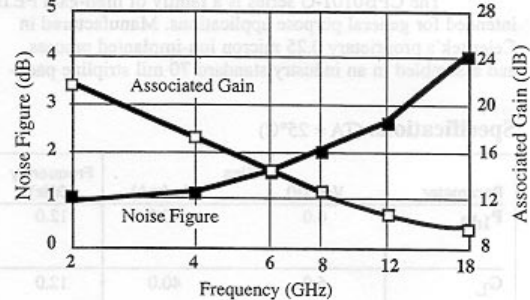
Power Output and Power Added Efficiency vs Power In
V_{ds} = 6V, I_{ds} = 40 mA, Frequency = 12 GHz



S₂₁ and MSG vs Frequency
V_{ds} = 6V, I_{ds} = 40 mA



Noise Figure and Associated Gain vs Frequency
V_{ds} = 6V, I_{ds} = 40 mA



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

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Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		MSG (dB)		
	(Mag)	(Ang)	(dB)	(Mag)	(Ang)	(dB)	(Mag)	(Ang)			
2.0	0.94	-35	14.0	5.01	148	-31.6	0.03	63	0.53	-13	22.8
4.0	0.82	-77	12.1	4.03	109	-26.3	0.05	47	0.53	-40	19.2
6.0	0.70	-110	10.6	3.39	79	-24.1	0.06	35	0.52	-58	17.3
8.0	0.58	-152	9.9	3.13	50	-22.4	0.08	25	0.45	-70	16.1
10.0	0.58	169	8.5	2.66	21	-21.3	0.09	14	0.35	-104	14.9
12.0	0.55	142	7.5	2.37	-2	-20.5	0.09	10	0.40	-122	14.0
14.0	0.60	104	6.6	2.14	-28	-19.0	0.11	-2	0.32	-147	12.8
16.0	0.67	87	5.6	1.91	-53	-17.7	0.13	-13	0.39	166	11.7
18.0	0.69	60	4.9	1.76	-79	-16.7	0.15	-32	0.46	146	10.8

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