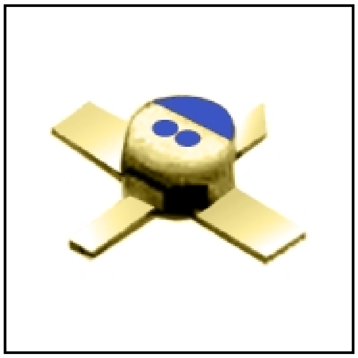
FSU01LG

General Purpose GaAs FET

FEATURES

- High Output Power: P_{1dB} = 20.0dBm (Typ.)
- High Associated Gain: G_{1dB} = 19.0dB (Typ.)
- Low Noise Figure: NF=0.55dB (Typ.)@f=2GHz
- Low Bias Conditions: V_{DS}=3V, 10mA
- Cost Effective Hermetic Microstrip Package
- Tape and Reel Available



DESCRIPTION

The FSU01LG is a high performance, low noise, GaAs FET designed for PCS/PCN applications as a driver in the 2GHz band.

Eudyna stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATING (Ambient Temperature Ta=25°C)

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V_{DS}		12.0	V
Gate-Source Voltage	V_{GS}		-5	V
Total Power Dissipation	P_{tot}	Note	375	mW
Storage Temperature	T_{stg}		-65 to +175	°C
Channel Temperature	T_{ch}		175	°C

Note: Mounted on Al_2O_3 board (30 x 30 x 0.65mm)

Eudyna recommends the following conditions for the reliable operation of GaAs FETs:

1. The drain-source operating voltage (V_{DS}) should not exceed 6 volts.
2. The forward and reverse gate currents should not exceed 0.7 and -0.1 mA respectively with gate resistance of 2000Ω.
3. The operating channel temperature (T_{ch}) should not exceed 145°C.

ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	V_{DS} = 3V, V_{GS} = 0V	35	55	75	mA
Transconductance	g_m	V_{DS} = 3V, I_{DS} = 27mA	-	50	-	mS
Pinch-off Voltage	V_p	V_{DS} = 3V, I_{DS} = 2.7mA	-0.7	-1.2	-1.7	V
Gate Source Breakdown Voltage	V_{GSO}	I_{GS} = -2.7μA	-5	-	-	V
Output Power at 1dB Gain Compression Point	P_{1dB}	V_{DS} = 6V I_{DS} = 40mA f = 2GHz	19.0	20.0	-	dBm
Power Gain at 1dB Gain Compression Point	G_{1dB}		18.0	19.0	-	dB
Noise Figure	NF	V_{DS} = 3V I_{DS} = 10mA f = 2GHz	-	0.55	-	dB
Associated Gain	Gas		-	18.5	-	dB
Thermal Resistance	R_{th}	Channel to Case	-	300	400	°C/W

