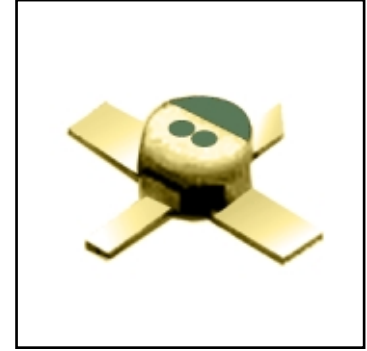


### FEATURES

- High Output Power:  $P_{1dB} = 23.0dBm$  (Typ.)@2GHz
- High Associated Gain:  $G_{1dB} = 17.0dB$  (Typ.)@2GHz
- Low Noise Figure:  $NF=1.5dB$  (Typ.)@f=2GHz
- Low Bias Conditions:  $V_{DS}=3V$ , 20mA
- Cost Effective Hermetic Microstrip Package
- Tape and Reel Available

### DESCRIPTION

The FSU02LG 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 $T_a=25^{\circ}C$ )

| Item                    | Symbol    | Condition | Rating      | Unit        |
|-------------------------|-----------|-----------|-------------|-------------|
| Drain-Source Voltage    | $V_{DS}$  |           | 12          | V           |
| Gate-Source Voltage     | $V_{GS}$  |           | -5          | V           |
| Total Power Dissipation | $P_{tot}$ | Note      | 750         | mW          |
| Storage Temperature     | $T_{stg}$ |           | -65 to +175 | $^{\circ}C$ |
| Channel Temperature     | $T_{ch}$  |           | 175         | $^{\circ}C$ |

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 1.4 and -0.2 mA respectively with gate resistance of 2000 $\Omega$ .
3. The operating channel temperature ( $T_{ch}$ ) should not exceed 145 $^{\circ}C$ .

### ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_a=25^{\circ}C$ )

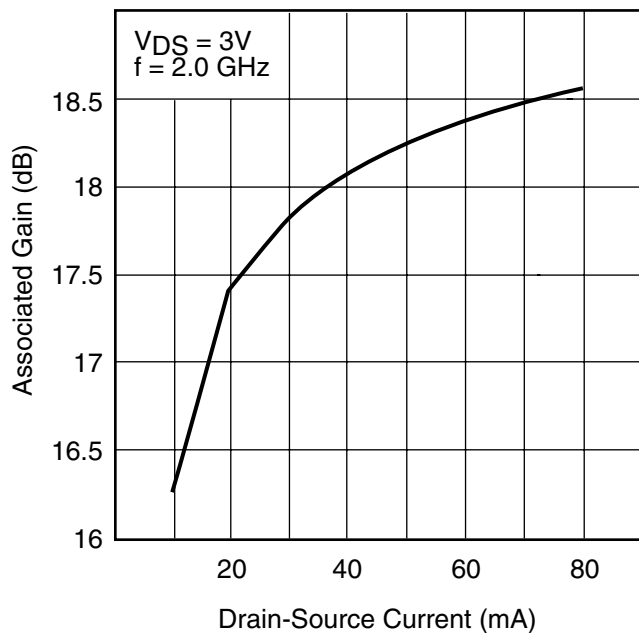
| Item                                       | Symbol    | Test Conditions                                    | Limit |      |      | Unit          |
|--------------------------------------------|-----------|----------------------------------------------------|-------|------|------|---------------|
|                                            |           |                                                    | Min.  | Typ. | Max. |               |
| Saturated Drain Current                    | $I_{DSS}$ | $V_{DS} = 3V$ , $V_{GS} = 0V$                      | 80    | 110  | 150  | mA            |
| Transconductance                           | $g_m$     | $V_{DS} = 3V$ , $I_{DS} = 54mA$                    | -     | 100  | -    | mS            |
| Pinch-off Voltage                          | $V_p$     | $V_{DS} = 3V$ , $I_{DS} = 5.4mA$                   | -0.7  | -1.2 | -1.7 | V             |
| Gate Source Breakdown Voltage              | $V_{GSO}$ | $I_{GS} = -5.4\mu A$                               | -5    | -    | -    | V             |
| Output Power at 1dB Gain Compression Point | $P_{1dB}$ | $V_{DS} = 6V$<br>$I_{DS(DC)} = 80mA$<br>$f = 2GHz$ | 22.0  | 23.0 | -    | dBm           |
| Power Gain at 1dB Gain Compression Point   | $G_{1dB}$ |                                                    | 16.0  | 17.0 | -    | dB            |
| Noise Figure                               | NF        |                                                    | -     | 1.5  | -    | dB            |
| Associated Gain                            | $G_{as}$  | $V_{DS} = 3V$<br>$I_{DS} = 20mA$<br>$f = 2GHz$     | -     | 17.5 | -    | dB            |
| Thermal Resistance                         | $R_{th}$  | Channel to Case                                    | -     | 150  | 200  | $^{\circ}C/W$ |

