CFB0303

High Dynamic Range Low-Noise GaAs FET

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Advanced Product Information
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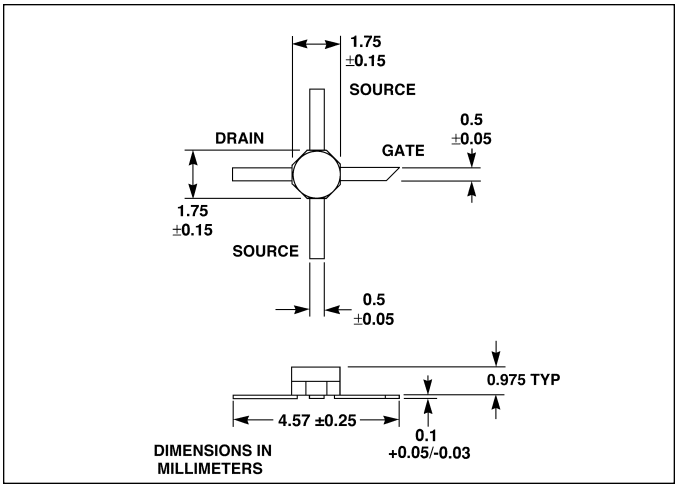
High Dynamic Range Low-Noise GaAs FET

Features

- ❑ **Low-Noise Figure from 0.8 to 2.0 GHz**
- ❑ **High Gain**
- ❑ **High Intercept Point**
- ❑ **Highly Stable**
- ❑ **Easily Matched to 50Ω**
- ❑ **70 mil Package**
- ❑ **PHEMT Material**

Applications

- ❑ **Cellular Base Stations**
- ❑ **PCS Base Stations**
- ❑ **Industrial Data Networks**



Description

Celeritek's CFB0303 is a high performance GaAs PHEMT with 600 µm gate width and 0.25 µm gate length. The low noise figure and high intercept point of this device makes it well suited for use as the low-noise amplifier of the base station receiver in PCS, Japanese PHS, AMPS, GSM and other communications systems. The CFB0303 is in an industry-standard 70 mil package. It is surface mountable and available in tape and reel.

Electrical Specifications (TA = 25°C, 2 GHz)

Parameters	Conditions	Min	Typ	Max	Units
V_d = 4V, I_d = 75 mA					
Noise Figure [2]			0.5	0.6	dB
Associated Gain [2]	@ Noise Figure	19.0	20.0	22.7	dB
P_{out} [1, 3]	P_{-1}	20.0	21.0	22.0	dBm
IP_3 [3]	+5 dBm P_{OUT}/Tone	32	34		dBm
I_d [3]	@ P_{-1}		83		mA
Transconductance	V_{ds} = 4 V, V_{gs} = 0 V		350		mho
Saturated Drain Current	V_{ds} = 4 V, V_{gs} = 0 V	80	140	240	mA
Pinchoff Voltages	V_{ds} = 4 V, I_{ds} = 1 mA		-0.3		V
Thermal Resistance	@ T_{case} = 150°C liquid crystal test		200		°C/W

Notes: 1. @ T_{case} = 25°C. Derate 5 mW/°C for T_{case} >25°C.
2. Input matched for low noise.
3. Matched for power transfer.

Typical Scattering Parameters (TA = 25°C, V_{DS} = 4 V, I_{DS} = 75 mA)

Frequency	S_{11}		S_{21}		S_{12}		S_{22}	
(GHz)	Mag	Ang	Mag (dB)	Ang	MAG (dB)	ANG	MAG	ANG
0.5	0.98	-24	8.47	160	0.02	77	0.33	-9
1.0	0.94	-44	8.20	147	0.03	69	0.32	-15
2.0	0.85	-80	7.30	118	0.05	51	0.27	-36
3.0	0.76	-112	6.30	94	0.07	37	0.25	-50
4.0	0.70	-134	5.60	74	0.08	29	0.24	-55
5.0	0.64	-154	5.13	54	0.09	19	0.23	-61

Typical Noise Parameters (V_{ds} = 4 V, I_{ds} = 75 mA)

Frequency (GHz)	F_{min} [1] (dB)	Gamma Opt Mag	Gamma Opt Ang	Rn/50
0.8	0.4	0.6	27	0.19
1.0	0.4	0.6	29	0.17
1.2	0.4	0.6	32	0.18
1.4	0.4	0.6	35	0.18
1.6	0.4	0.5	38	0.17
1.8	0.4	0.5	41	0.16
2.0	0.5	0.5	45	0.15
2.2	0.5	0.5	49	0.15
2.4	0.5	0.5	54	0.14
2.6	0.5	0.5	60	0.13

Note: 1. Fmin values reflect the circuit losses in the test fixture when matched to optimum noise figure.

Absolute Maximum Ratings

Parameter	Symbol	Rating
Drain-Source Voltage	V_{ds}	+8V
Gate-Source Voltage	V_{gs}	-5V
Drain Current	I_{ds}	Idss
Continuous Dissipation[1]	Pt	750 mW
Channel Temperature	Tch	175°C
Storage Temperature	Tstg	-65°C to +150°C

Notes

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