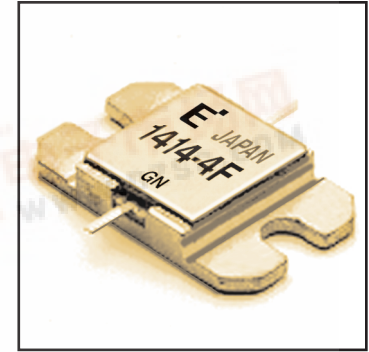


### FEATURES

- High Output Power:  $P_{1dB} = 36.0\text{dBm}$  (Typ.)
- High Gain:  $G_{1dB} = 6.0\text{dB}$  (Typ.)
- High PAE:  $\eta_{add} = 27\%$  (Typ.)
- Low  $IM_3 = -46\text{dBc}$ @ $P_o = 25.5\text{dBm}$  (Typ.)
- Broad Band: 14.0 ~ 14.5GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed



### DESCRIPTION

The FLM1414-4F 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 | $P_T$     | $T_c = 25^\circ\text{C}$ | 25          | W                |
| Storage Temperature     | $T_{stg}$ |                          | -65 to +175 | $^\circ\text{C}$ |
| Channel Temperature     | $T_{ch}$  |                          | 175         | $^\circ\text{C}$ |

Fujitsu 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 16.0 and -2.2 mA respectively with gate resistance of 100 $\Omega$ .

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

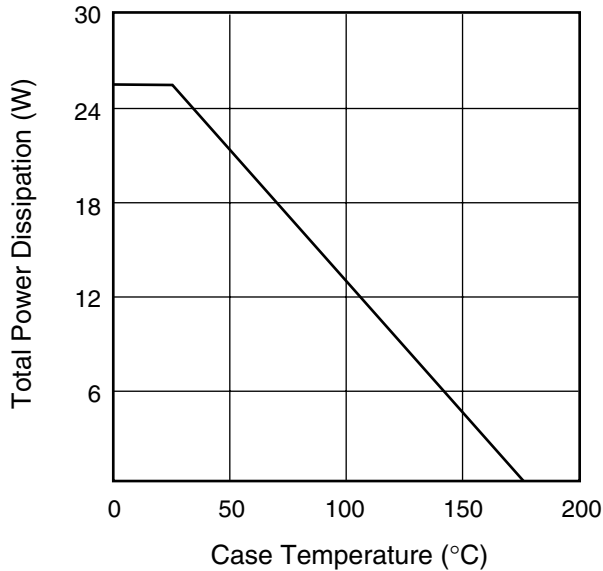
| Item                                 | Symbol          | Test Conditions   | Limit |      |           | Unit               |
|--------------------------------------|-----------------|---|-------|------|-----------|--------------------|
|                                      |                 |   | Min.  | Typ. | Max.      |                    |
| Saturated Drain Current              | $I_{DSS}$       | $V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$  | -     | 1700 | 2600      | mA                 |
| Transconductance                     | $g_m$           | $V_{DS} = 5\text{V}, I_{DS} = 1100\text{mA}$  | -     | 1700 | -         | mS                 |
| Pinch-off Voltage                    | $V_p$           | $V_{DS} = 5\text{V}, I_{DS} = 85\text{mA}$  | -0.5  | -1.5 | -3.0      | V                  |
| Gate Source Breakdown Voltage        | $V_{GSO}$       | $I_{GS} = -85\mu\text{A}$   | -5.0  | -    | -         | V                  |
| Output Power at 1dB G.C.P.           | $P_{1dB}$       |   | 35.5  | 36.0 | -         | dBm                |
| Power Gain at 1dB G.C.P.             | $G_{1dB}$       | $V_{DS} = 10\text{V}$   | 5.0   | 6.0  | -         | dB                 |
| Drain Current                        | $I_{dsr}$       | $f = 14.0 \sim 14.5\text{GHz}$<br>$I_{DS} = 0.65 I_{DSS}(\text{Typ.})$                            | -     | 1100 | 1300      | mA                 |
| Power-Added Efficiency               | $\eta_{add}$    | $Z_S = Z_L = 50\Omega$  | -     | 27   | -         | %                  |
| Gain Flatness                        | $\Delta G$      |   | -     | -    | $\pm 0.6$ | dB                 |
| 3rd Order Intermodulation Distortion | $IM_3$          | $f = 14.5\text{GHz}, \Delta f = 10\text{MHz}$<br>2-Tone Test<br>$P_{out} = 25.5\text{dBm S.C.L.}$ | -44   | -46  | -         | dBc                |
| Thermal Resistance                   | $R_{th}$        | Channel to Case   | -     | 5.0  | 6.0       | $^\circ\text{C/W}$ |
| Channel Temperature Rise             | $\Delta T_{ch}$ | $10\text{V} \times I_{dsr} \times R_{th}$   | -     | -    | 80        | $^\circ\text{C}$   |



