

**Product Specifications**  
**May 1994**

(1 of 2)

**Medium Power**  
**GaAs FETs****Features**

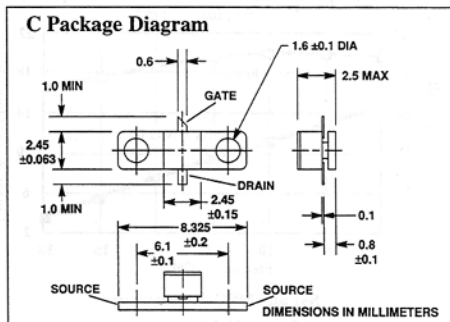
- High Gain
- +23 dBm Power Output
- Ion Implanted Material
- 100 Mil Stripline Flange Package

**Applications**

- Point-to-Point Radios
- Satellites
- Commercial Applications
- Defense Electronics

**Description**

The CFC0301-P series is a family of high-gain FETs intended for driver amplifier applications in high-power systems, and output stage usage in medium power applications at power levels up to 0.25 watts. Manufactured in Celeritek's



proprietary 0.25 micron ion-implanted process, this family of devices is assembled in an industry standard 100 mil flange package.

**Specifications** (TA = 25°C)

Parameter	Vds (V)	Bias Ids (mA)	Frequency (GHz)	Units	Grade	Performance Specifications		
						Min	Typ	Max
P <sub>1dB</sub>	6.0	80.0	12.0	dBm	P1	22.5	23.0	—
G <sub>L</sub>	6.0	80.0	12.0	dB	P1	9.5	10.0	—
					P2	9.0	9.5	—
					P3	8.0	9.0	—
S <sub>21</sub>   <sup>2</sup>	6.0	80.0	2.0	dB		15.5		
						7.6		
						-1.1		
NF <sub>opt</sub>	6.0	80.0	12.0	dB		2.6		
g <sub>m</sub>	Vds = 3.0V	Vgs = 0V		mS		120		
I <sub>dss</sub>	Vds = 3.0V	Vgs = 0V		mA		120	180	240
V <sub>p</sub>	Vds = 3.0V	Ids = 1mA		Volts		-0.7	-1.3	-2.5
BV <sub>gd</sub>	Igd = 100 μA			Volts		-5.5	-8.0	
R <sub>th</sub>				°C/W			100	

**Absolute Maximum Ratings**

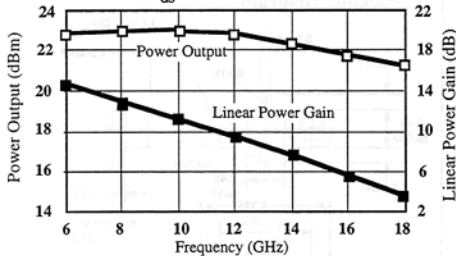
Parameter	Symbol	Rating
Drain-Source Voltage	Vds	8V
Gate-Source Voltage	Vgs	-5V
Drain Current	Ids	I <sub>dss</sub>
Continuous Dissipation	Pt	1.6W
RF Power In	Pin	+20 dBm
Channel Temperature	Tch	175°C
Storage Temperature	Tstg	-65°C to +175°C

**Typical Noise Parameters** (Vds = 6V, Ids = 80 mA)

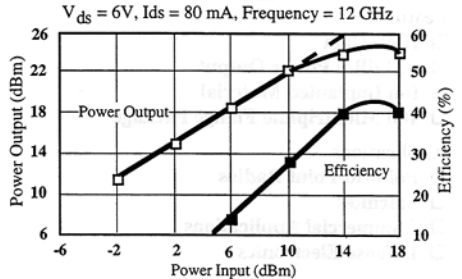
Freq (GHz)	NF <sub>opt</sub>	G <sub>A</sub> (dB)	Gamma Opt Mag	Ang	Rn/50
2.0	0.34	18.4	0.88	56	0.65
4.0	0.72	18.4	0.80	103	0.43
6.0	1.11	14.8	0.73	143	0.30
8.0	1.55	13.0	0.65	179	0.24
10.0	2.06	11.2	0.58	-146	0.26
12.0	2.64	9.4	0.51	-112	0.36
14.0	3.28	7.6	0.46	-75	0.54
16.0	3.98	5.9	0.42	-34	0.79
18.0	4.75	4.2	0.40	14	1.12

### Typical Performance (TA = 25°C)

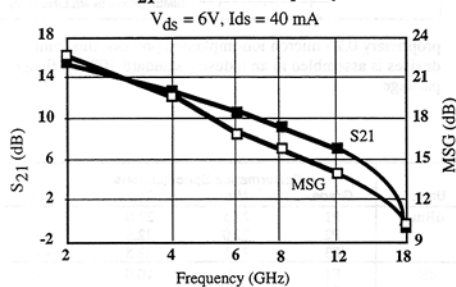
**Power Output and Linear Power Gain vs Frequency**  
V<sub>ds</sub> = 6V, I<sub>ds</sub> = 80 mA



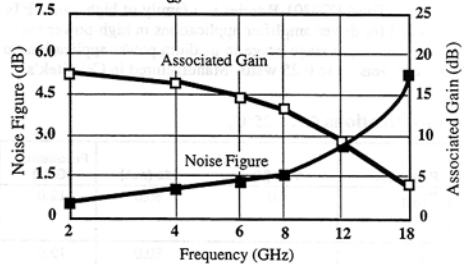
**Power Output and Power Added Efficiency vs Power In**  
V<sub>ds</sub> = 6V, I<sub>ds</sub> = 80 mA, Frequency = 12 GHz



**S<sub>21</sub> and MSG vs Frequency**  
V<sub>ds</sub> = 6V, I<sub>ds</sub> = 40 mA



**Noise Figure and Associated Gain vs Frequency**  
V<sub>ds</sub> = 6V, I<sub>ds</sub> = 40 mA



### Typical Scattering Parameters (TA = 25°C, V<sub>ds</sub> = 6V, I<sub>ds</sub> = 80mA)

#### CFC0301

Frequency (GHz)	S <sub>11</sub>		(dB)	S <sub>21</sub>		(dB)	S <sub>12</sub>		S <sub>22</sub>		MSG (dB)
	(Mag)	(Ang)		(Mag)	(Ang)		(Mag)	(Ang)	(Mag)	(Ang)	
2.0	0.90	-81	15.5	5.97	117	-30.5	0.03	45	0.37	-56	22.4
4.0	0.90	-131	12.7	4.30	76	-26.0	0.05	21	0.41	-86	19.5
6.0	0.70	-162	10.3	3.27	43	-26.0	0.05	3	0.42	-108	17.9
8.0	0.69	162	8.9	2.80	11	-24.4	0.06	-12	0.43	-129	16.7
10.0	0.67	129	7.6	2.40	-21	-24.4	0.06	-40	0.39	-151	15.8
12.0	0.62	98	7.1	2.27	-54	-21.9	0.08	-57	0.45	180	14.8
14.0	0.53	65	6.2	2.04	-92	-20.9	0.09	-91	0.50	148	13.5
16.0	0.35	39	4.4	1.66	-134	-20.0	0.10	-130	0.58	113	12.1
18.0	0.40	35	-1.1	0.88	-177	-21.9	0.08	159	0.65	72	10.5

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