FEATURES
• High Output Power: $P_{1\text{dB}} = 41.5\text{dBm}$ (Typ.)
• High Gain: $G_{1\text{dB}} = 9.5\text{dB}$ (Typ.)
• High PAE: $\eta_{\text{add}} = 38\%$ (Typ.)
• Low $\text{IM}_3 = -46\text{dBc}@P_o = 30.5\text{dBm}$
• Broad Band: $5.3 \sim 5.9\text{GHz}$
• Impedance Matched $Z_{\text{in}}/Z_{\text{out}} = 50\Omega$

DESCRIPTION
The FLM5359-12F 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 $T_a=25^\circ\text{C}$)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Condition</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-Source Voltage</td>
<td>$V_{DS}$</td>
<td></td>
<td>15</td>
<td>V</td>
</tr>
<tr>
<td>Gate-Source Voltage</td>
<td>$V_{GS}$</td>
<td></td>
<td>-5</td>
<td>V</td>
</tr>
<tr>
<td>Total Power Dissipation</td>
<td>$P_T$</td>
<td>$T_c = 25^\circ\text{C}$</td>
<td>57.6</td>
<td>W</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{\text{stg}}$</td>
<td></td>
<td>-65 to +175</td>
<td>°C</td>
</tr>
<tr>
<td>Channel Temperature</td>
<td>$T_{ch}$</td>
<td></td>
<td>175</td>
<td>°C</td>
</tr>
</tbody>
</table>

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 $T_a=25^\circ\text{C}$)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Test Conditions</th>
<th>Limit</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturated Drain Current</td>
<td>$I_{DSS}$</td>
<td>$V_{DS} = 5V$, $V_{GS} = 0V$</td>
<td>-</td>
<td>5800</td>
<td>8700</td>
<td>mA</td>
</tr>
<tr>
<td>Transconductance</td>
<td>$g_m$</td>
<td>$V_{DS} = 5V$, $I_{DS} = 3400\text{mA}$</td>
<td>-</td>
<td>2900</td>
<td>-</td>
<td>mS</td>
</tr>
<tr>
<td>Pinch-off Voltage</td>
<td>$V_p$</td>
<td>$V_{DS} = 5V$, $I_{DS} = 300\text{mA}$</td>
<td>-1.0</td>
<td>-2.0</td>
<td>-3.5</td>
<td>V</td>
</tr>
<tr>
<td>Gate Source Breakdown Voltage</td>
<td>$V_{GSO}$</td>
<td>$I_{GS} = -300\mu\text{A}$</td>
<td>-5.0</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Output Power at 1dB G.C.P.</td>
<td>$P_{1\text{dB}}$</td>
<td>$V_{DS} = 10V$, $I_{DS} = 0.55I_{DSS}$ (Typ.), $f = 5.3 \sim 5.9\text{GHz}$, $Z_s = Z_L = 50\Omega$</td>
<td>40.5</td>
<td>41.5</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Power Gain at 1dB G.C.P.</td>
<td>$G_{1\text{dB}}$</td>
<td>-</td>
<td>8.5</td>
<td>9.5</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Drain Current</td>
<td>$I_{\text{dsr}}$</td>
<td>-</td>
<td>3250</td>
<td>3800</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Power-added Efficiency</td>
<td>$\eta_{\text{add}}$</td>
<td>-</td>
<td>38</td>
<td>-</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>$\Delta G$</td>
<td>-</td>
<td>-</td>
<td>±0.6</td>
<td>dB</td>
<td></td>
</tr>
<tr>
<td>3rd Order Intermodulation Distortion</td>
<td>$\text{IM}_3$</td>
<td>$f = 5.9\text{GHz}$, $\Delta f = 10\text{MHz}$ 2-Tone Test $P_{\text{out}} = 30.5\text{dBm}$ S.C.L.</td>
<td>-44</td>
<td>-46</td>
<td>-</td>
<td>dBc</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>$R_{\text{th}}$</td>
<td>Channel to Case</td>
<td>-2.3</td>
<td>2.6</td>
<td>°C/W</td>
<td></td>
</tr>
<tr>
<td>Channel Temperature Rise</td>
<td>$\Delta T_{\text{ch}}$</td>
<td>$10V \times I_{\text{dsr}} \times R_{\text{th}}$</td>
<td>-</td>
<td>-</td>
<td>80</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

CASE STYLE: IK

G.C.P.: Gain Compression Point, S.C.L.: Single Carrier Level
FLM5359-12F  
C-Band Internally Matched FET

**POWER DERATING CURVE**

- Total Power Dissipation (W) vs. Case Temperature (°C)

**OUTPUT POWER & IM3 vs. INPUT POWER**

- **VDS=10V**
  - $f_1 = 5.9$ GHz
  - $f_2 = 5.91$ GHz
  - 2-tone test

- Output Power (S.C.L.) (dBm) vs. Input Power (S.C.L.) (dBm)
  - IM3 (dBc)