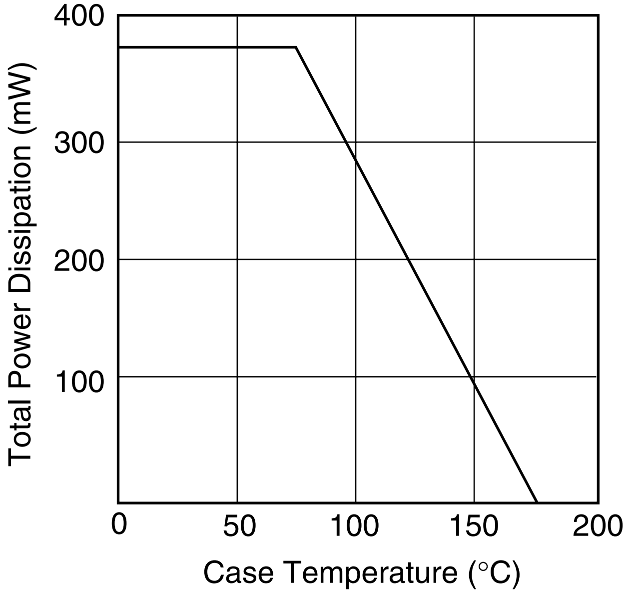
AVAILABLE CASE STYLES: LG

G.C.P.: Gain Compression Point

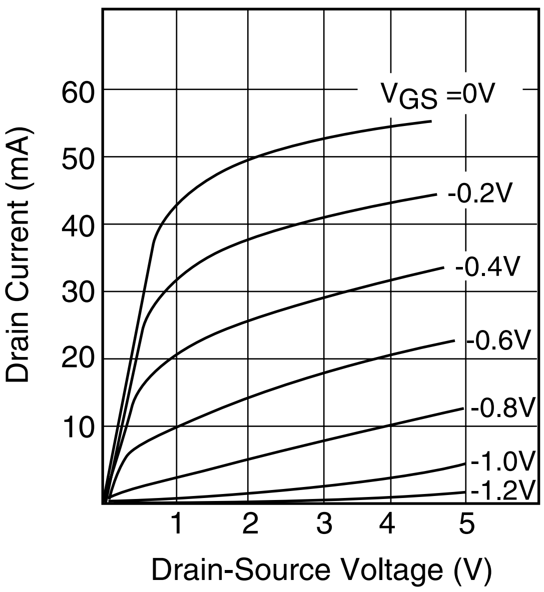
Note: The RF parameters are measured on a lot basis by sample testing at an AQL = 0.1%, Level-II inspection. Any lot failure shall be 100% retested.

Edition 1.2
July 1999

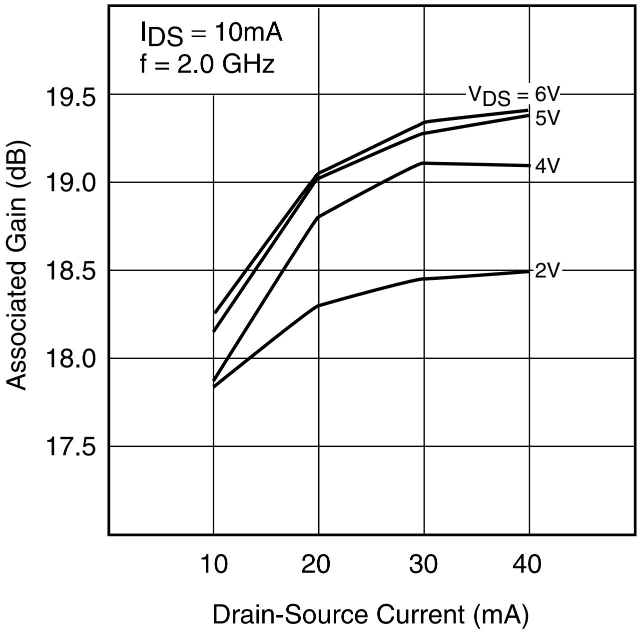
POWER DERATING CURVE



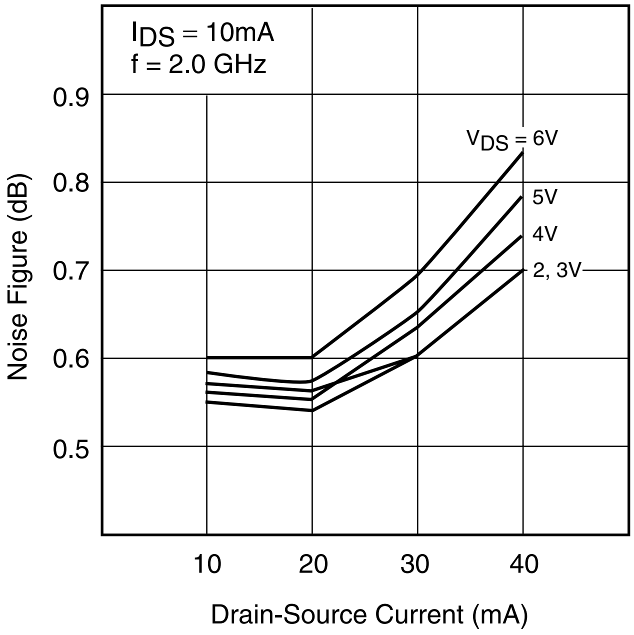
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE

