# FLC257MH-8

## C-Band Power GaAs FET

## FEATURES

- High Output Power: $P_{1dB}$ = 34.0dBm(Typ.)
- High Gain: $G_{1dB}$ = 8.0dB(Typ.)
- High PAE: $\eta_{add}$ = 35%(Typ.)
- ProvenReliability
- Hermetic Metal/Ceramic Package


## DESCRIPTION

The FLC257MH-8 is a power GaAs FET that is designed for general purpose applications in the C-Band frequency range as it provides superior power, gain, and efficiency.

Fujitsu'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 | 15 | 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 17.8 and -1.2 mA respectively with gate resistance of 200Ω.
3. The operating channel temperature ($T_{ch}$) should not exceed 145°C.

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

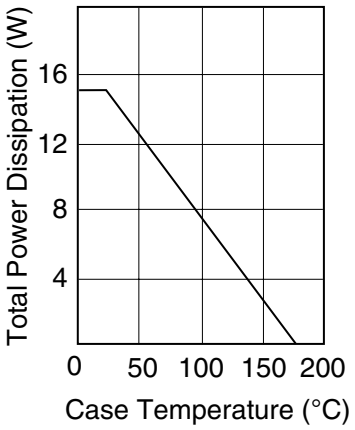
| Item | Symbol | Test Conditions | Limit | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| **Saturated Drain Current** | $I_{DSS}$ | $V_{DS}$ = 5V, $V_{GS}$ = 0V | - | 1000 | 1500 | mA |
| **Transconductance** | $g_m$ | $V_{DS}$ = 5V, $I_{DS}$ =600mA | - | 500 | - | mS |
| **Pinch-off Voltage** | $V_p$ | $V_{DS}$ = 5V, $I_{DS}$ =50mA | -1.0 | -2.0 | -3.5 | V |
| **Gate Source Breakdown Voltage** | $V_{GSO}$ | $I_{GS}$ = -50μA | -5 | - | - | V |
| **Output Power at 1dB G.C.P.** | $P_{1dB}$ | $V_{DS}$ = 10V, $I_{DS}$ = 0.6 $I_{DSS}$ (Typ.), f = 8.5 GHz | 32.5 | 34.0 | - | dBm |
| **Power Gain at 1dB G.C.P.** | $G_{1dB}$ | | 7.0 | 8.0 | - | dB |
| **Power-added Efficiency** | $\eta_{add}$ | | - | 35 | - | % |
| **Thermal Resistance** | $R_{th}$ | Channel to Case | - | 8 | 10 | °C/W |

