# FSX017WF

## General Purpose GaAs FET

## FEATURES

- Medium Power Output: $P_{1dB}$=21.5dB (Typ.)@8.0GHz
- High Power Gain: $G_{1dB}$=11dB (Typ.)@8.0GHz
- Hermetic Metal/Ceramic Package
- Proven Reliability




## DESCRIPTION

The FSX017WF is a general purpose GaAs FET designed for medium power applications up to the 12GHz. These devices have a wide dynamic range and are suitable for use in medium power, wide band, linear drive amplifiers or oscillators.

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** | $V_{DS}$ | | 12 | V |
| **Gate-Source Voltage** | $V_{GS}$ | | -5 | V |
| **Total Power Dissipation** | $P_{tot}$ | $T_c$ = 25°C | 1.0 | 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 8 volts.
2. The forward and reverse gate currents should not exceed 0.7 and -0.1 mA respectively with gate resistance of 2000Ω.
3. The operating channel temperature ($T_{ch}$) should not exceed 145°C.

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

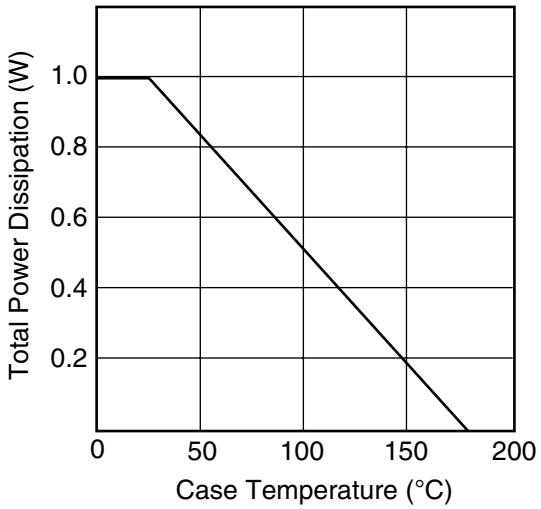
| Item | Symbol | Test Conditions | | Limit Min. | Limit Typ. | Limit Max. | Unit |
|---|---|---|---|---|---|---|---|
| **Saturated Drain Current** | $I_{DSS}$ | $V_{DS}$ = 3V, $V_{GS}$ = 0V | | 35 | 55 | 75 | mA |
| **Transconductance** | $g_m$ | $V_{DS}$ = 3V, $I_{DS}$ = 27mA | | - | 50 | - | mS |
| **Pinch-off Voltage** | $V_p$ | $V_{DS}$ = 3V, $I_{DS}$ = 2.7mA | | -0.7 | -1.2 | -1.7 | V |
| **Gate Source Breakdown Voltage** | $V_{GSO}$ | $I_{GS}$ = -2.7μA | | -5.0 | - | - | V |
| **Noise Figure** | NF | $V_{DS}$ = 3V, $I_{DS}$ = 10mA f = 8GHz | | - | 2.5 | - | dB |
| **Associated Gain** | $G_{as}$ | | | - | 10.5 | - | dB |
| **Output Power at 1 dB G.C.P.** | $P_{1dB}$ | $V_{DS}$ = 8V, $I_{DS}$ = 0.7$I_{DSS}$ | f = 4GHz | - | 21.5 | - | dBm |
| | | | f = 8GHz | 20.5 | 21.5 | - | dBm |
| | | | f = 12GHz | - | 20.5 | - | dBm |
| **Power Gain at 1 dB G.C.P.** | $G_{1dB}$ | $V_{DS}$ = 8V, $I_{DS}$ = 0.7$I_{DSS}$ | f = 4GHz | - | 15.0 | - | dB |
| | | | f = 8GHz | 10.0 | 11.0 | - | dB |
| | | | f = 12GHz | - | 7.5 | - | dB |
| **Thermal Resistance** | $R_{th}$ | Channel to Case | | - | 120 | 150 | °C/W |