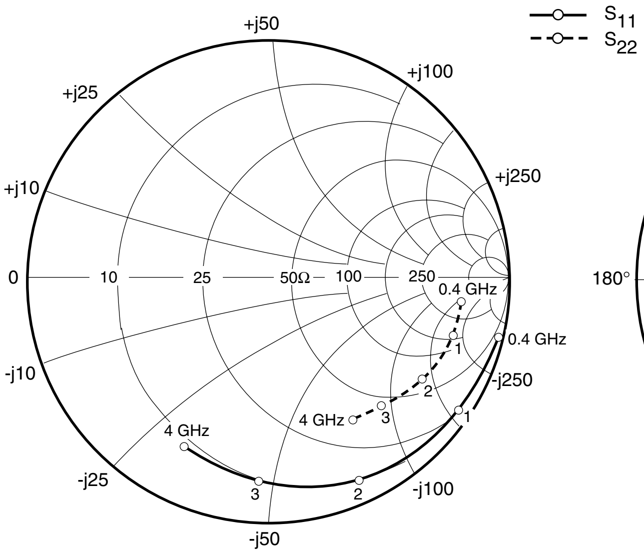


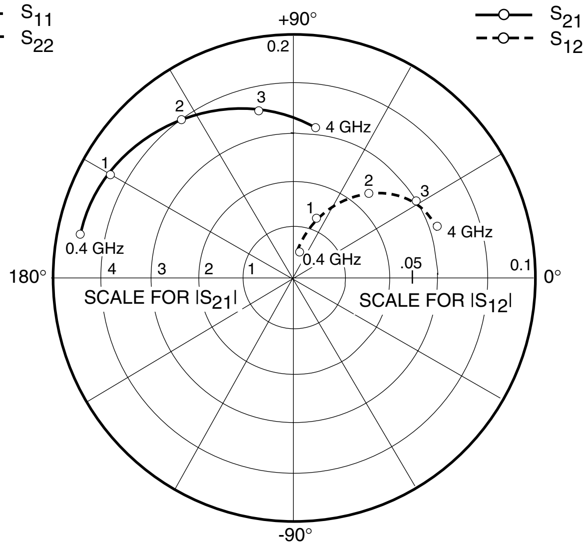
ASSOCIATED GAIN vs. DRAIN-SOURCE CURRENT



