# Low Noise GaAs FETs

July 2006 - Rev 31-Jul-06

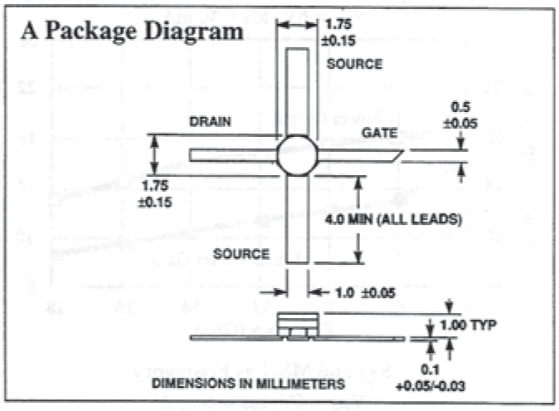
## CFA0103

## Features

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

## Applications

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




## General Description

The CFA0103-L series is a family of low noise, high-gain FETs intended for satellite and point-to-point radio receiver applications. This family of devices is assembled in an industry standard 70 mil hermetic package. This family of high reliability devices is ideally suited for operation-critical applications where reliability and performance are required.

## Typical Noise Parameters

(Vds = 3V, Ids = 15 mA)

| Freq (GHz) | $NF_{opt}$ | $G_A$ (dB) | Gamma Opt Mag | Gamma 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 |

## Absolute Maximum Ratings

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

## Electrical Characteristics (Ambient Temperature T = 25 °C)

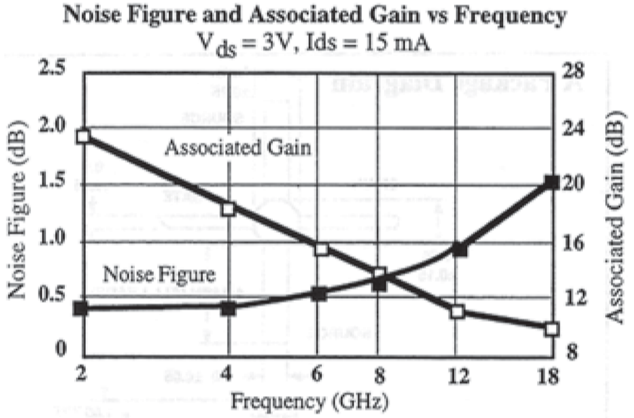
| Parameter | Bias Vds (V) | Bias Ids (mA) | Frequency (GHz) | Units | Grade | Min | Typ | Max |
|---|---|---|---|---|---|---|---|---|
| NFopt | 3.0 | 15.0 | 12.0 | dB | L1 | - | 0.7 | 0.8 |
| | | | | | L2 | - | 0.9 | 1.0 |
| | | | | | L3 | - | 0.9 | 1.2 |
| Ga | 3.0 | 15.0 | 12.0 | dB | L1 | 10.0 | 11.0 | - |
| | | | | | L2 | 10.0 | 11.0 | - |
| | | | | | L3 | 8.0 | 9.0 | - |
| $IS211^2$ | 3.0 | 15.0 | 2.0 | dB | | | 13.0 | |
| | | | 10.0 | dB | | | 9.6 | |
| | | | 18.0 | dB | | | 7.2 | |
| P1dB | 6.0 | 40.0 | 12.0 | dBm | | | 19.0 | |
| gm | Vds = 3.0V | Vgs = V | | mS | | | 90.0 | |
| Idss | Vds = 3.0V | Vgs = 0V | | mA | | 30.0 | 60.0 | 120.0 |
| Vp | Vds = 3.0V | Ids = 1 mA | | Volts | | -0.5 | -1.3 | -2.5 |
| BVgd | Igd = 100 uA | | | Volts | | -5.5 | -8.0 | |
| Rth | | | | °C/W | | | 250 | |

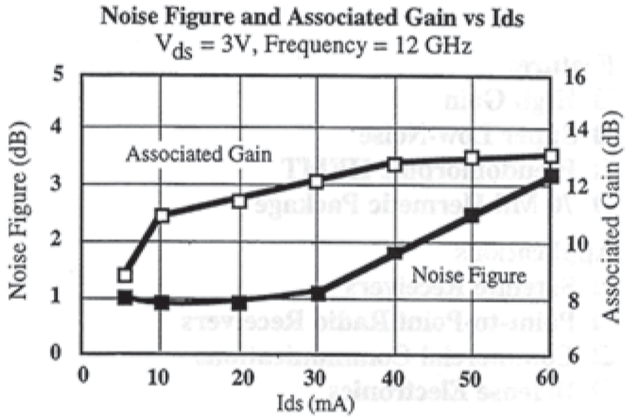


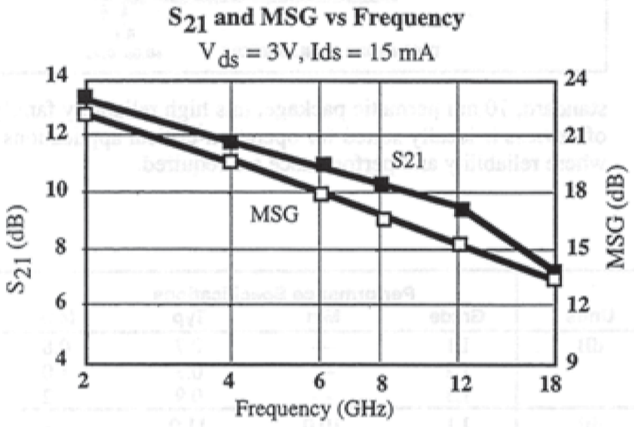
Mimix Broadband, Inc., 10795 Rockley Rd., Houston, Texas 77099
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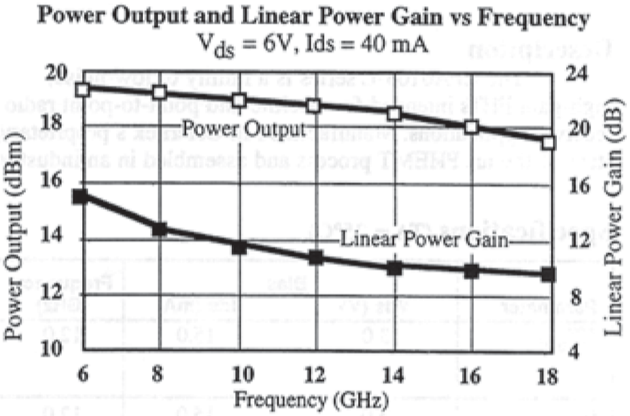
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## Typical Performance (TA = 25°C)




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

| Frequency (GHz) | S11 (Mag) | S11 (Ang) | S21 (dB) | S21 (Mag) | S21 (Ang) | S12 (dB) | S12 (Mag) | S12 (Ang) | S22 (Mag) | S22 (Ang) | MSG (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | -21.4 | 0.08 | 10 | 0.46 | -84 | 16.3 |
| 10.0 | 0.59 | -170 | 9.6 | 3.02 | 22 | -21.6 | 0.09 | -13 | 0.36 | -121 | 15.5 |
| 12.0 | 0.57 | 162 | 9.0 | 2.82 | -4 | -21.0 | 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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