

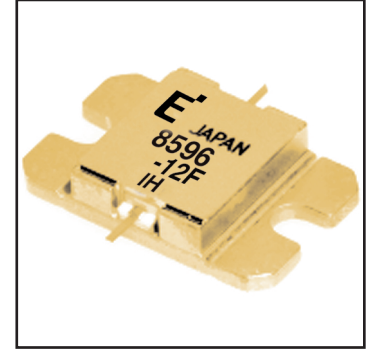
### FEATURES

- High Output Power:  $P_{1dB} = 40.5\text{dBm}$  (Typ.)
- High Gain:  $G_{1dB} = 7.5\text{dB}$  (Typ.)
- High PAE:  $\eta_{add} = 25\%$  (Typ.)
- Low  $IM_3 = -45\text{dBc}$  @  $P_o = 29.5\text{dBm}$
- Broad Band: 8.5 ~ 9.6GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed

### DESCRIPTION

The FLM8596-12F is a power GaAs FET that is internally matched for standard communication bands to provide optimum power and gain in a 50 ohm system.

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



### ABSOLUTE MAXIMUM RATING (Ambient Temperature $T_a=25^\circ\text{C}$ )

| Item                    | Symbol    | Condition                | Rating      | Unit             |
|-------------------------|-----------|--------------------------|-------------|------------------|
| Drain-Source Voltage    | $V_{DS}$  |                          | 15          | V                |
| Gate-Source Voltage     | $V_{GS}$  |                          | -5          | V                |
| Total Power Dissipation | $P_T$     | $T_C = 25^\circ\text{C}$ | 57.6        | W                |
| Storage Temperature     | $T_{stg}$ |                          | -65 to +175 | $^\circ\text{C}$ |
| Channel Temperature     | $T_{ch}$  |                          | 175         | $^\circ\text{C}$ |

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

1. The drain-source operating voltage ( $V_{DS}$ ) should not exceed 10 volts.
2. The forward and reverse gate currents should not exceed 32.0 and -5.6 mA respectively with gate resistance of  $50\Omega$ .

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

| Item                                 | Symbol          | Test Conditions                                                                                                                      | Limit |      |           | Unit               |
|--------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------|-------|------|-----------|--------------------|
|                                      |                 |                                                                                                                                      | Min.  | Typ. | Max.      |                    |
| Saturated Drain Current              | $I_{DSS}$       | $V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$                                                                                             | -     | 6000 | 9000      | mA                 |
| Transconductance                     | $g_m$           | $V_{DS} = 5\text{V}, I_{DS} = 3600\text{mA}$                                                                                         | -     | 5000 | -         | mS                 |
| Pinch-off Voltage                    | $V_p$           | $V_{DS} = 5\text{V}, I_{DS} = 300\text{mA}$                                                                                          | -0.5  | -1.5 | -3.0      | V                  |
| Gate Source Breakdown Voltage        | $V_{GSO}$       | $I_{GS} = -340\mu\text{A}$                                                                                                           | -5    | -    | -         | V                  |
| Output Power at 1dB G.C.P.           | $P_{1dB}$       | $V_{DS} = 10\text{V},$<br>$I_{DS} = 0.65 I_{DSS} \text{ (Typ.)},$<br>$f = 8.5 \sim 9.6 \text{ GHz},$<br>$Z_S = Z_L = 50 \text{ ohm}$ | 39.5  | 40.5 | -         | dBm                |
| Power Gain at 1dB G.C.P.             | $G_{1dB}$       |                                                                                                                                      | 6.5   | 7.5  | -         | dB                 |
| Drain Current                        | $I_{dsr}$       |                                                                                                                                      | -     | 3600 | 4500      | mA                 |
| Power-added Efficiency               | $\eta_{add}$    |                                                                                                                                      | -     | 25   | -         | %                  |
| Gain Flatness                        | $\Delta G$      |                                                                                                                                      | -     | -    | $\pm 0.6$ | dB                 |
| 3rd Order Intermodulation Distortion | $IM_3$          | $f = 9.6 \text{ GHz}, \Delta f = 10 \text{ MHz}$<br>2-Tone Test<br>$P_{out} = 29.5\text{dBm S.C.L.}$                                 | -42   | -45  | -         | dBc                |
| Thermal Resistance                   | $R_{th}$        | Channel to Case                                                                                                                      | -     | 2.3  | 2.6       | $^\circ\text{C/W}$ |
| Channel Temperature Rise             | $\Delta T_{ch}$ | $10\text{V} \times I_{dsr} \times R_{th}$                                                                                            | -     | -    | 80        | $^\circ\text{C}$   |