NOISE FIGURE vs. DRAIN-SOURCE CURRENT





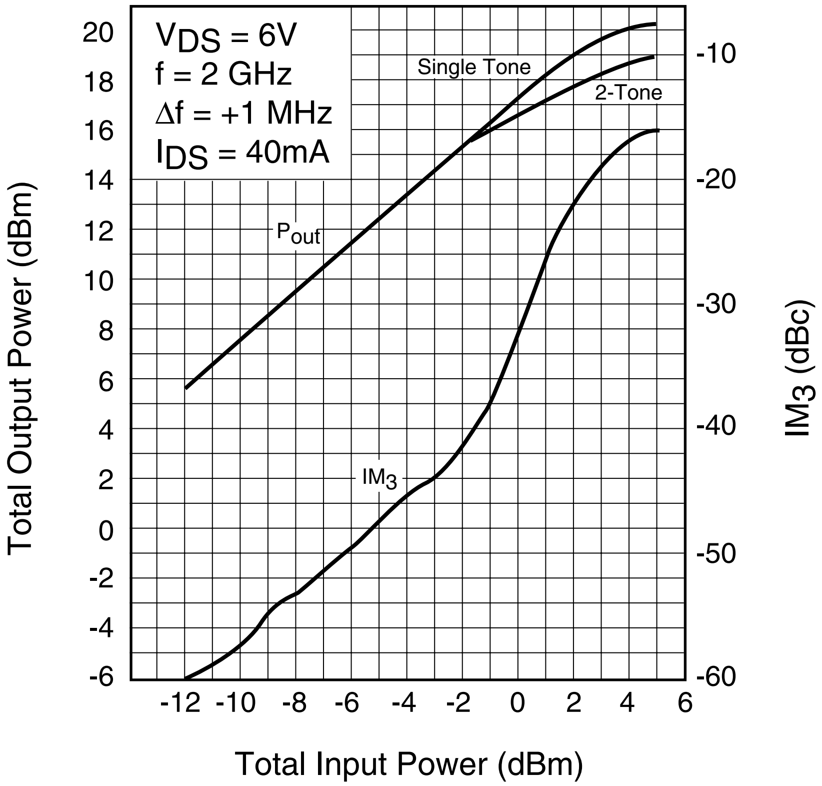


S-PARAMETERS

V_{DS} =6V, I_{DS} = 40mA

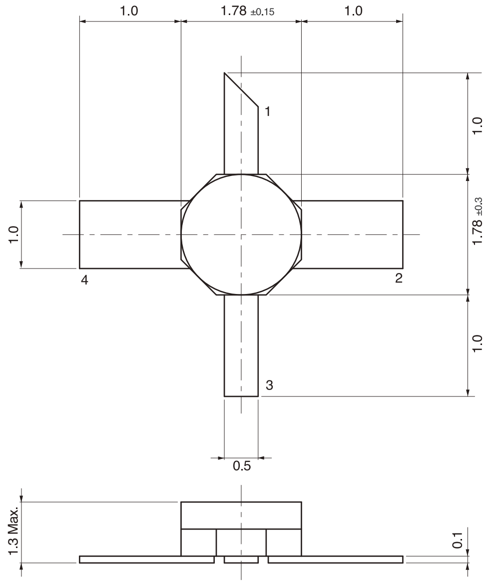
FREQUENCY (MHZ)	S11 MAG	S11 ANG	S21 MAG	S21 ANG	S12 MAG	S12 ANG	S22 MAG	S22 ANG
400	.987	-13.8	4.507	168.3	.011	77.9	.812	-6.7
600	.985	-20.3	4.488	162.8	.016	76.2	.812	-10.0
800	.974	-27.1	4.421	157.0	.021	72.0	.807	-13.2
1000	.966	-34.1	4.367	151.3	.026	68.6	.803	-16.4
1200	.954	-40.0	4.309	146.4	.030	65.2	.793	-19.8
1400	.936	-47.0	4.212	140.5	.035	60.3	.786	-23.0
1600	.935	-53.3	4.158	135.2	.038	56.5	.778	-25.8
1800	.910	-58.7	4.037	130.8	.043	51.8	.766	-28.9
2000	.904	-65.4	3.980	125.2	.047	48.8	.761	-31.8
2200	.888	-71.0	3.885	120.7	.049	45.2	.748	-34.3
2400	.871	-77.0	3.797	115.5	.052	42.6	.739	-37.5
2600	.856	-82.5	3.696	110.9	.055	39.5	.729	-40.2
2800	.844	-88.1	3.609	106.2	.057	35.7	.716	-43.0
3000	.829	-93.3	3.511	101.9	.060	30.9	.704	-45.8
3200	.812	-98.4	3.400	97.7	.060	27.2	.692	-47.9
3400	.798	-103.1	3.323	93.8	.061	26.0	.687	-50.3
3600	.788	-107.9	3.249	89.7	.062	22.9	.681	-52.8
3800	.779	-112.6	3.176	85.6	.063	20.9	.674	-55.3
4000	.769	-117.3	3.101	81.7	.063	19.4	.668	-58.0

OUTPUT POWER & IM_3 vs. INPUT POWER



Case Style "LG"

Metal-Ceramic Package



Gold Plated Leads

1. **Gate**
2. **Source**
3. **Drain**
4. **Source**

Unit: mm