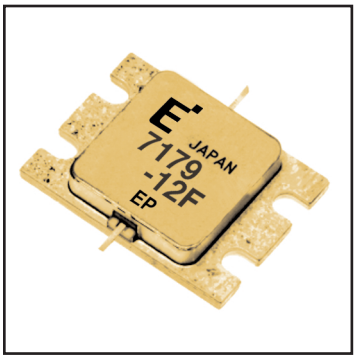
# FLM7179-12F

## C-Band Internally Matched FET

## FEATURES

- High Output Power: $P_{1dB}$ = 41.5dBm (Typ.)
- High Gain: $G_{1dB}$ = 9.0dB (Typ.)
- High PAE: $\eta_{add}$ = 38% (Typ.)
- Low $IM_3$ = -46dBc@Po = 30.5dBm
- Broad Band: 7.1 ~ 7.9GHz
- Impedance Matched Zin/Zout = 50Ω
- Hermetically Sealed Package




## DESCRIPTION

The FLM7179-12F 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 Ta=25°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°C | 57.6 | W |
| **Storage Temperature** | $T_{stg}$ | | -65 to +175 | °C |
| **Channel Temperature** | $T_{ch}$ | | 175 | °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 32.0 and -5.6 mA respectively with gate resistance of 50Ω.

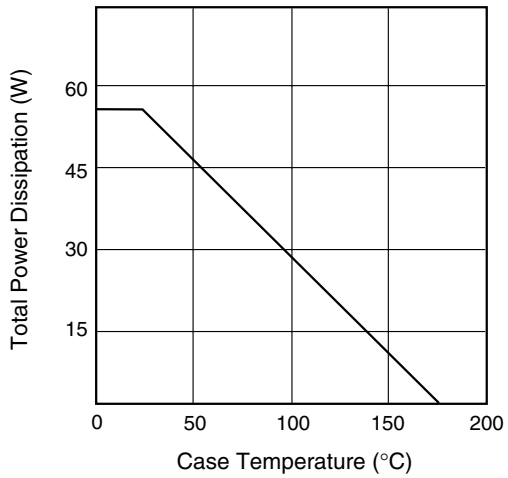
### ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

| Item | Symbol | Test Conditions | Limit | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| **Saturated Drain Current** | $I_{DSS}$ | $V_{DS}$ = 5V, $V_{GS}$ = 0V | - | 5000 | 7500 | mA |
| **Transconductance** | $g_m$ | $V_{DS}$ = 5V, $I_{DS}$ = 3250mA | - | 5000 | - | mS |
| **Pinch-off Voltage** | $V_p$ | $V_{DS}$ = 5V, $I_{DS}$ = 250mA | -0.5 | -1.5 | -3.0 | V |
| **Gate Source Breakdown Voltage** | $V_{GSO}$ | $I_{GS}$ = -250μA | -5.0 | - | - | V |
| **Output Power at 1dB G.C.P.** | $P_{1dB}$ | $V_{DS}$ =10V, $I_{DS}$ = 0.65$I_{DSS}$ (Typ.), f = 7.1 ~ 7.9 GHz, $Z_S$=$Z_L$= 50 ohm | 40.5 | 41.5 | - | dBm |
| **Power Gain at 1dB G.C.P.** | $G_{1dB}$ | | 8.0 | 9.0 | - | dB |
| **Drain Current** | $I_{dsr}$ | | - | 3250 | 4000 | mA |
| **Power-added Efficiency** | $\eta$add | | - | 38 | - | % |
| **Gain Flatness** | ΔG | | - | - | ±0.6 | dB |
| **3rd Order Intermodulation Distortion** | $IM_3$ | f = 7.9 GHz, Δf = 10 MHz 2-Tone Test $P_{out}$ = 30.5dBm S.C.L. | -44 | -46 | - | dBc |
| **Thermal Resistance** | $R_{th}$ | Channel to Case | - | 2.3 | 2.6 | °C/W |
| **Channel Temperature Rise** | $\Delta T_{ch}$ | 10V x $I_{dsr}$ x $R_{th}$ | - | - | 80 | °C |