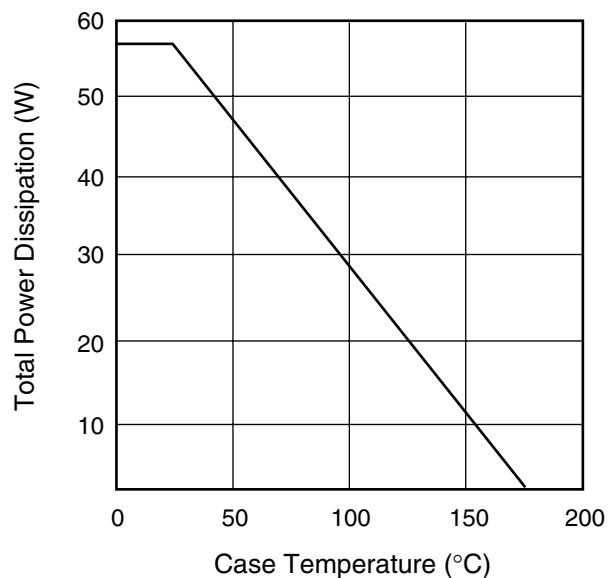
CASE STYLE: IB

G.C.P.: Gain Compression Point, S.C.L.: Single Carrier Level

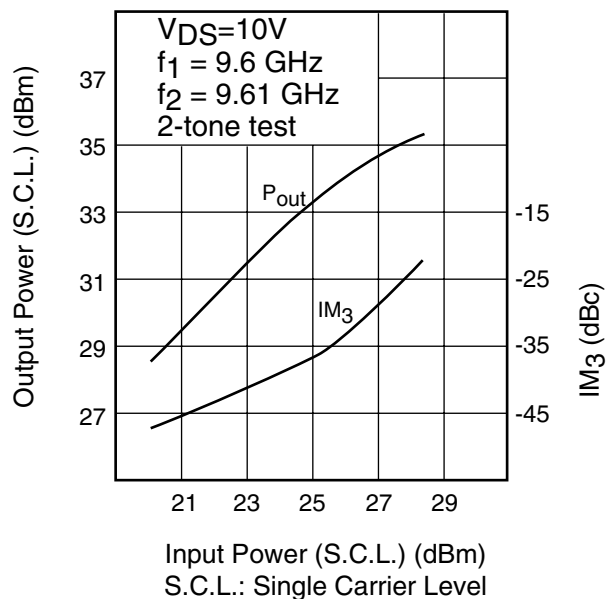
# FLM8596-12F

X, Ku-Band Internally Matched FET

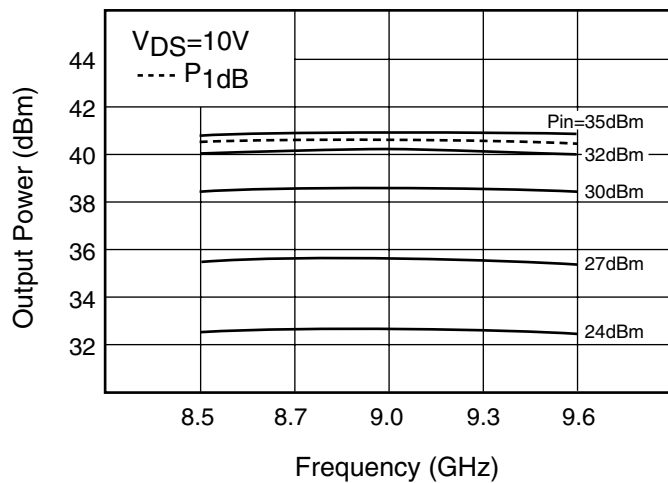
POWER DERATING CURVE



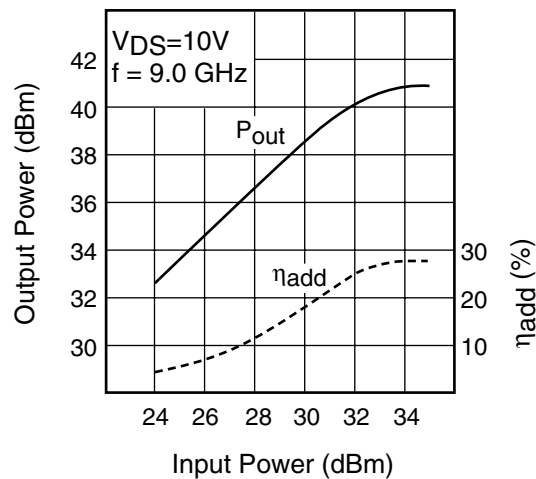
OUTPUT POWER & IM<sub>3</sub> vs. INPUT POWER