**CASE STYLE: WF**

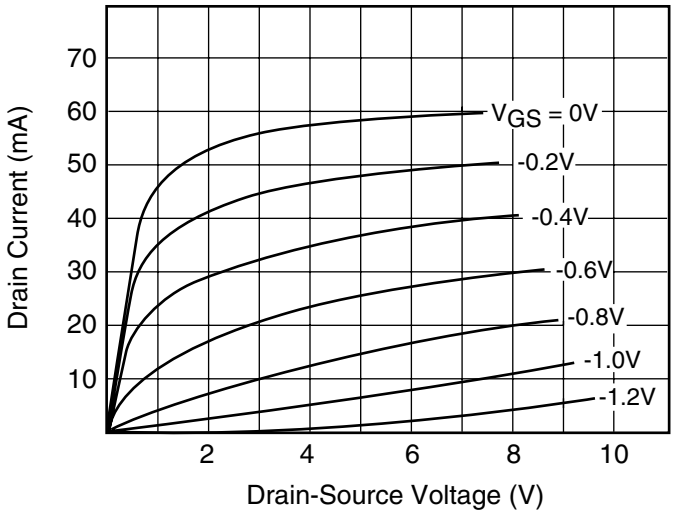
G.C.P.: Gain Compression Point

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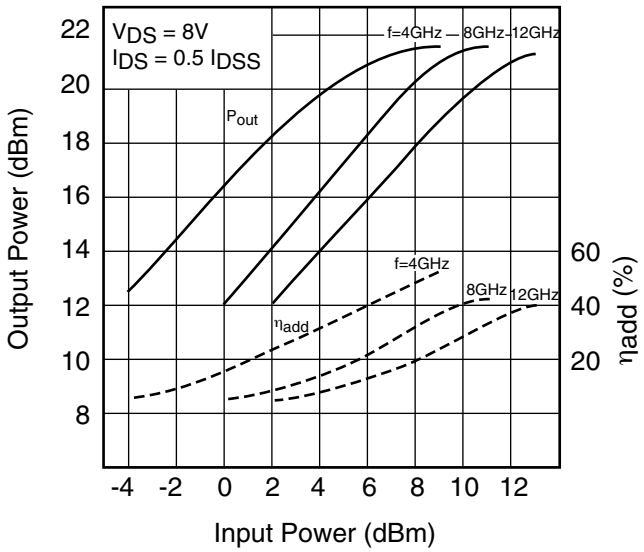
POWER DERATING CURVE