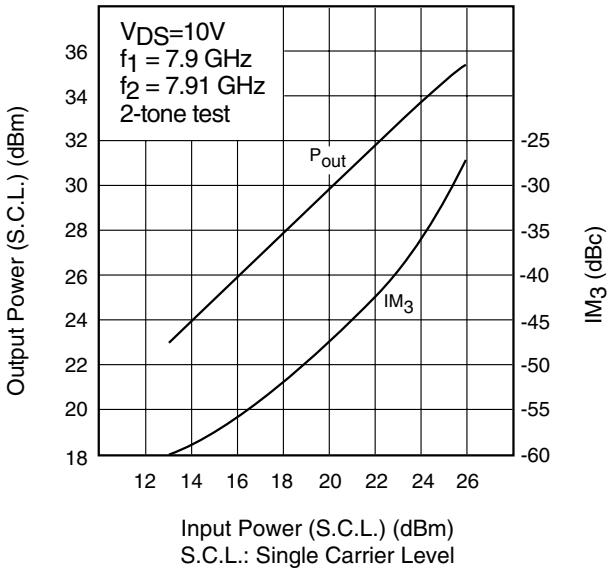
**CASE STYLE:** IK

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

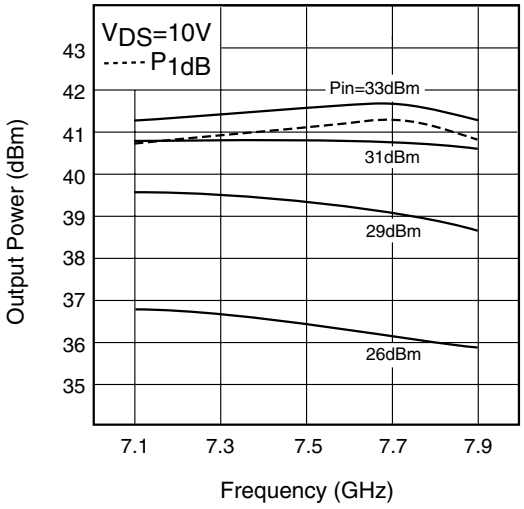
### POWER DERATING CURVE




### OUTPUT POWER & IM3 vs. INPUT POWER




### OUTPUT POWER vs. FREQUENCY

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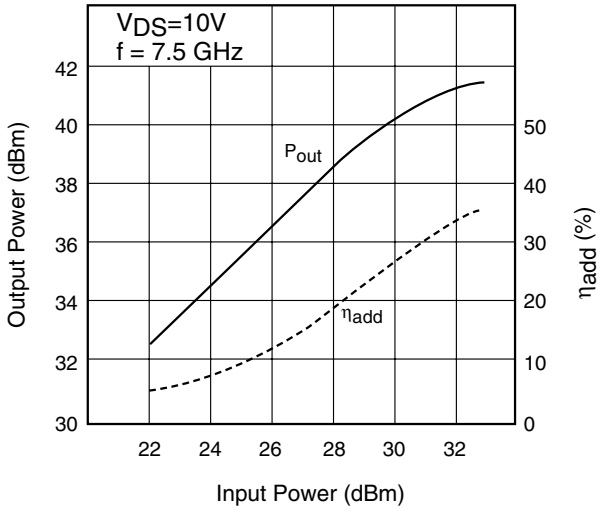
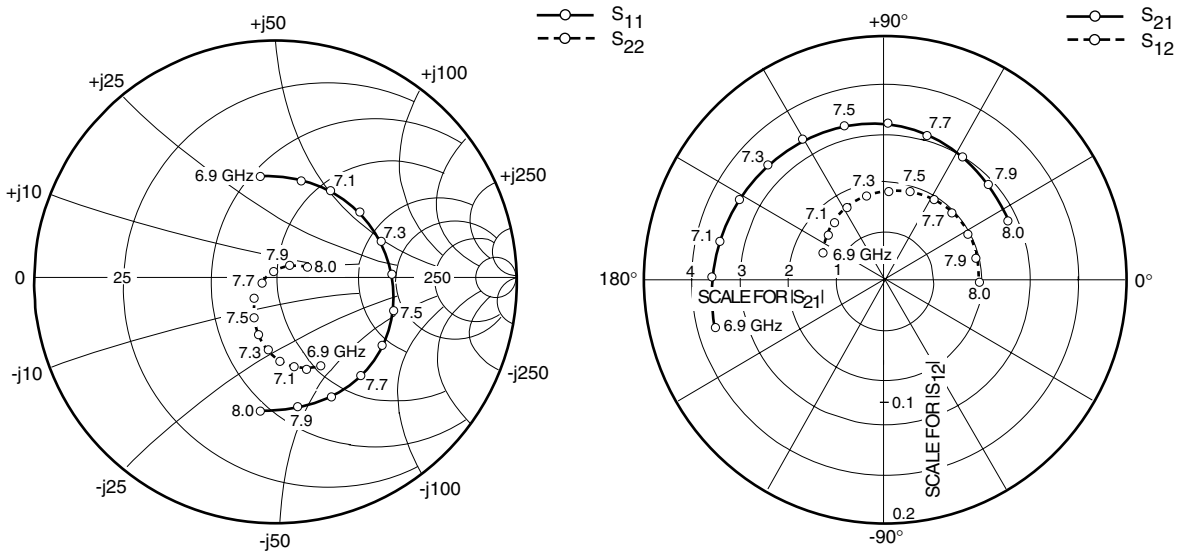