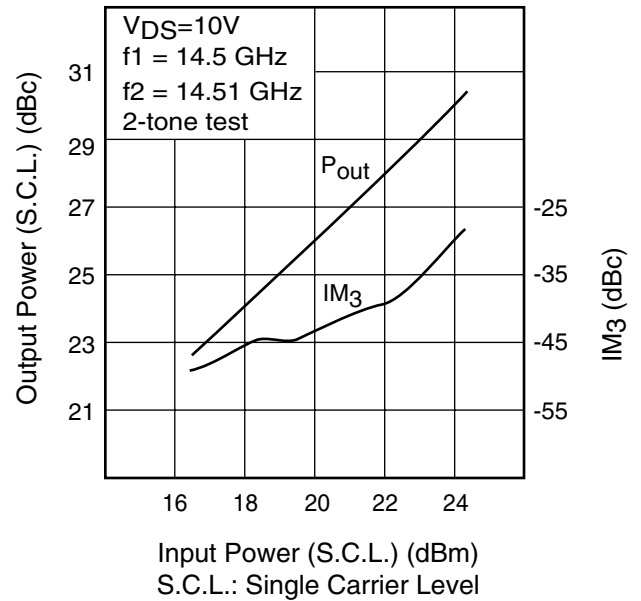
# FLM1414-4F

Internally Matched Power GaAs FET

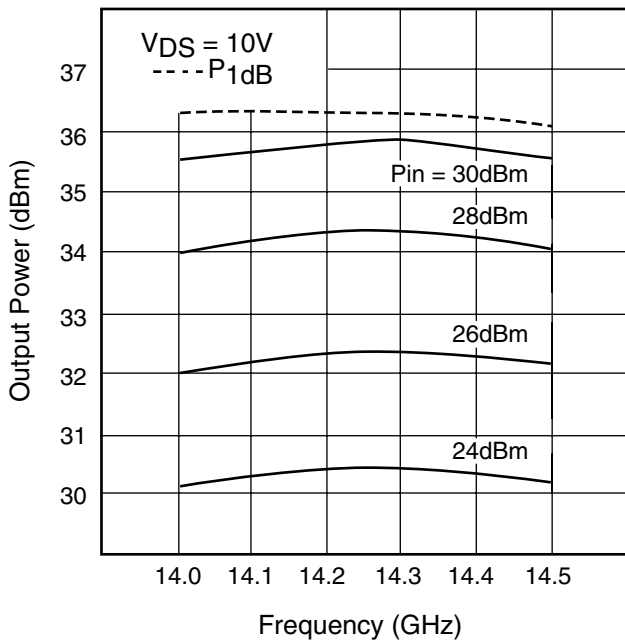
### POWER DERATING CURVE



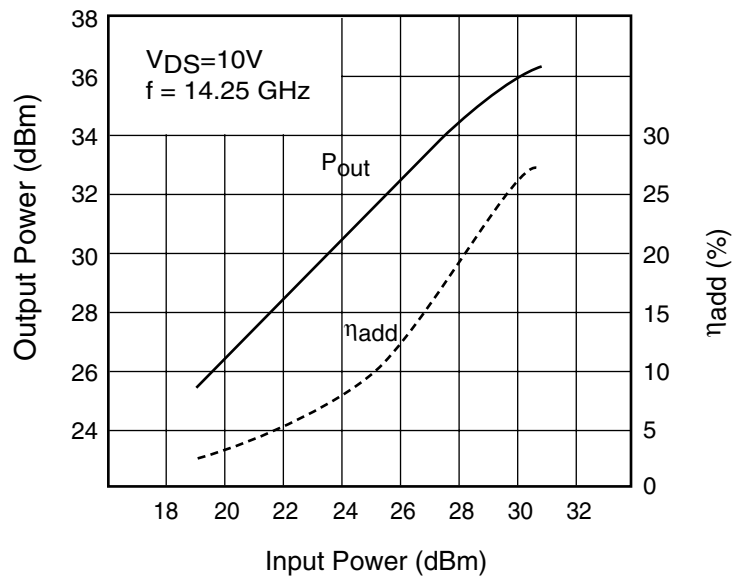
### OUTPUT POWER & IM<sub>3</sub> vs. INPUT POWER