**CASE STYLE:** MH

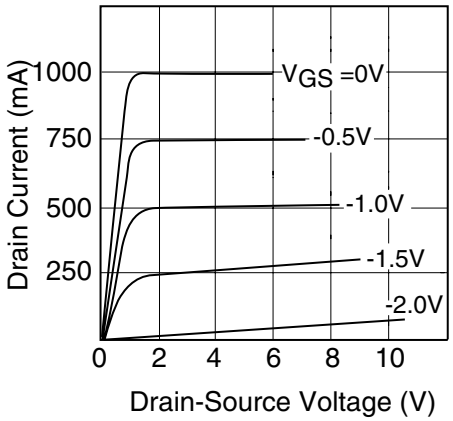
G.C.P.: Gain Compression Point

Edition 1.1
July 1999

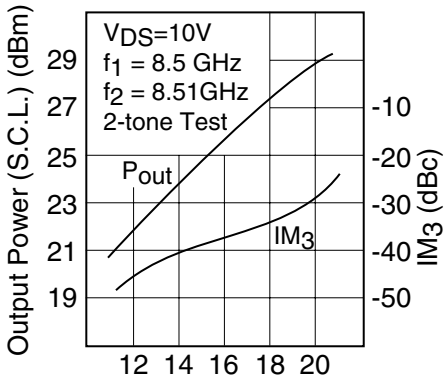
**POWER DERATING CURVE**



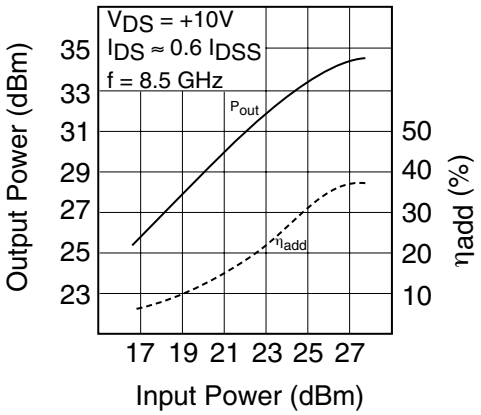

**DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE**



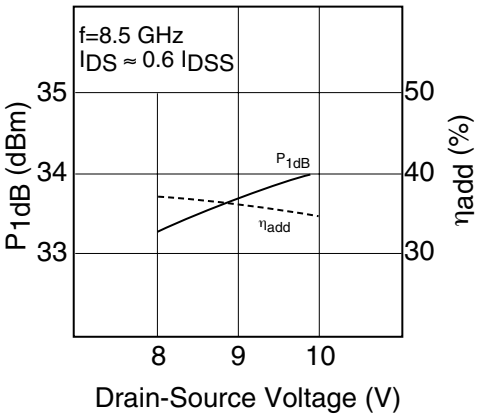

**OUTPUT POWER & IM3 vs. INPUT POWER**




**OUTPUT POWER vs. INPUT POWER**




**P1dB & ηadd vs. VDS**

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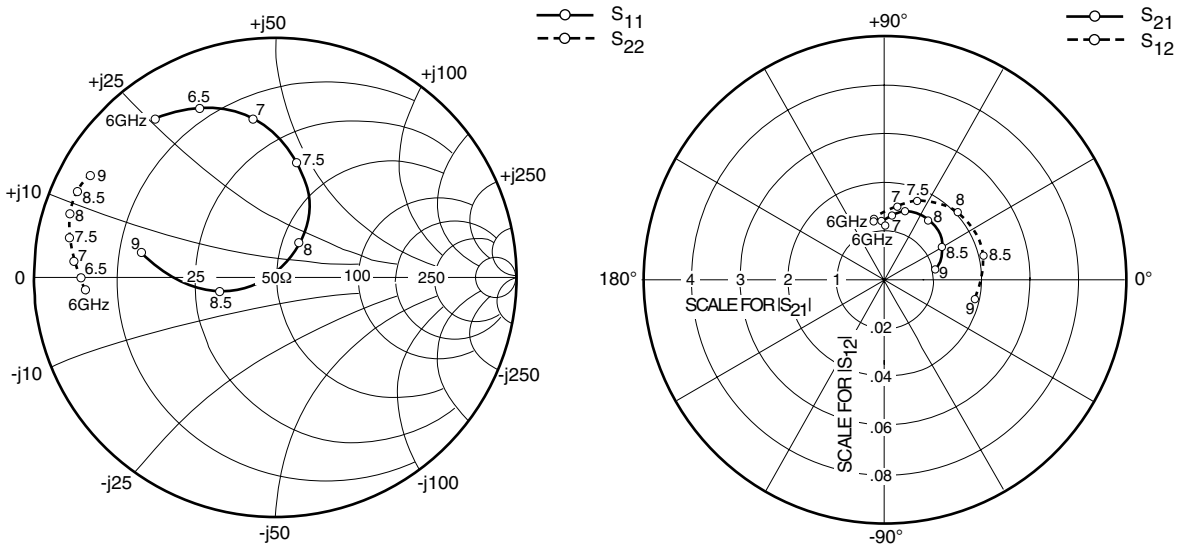
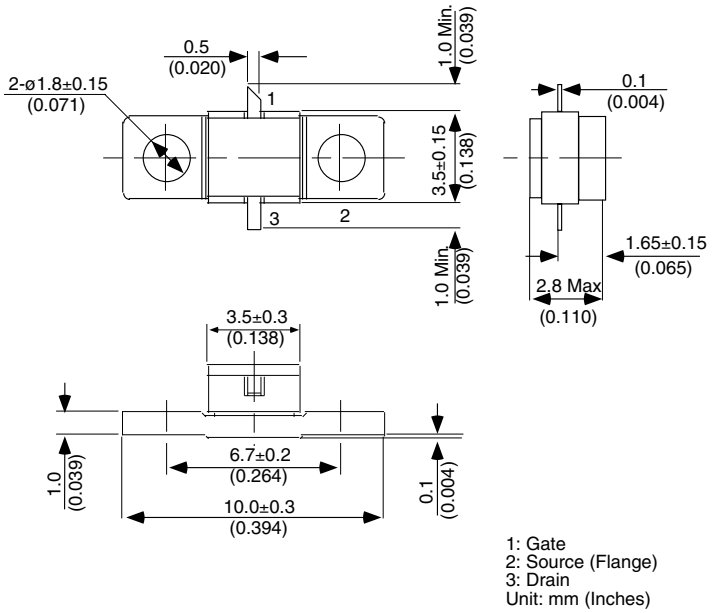



**S-PARAMETERS**

$V_{DS}$ = 10V, $I_{DS}$ = 600mA

| FREQUENCY | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| (MHZ) | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 500 | .928 | -142.8 | 7.163 | 109.2 | .021 | 28.8 | .344 | -157.2 |
| 6000 | .826 | 127.2 | 1.097 | 90.1 | .025 | 99.3 | .778 | -174.5 |
| 6500 | .770 | 114.2 | 1.179 | 92.6 | .026 | 98.5 | .798 | -179.6 |
| 7000 | .666 | 98.0 | 1.270 | 84.3 | .030 | 81.0 | .834 | 175.7 |
| 7500 | .485 | 78.9 | 1.453 | 73.2 | .035 | 67.7 | .863 | 169.2 |
| 8000 | .170 | 55.0 | 1.500 | 53.1 | .041 | 43.3 | .894 | 162.7 |
| 8500 | .243 | -164.9 | 1.368 | 29.9 | .042 | 14.0 | .889 | 156.1 |
| 9000 | .561 | 170.0 | 1.053 | 10.3 | .038 | -12.0 | .874 | 150.6 |
| 9500 | .740 | 150.0 | .758 | -1.9 | .029 | -29.6 | .848 | 146.0 |
| 10000 | .828 | 134.3 | .569 | -9.3 | .023 | -40.1 | .846 | 143.4 |

**Case Style "MH"**
Metal-Ceramic Hermetic Package




1: Gate
2: Source (Flange)
3: Drain
Unit: mm (Inches)

**For further information please contact:**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**CAUTION**

Fujitsu Compound Semiconductor 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 these products 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.**




Printed in U.S.A. FCSI0598M200


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