### AVAILABLE CASE STYLES: LG

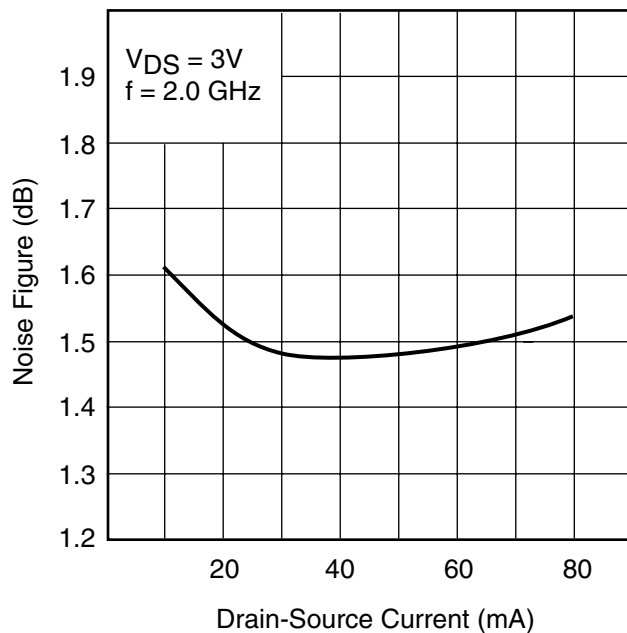
G.C.P.: Gain Compression Point

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.

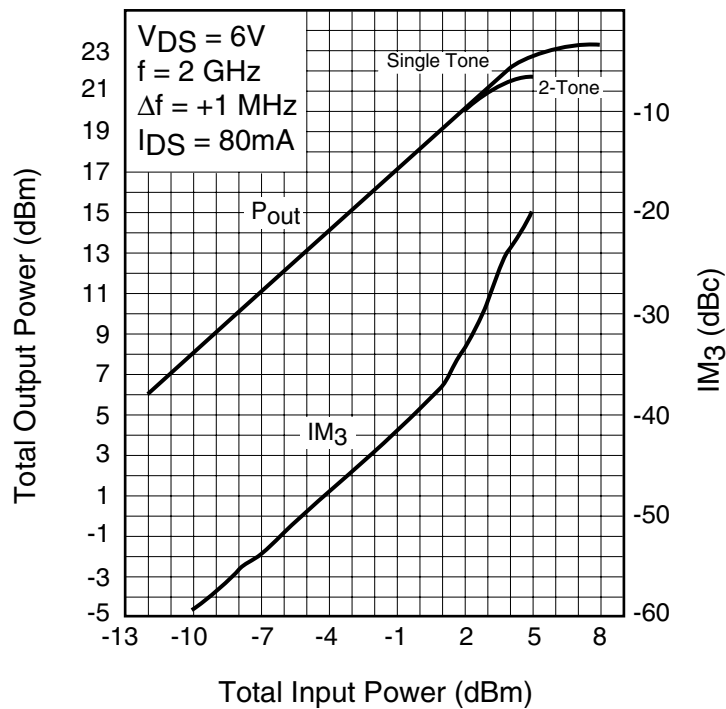
**ASSOCIATED GAIN vs. DRAIN-SOURCE CURRENT**



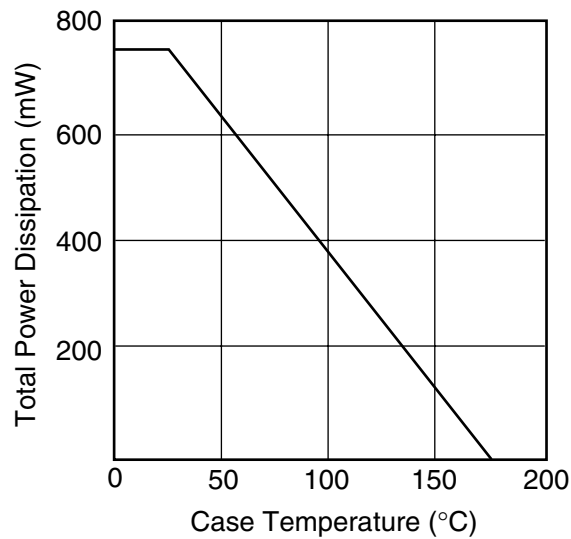
**NOISE FIGURE vs. DRAIN-SOURCE CURRENT**