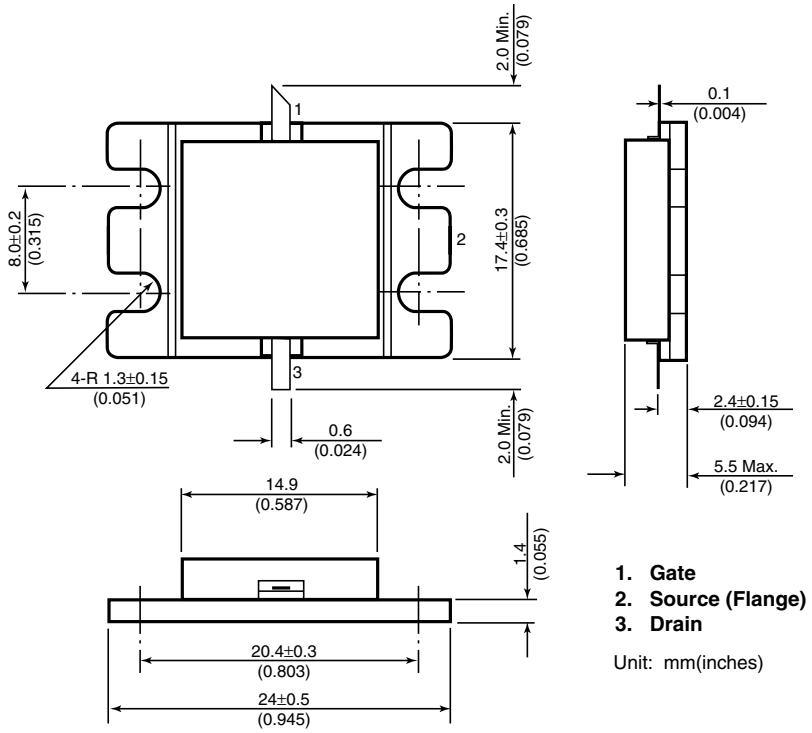

**S-PARAMETERS**

$V_{DS}$ = 10V, $I_{DS}$ = 3250mA

| FREQUENCY | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| (MHZ) | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 6900 | .425 | 99.1 | 3.694 | -164.7 | .056 | 156.4 | .408 | -64.4 |
| 7000 | .418 | 76.0 | 3.616 | 179.1 | .060 | 141.9 | .398 | -72.6 |
| 7100 | .424 | 58.4 | 3.553 | 167.2 | .063 | 131.9 | .378 | -78.5 |
| 7200 | .439 | 38.0 | 3.477 | 151.7 | .067 | 118.1 | .347 | -86.9 |
| 7300 | .460 | 19.0 | 3.409 | 136.2 | .072 | 101.9 | .304 | -96.1 |
| 7400 | .483 | 0.7 | 3.336 | 120.6 | .074 | 88.1 | .252 | -106.9 |
| 7500 | .502 | -16.4 | 3.262 | 104.8 | .077 | 73.5 | .190 | -118.4 |
| 7600 | .520 | -33.0 | 3.180 | 89.3 | .077 | 59.3 | .127 | -133.2 |
| 7700 | .535 | -49.4 | 3.094 | 73.5 | .079 | 44.3 | .062 | -154.6 |
| 7800 | .546 | -65.3 | 3.007 | 57.6 | .078 | 28.8 | .023 | 107.8 |
| 7900 | .554 | -80.8 | 2.913 | 41.8 | .078 | 12.6 | .073 | 40.9 |
| 8000 | .560 | -96.4 | 2.819 | 25.7 | .078 | -1.3 | .129 | 18.5 |

### Case Style "IK"

Metal-Ceramic Hermetic Package




1. **Gate**
2. **Source (Flange)**
3. **Drain**

Unit: mm(inches)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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.**