### OUTPUT POWER vs. FREQUENCY

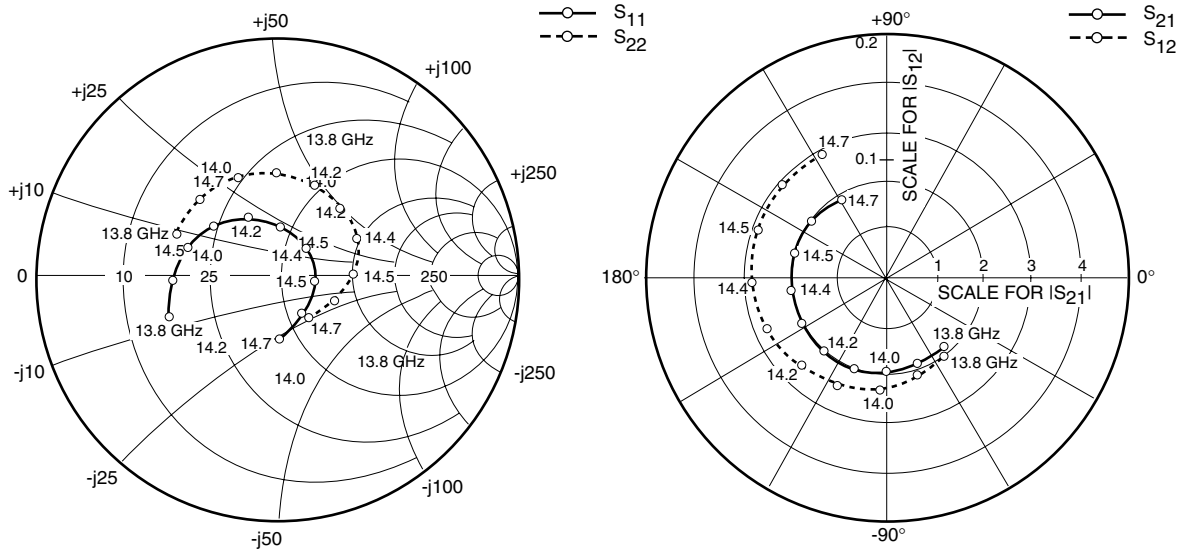


### OUTPUT POWER vs. INPUT POWER



# FLM1414-4F

Internally Matched Power GaAs FET



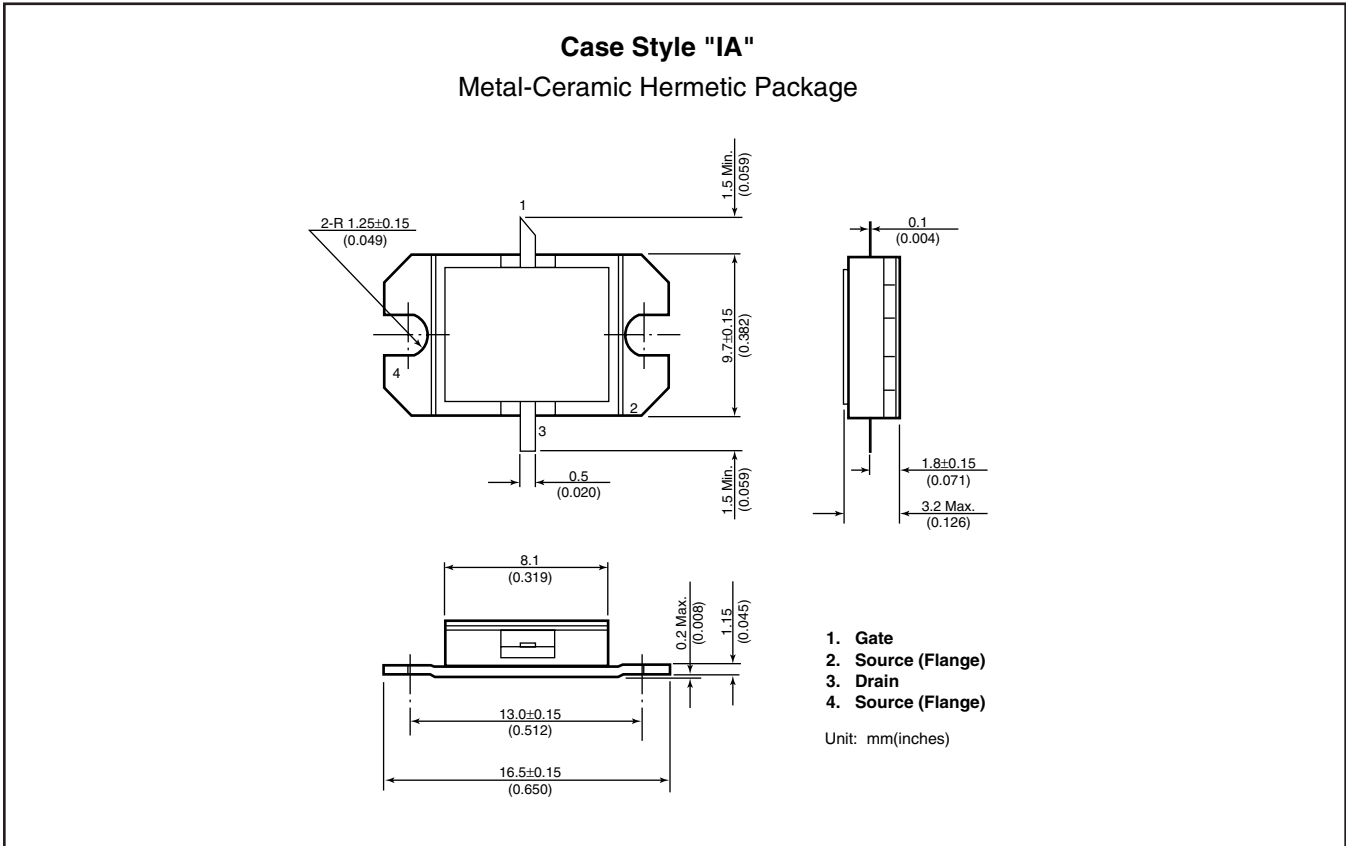
### S-PARAMETERS

$V_{DS} = 10V, I_{DS} = 1100mA$

| FREQUENCY<br>(MHZ) | S11  |        | S21   |        | S12  |        | S22  |       |
|--------------------|------|--------|-------|--------|------|--------|------|-------|
|                    | MAG  | ANG    | MAG   | ANG    | MAG  | ANG    | MAG  | ANG   |
| 13800              | .479 | -159.9 | 1.883 | -51.6  | .080 | -54.0  | .459 | 156.7 |
| 13900              | .436 | -178.2 | 1.921 | -70.6  | .084 | -73.1  | .454 | 134.3 |
| 14000              | .388 | 162.3  | 1.955 | -90.8  | .093 | -94.2  | .438 | 112.7 |
| 14100              | .334 | 141.1  | 1.990 | -110.4 | .098 | -115.0 | .430 | 92.1  |
| 14200              | .278 | 117.4  | 2.017 | -131.2 | .100 | -135.6 | .413 | 68.9  |
| 14300              | .209 | 88.3   | 2.032 | -151.9 | .110 | -157.1 | .381 | 48.0  |
| 14400              | .162 | 47.6   | 2.050 | -172.9 | .113 | -177.9 | .353 | 24.8  |
| 14500              | .150 | -8.2   | 2.016 | 165.3  | .114 | 160.0  | .307 | 0.4   |
| 14600              | .194 | -55.1  | 1.966 | 143.4  | .116 | 138.4  | .256 | -24.4 |
| 14700              | .264 | -89.3  | 1.882 | 121.0  | .115 | 117.5  | .216 | -55.4 |

# FLM1414-4F

Internally Matched Power GaAs FET



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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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