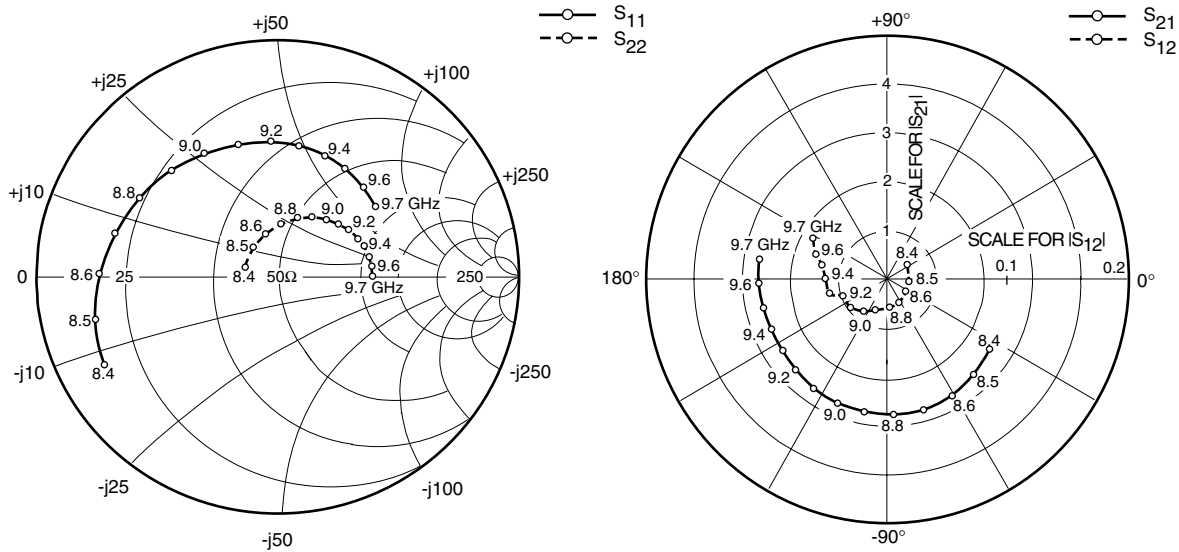


OUTPUT POWER vs. FREQUENCY



OUTPUT POWER vs. INPUT POWER





### S-PARAMETERS

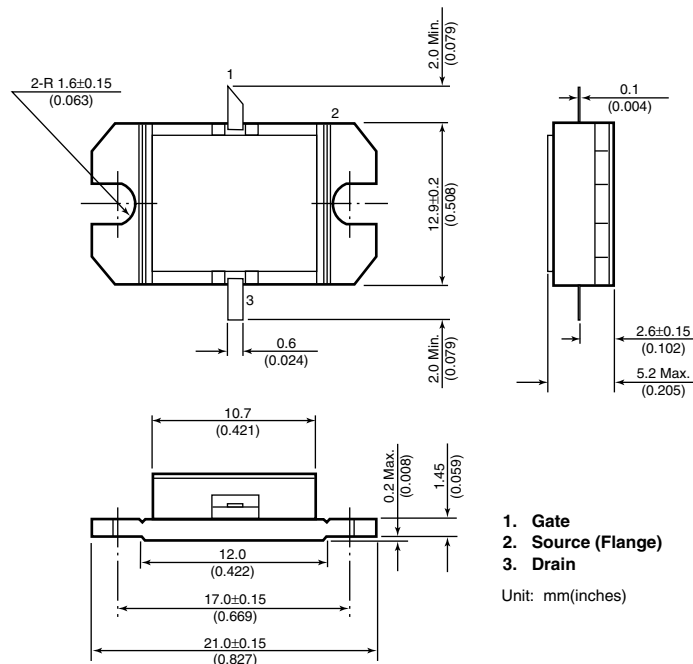
$V_{DS} = 10V, I_{DS} = 3600mA$

| FREQUENCY<br>(MHZ) | S <sub>11</sub> |        | S <sub>21</sub> |        | S <sub>12</sub> |        | S <sub>22</sub> |       |
|--------------------|-----------------|--------|-----------------|--------|-----------------|--------|-----------------|-------|
|                    | MAG             | ANG    | MAG             | ANG    | MAG             | ANG    | MAG             | ANG   |
| 8400               | .807            | -153.6 | 2.559           | -34.3  | .020            | 36.9   | .140            | 163.4 |
| 8500               | .775            | -166.9 | 2.660           | -47.8  | .018            | -9.5   | .159            | 130.9 |
| 8600               | .739            | 179.0  | 2.757           | -61.1  | .018            | -38.2  | .187            | 106.1 |
| 8700               | .703            | 164.6  | 2.789           | -74.3  | .022            | -68.2  | .220            | 86.6  |
| 8800               | .663            | 149.5  | 2.793           | -87.6  | .024            | -87.6  | .262            | 72.5  |
| 8900               | .634            | 134.3  | 2.789           | -100.5 | .028            | -112.9 | .287            | 60.8  |
| 9000               | .611            | 120.0  | 2.747           | -112.7 | .034            | -125.5 | .313            | 50.1  |
| 9100               | .587            | 105.9  | 2.707           | -124.2 | .039            | -142.3 | .335            | 41.1  |
| 9200               | .574            | 93.1   | 2.671           | -135.5 | .040            | -156.6 | .354            | 34.4  |
| 9300               | .561            | 80.8   | 2.640           | -146.3 | .051            | -165.1 | .369            | 25.7  |
| 9400               | .550            | 68.8   | 2.640           | -156.5 | .052            | 180.0  | .381            | 20.0  |
| 9500               | .537            | 57.8   | 2.634           | -167.3 | .056            | 168.7  | .390            | 11.8  |
| 9600               | .520            | 46.9   | 2.643           | -178.0 | .063            | 161.6  | .390            | 5.9   |
| 9700               | .506            | 36.2   | 2.680           | 171.1  | .070            | 152.0  | .391            | 0.0   |

# FLM8596-12F

## X, Ku-Band Internally Matched FET

### Case Style "IB" Metal-Ceramic Hermetic Package



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### CAUTION

Eudyna Devices Inc. products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

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