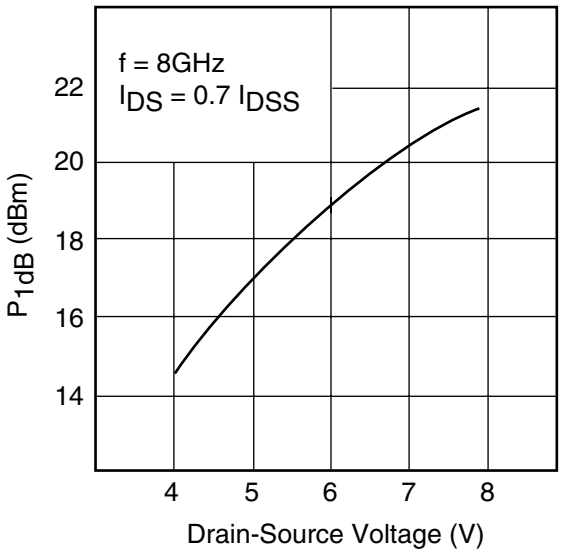

DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE

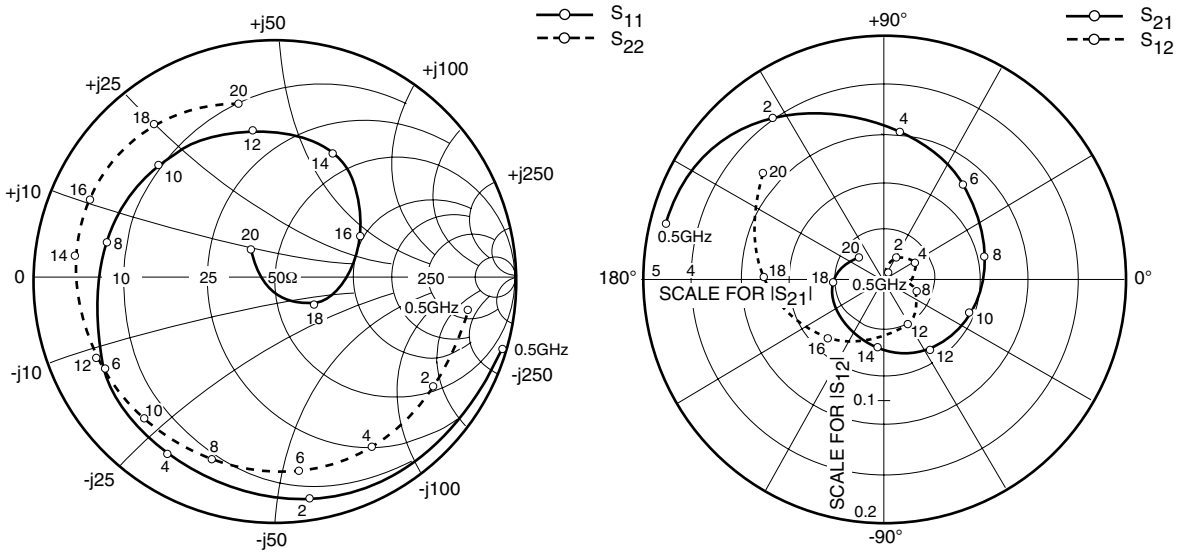



OUTPUT POWER vs. INPUT POWER




$P_{1dB}$ vs. $V_{DS}$





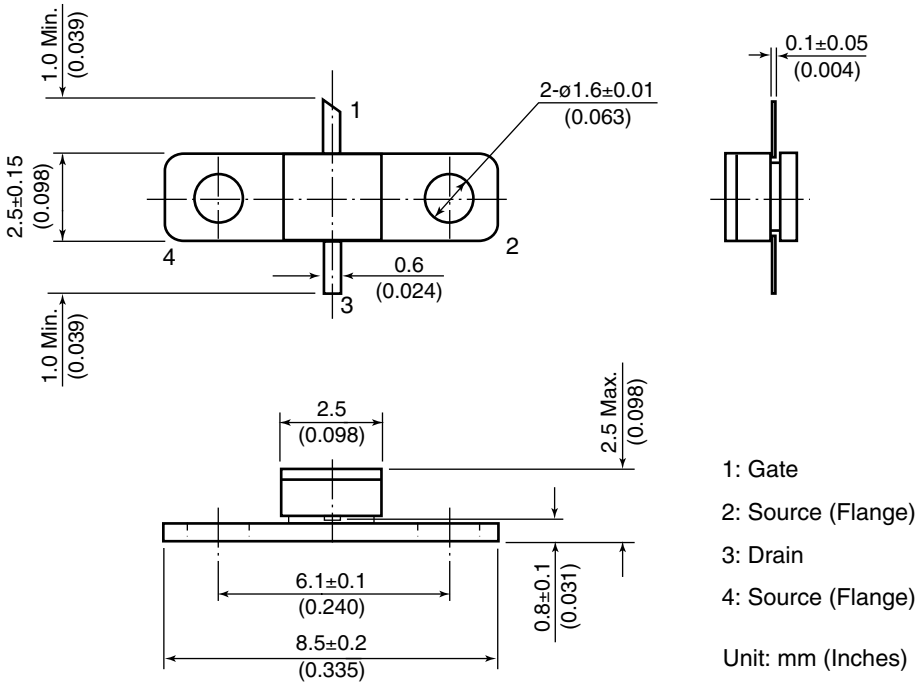

**S-PARAMETERS**

$V_{DS}$ =8V, $I_{DS}$ = 35mA

| FREQUENCY | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| (MHZ) | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 500 | .994 | -17.5 | 4.666 | 165.0 | .007 | 75.3 | .826 | -8.4 |
| 1000 | .982 | -33.7 | 4.499 | 151.2 | .013 | 69.9 | .819 | -17.3 |
| 2000 | .936 | -66.2 | 4.066 | 124.2 | .022 | 47.3 | .808 | -33.3 |
| 3000 | .891 | -92.7 | 3.486 | 101.1 | .026 | 30.2 | .799 | -47.7 |
| 4000 | .855 | -112.9 | 3.001 | 82.3 | .027 | 17.5 | .796 | -59.2 |
| 5000 | .817 | -131.0 | 2.706 | 66.1 | .026 | 7.6 | .795 | -67.5 |
| 6000 | .778 | -150.4 | 2.555 | 49.2 | .026 | 0.0 | .791 | -76.3 |
| 7000 | .738 | -172.0 | 2.407 | 30.3 | .026 | -12.8 | .778 | -88.8 |
| 8000 | .705 | 167.8 | 2.206 | 12.0 | .022 | -20.7 | .774 | -102.1 |
| 9000 | .693 | 150.3 | 2.020 | -5.3 | .025 | -24.2 | .777 | -115.7 |
| 10000 | .679 | 135.1 | 1.894 | -20.9 | .028 | -31.8 | .780 | -127.6 |
| 11000 | .655 | 117.2 | 1.842 | -38.1 | .035 | -43.3 | .791 | -140.5 |
| 12000 | .631 | 96.4 | 1.750 | -57.3 | .042 | -60.2 | .798 | -155.2 |
| 13000 | .610 | 78.9 | 1.595 | -76.9 | .047 | -79.6 | .809 | -173.0 |
| 14000 | .573 | 64.6 | 1.422 | -94.9 | .050 | -96.0 | .830 | 172.1 |
| 15000 | .503 | 48.0 | 1.298 | -111.5 | .058 | -113.5 | .846 | 163.3 |

**Download S-Parameters, click here**

Case Style "WF"
Metal-Ceramic Hermetic Package




1: Gate

2: Source (Flange)

3: Drain

4: Source (Flange)

Unit: mm (Inches)

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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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Printed in U.S.A. FCSI0598M200


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