**OUTPUT POWER & IM<sub>3</sub> vs. INPUT POWER**

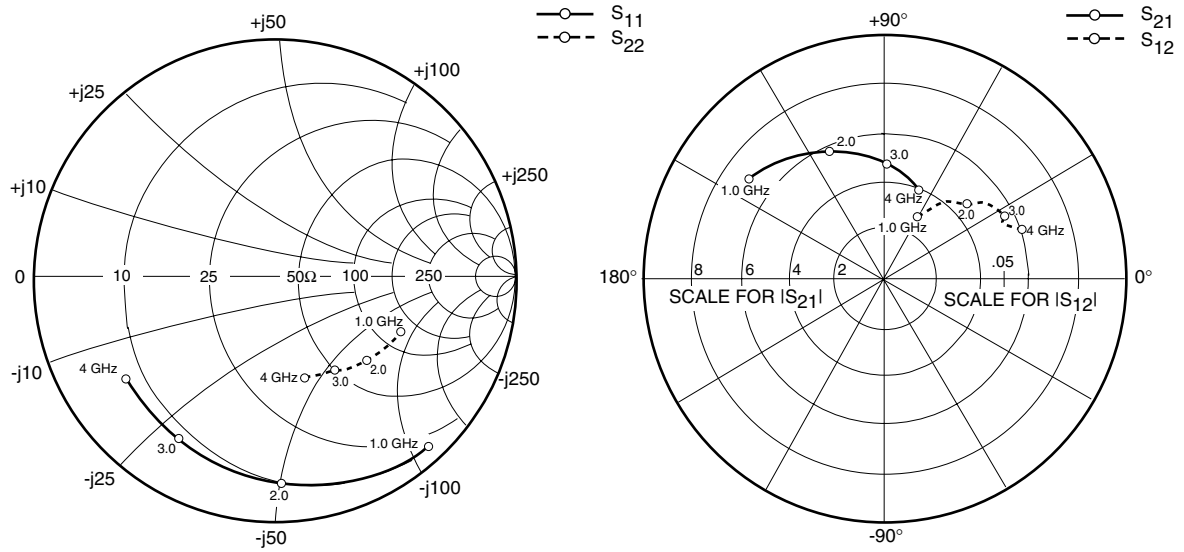


**POWER DERATING CURVE**



# FSU02LG

## General Purpose GaAs FET

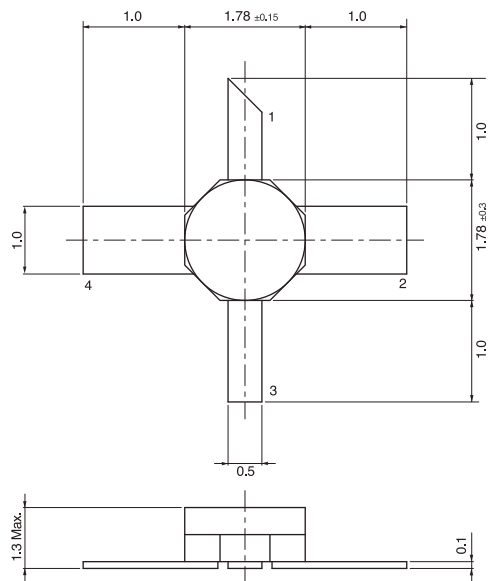


### S-PARAMETERS

$V_{DS} = 6V$ ,  $I_{DS} = 80mA$

| FREQUENCY<br>(GHZ) | S11  |        | S21   |       | S12  |      | S22  |       |
|--------------------|------|--------|-------|-------|------|------|------|-------|
|                    | MAG  | ANG    | MAG   | ANG   | MAG  | ANG  | MAG  | ANG   |
| 400                | .993 | -19.6  | 7.407 | 165.2 | .012 | 76.3 | .593 | -9.4  |
| 600                | .982 | -29.3  | 7.259 | 157.9 | .018 | 74.8 | .589 | -14.4 |
| 800                | .971 | -38.8  | 7.115 | 150.8 | .023 | 68.3 | .580 | -19.2 |
| 1000               | .952 | -47.9  | 6.925 | 144.0 | .029 | 62.7 | .570 | -23.6 |
| 1200               | .938 | -56.5  | 6.704 | 137.3 | .032 | 59.1 | .560 | -27.8 |
| 1400               | .921 | -65.0  | 6.450 | 130.9 | .037 | 54.8 | .547 | -31.7 |
| 1600               | .899 | -73.0  | 6.198 | 125.0 | .041 | 51.3 | .536 | -36.5 |
| 1800               | .880 | -80.7  | 5.954 | 119.2 | .043 | 47.6 | .524 | -39.3 |
| 2000               | .836 | -88.2  | 5.722 | 113.6 | .046 | 42.2 | .513 | -42.9 |
| 2200               | .843 | -95.1  | 5.503 | 108.4 | .048 | 40.1 | .500 | -46.3 |
| 2400               | .829 | -101.7 | 5.270 | 103.2 | .051 | 38.2 | .490 | -49.7 |
| 2600               | .818 | -108.1 | 5.054 | 98.3  | .053 | 34.5 | .480 | -53.3 |
| 2800               | .802 | -114.5 | 4.836 | 93.5  | .055 | 30.0 | .465 | -56.5 |
| 3000               | .781 | -120.2 | 4.608 | 89.4  | .054 | 27.1 | .453 | -58.2 |
| 3200               | .774 | -125.1 | 4.449 | 85.2  | .055 | 27.6 | .452 | -60.8 |
| 3400               | .766 | -130.5 | 4.292 | 81.0  | .055 | 23.5 | .448 | -64.0 |
| 3600               | .758 | -135.5 | 4.135 | 77.0  | .056 | 23.0 | .443 | -66.8 |
| 3800               | .753 | -140.5 | 3.985 | 73.0  | .057 | 21.5 | .438 | -70.0 |
| 4000               | .747 | -145.0 | 3.849 | 69.0  | .059 | 20.4 | .433 | -73.2 |

### Case Style "LG" Metal-Ceramic Package



#### Gold Plated Leads

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

Unit: mm