**OUTPUT POWER vs. FREQUENCY**

- VDS=10V
  - $P_{1dB}$
  - $P_{out}$
  - $P_{in}$=33dBm
  - 3 dBm
  - 29dBm
  - 27dBm

- Output Power (dBm) vs. Frequency (GHz)

**OUTPUT POWER vs. INPUT POWER**

- VDS=10V
  - $f = 5.6$ GHz
  - $P_{out}$
  - $\eta_{add}$

- Output Power (dBm) vs. Input Power (dBm)

- Efficiency (%) vs. Input Power (dBm)
### S-Parameters

**V_{DS} = 10V, I_{DS} = 3400mA**

<table>
<thead>
<tr>
<th>FREQUENCY (MHZ)</th>
<th>S11 MAG</th>
<th>S11 ANG</th>
<th>S12 MAG</th>
<th>S12 ANG</th>
<th>S21 MAG</th>
<th>S21 ANG</th>
<th>S22 MAG</th>
<th>S22 ANG</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100</td>
<td>.722</td>
<td>-100.8</td>
<td>2.867</td>
<td>43.0</td>
<td>.027</td>
<td>21.1</td>
<td>.434</td>
<td>-91.7</td>
</tr>
<tr>
<td>5200</td>
<td>.670</td>
<td>-118.0</td>
<td>3.100</td>
<td>25.4</td>
<td>.031</td>
<td>-4.1</td>
<td>.401</td>
<td>-113.1</td>
</tr>
<tr>
<td>5300</td>
<td>.608</td>
<td>-137.4</td>
<td>3.299</td>
<td>7.2</td>
<td>.038</td>
<td>-26.3</td>
<td>.372</td>
<td>-136.6</td>
</tr>
<tr>
<td>5400</td>
<td>.543</td>
<td>-159.6</td>
<td>3.429</td>
<td>-11.6</td>
<td>.044</td>
<td>-49.2</td>
<td>.352</td>
<td>-161.0</td>
</tr>
<tr>
<td>5500</td>
<td>.485</td>
<td>175.3</td>
<td>3.497</td>
<td>-30.0</td>
<td>.050</td>
<td>-71.0</td>
<td>.343</td>
<td>175.8</td>
</tr>
<tr>
<td>5600</td>
<td>.448</td>
<td>148.0</td>
<td>3.502</td>
<td>-48.4</td>
<td>.054</td>
<td>-91.6</td>
<td>.344</td>
<td>155.0</td>
</tr>
<tr>
<td>5700</td>
<td>.441</td>
<td>120.7</td>
<td>3.449</td>
<td>-66.1</td>
<td>.057</td>
<td>-110.3</td>
<td>.344</td>
<td>137.0</td>
</tr>
<tr>
<td>5800</td>
<td>.458</td>
<td>96.4</td>
<td>3.357</td>
<td>-83.2</td>
<td>.060</td>
<td>-128.1</td>
<td>.346</td>
<td>121.8</td>
</tr>
<tr>
<td>5900</td>
<td>.485</td>
<td>76.0</td>
<td>3.250</td>
<td>-99.5</td>
<td>.063</td>
<td>-144.4</td>
<td>.350</td>
<td>108.2</td>
</tr>
<tr>
<td>6000</td>
<td>.513</td>
<td>59.3</td>
<td>3.141</td>
<td>-114.9</td>
<td>.064</td>
<td>-159.7</td>
<td>.357</td>
<td>96.8</td>
</tr>
<tr>
<td>6100</td>
<td>.536</td>
<td>45.2</td>
<td>3.053</td>
<td>-129.7</td>
<td>.066</td>
<td>-174.1</td>
<td>.365</td>
<td>86.8</td>
</tr>
</tbody>
</table>
**FLM5359-12F**

*C-Band Internally Matched FET*

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**Case Style "IK"**

Metal-Ceramic Hermetic Package

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For further information please contact:

**Eudyna Devices USA Inc.**
2355 Zanker Rd.
San Jose, CA  95131-1138, U.S.A.
TEL: (408) 232-9500
FAX: (408) 482-9111
[www.us.eudyna.com](http://www.us.eudyna.com)

**Eudyna Devices Europe Ltd.**
Network House
Norreys Drive
Maidenhead, Berkshire SL6 4FJ
United Kingdom
TEL: +44 (0) 1628 504800
FAX: +44 (0) 1628 504888

**Eudyna Devices Asia Pte Ltd.**
Hong Kong Branch
Rm. 1101, Ocean Centre, 5 Canton Rd.
Tsim Sha Tsui, Kowloon, Hong Kong
TEL: +852-2377-0227
FAX: +852-2377-3921

**Eudyna Devices Inc.**
Sales Division
1, Kanai-cho, Saka-ku
Yokohama, 244-0845, Japan
TEL: +81-45-853-8156
FAX: +81-45-853-8170

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- 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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