# FLK012WF
## X-Ku Band Power GaAs FETs

### ABSOLUTE MAXIMUM RATINGS (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 | $P_T$ | Tc=25°C | 1.15 | 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 +0.25 and -0.05 mA respectively with gate resistance of 3000Ω.

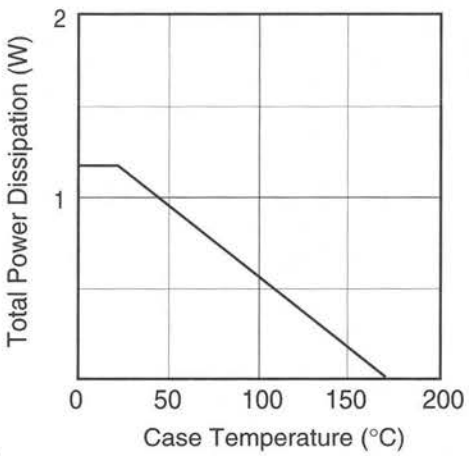
### ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta = 25°C)

| Item | Symbol | Test Conditions | Limit | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Saturated Drain Current | $I_{DSS}$ | $V_{DS}$ = 5V, $V_{GS}$ = 0V | - | 60 | 90 | mA |
| Transconductance | $g_m$ | $V_{DS}$ = 5V, $I_{DS}$ = 40mA | - | 30 | - | mS |
| Pinch-off Voltage | $V_P$ | $V_{DS}$ = 5V, $I_{DS}$ = 3mA | -1.0 | -2.0 | -3.5 | V |
| Gate-Source Breakdown Voltage | $V_{GSO}$ | $I_{GS}$ = -3 μA | -5 | - | - | V |
| Output Power at 1dB G.C.P. | $P_{1dB}$ | $V_{DS}$ =10V, $I_{DS}$= 0.6 $I_{DSS}$ (Typ.), f = 14.5GHz | 19.5 | 20.5 | - | dBm |
| Power Gain at 1dB G.C.P. | $G_{1dB}$ | | 6.0 | 7.5 | - | dB |
| Power added Efficiency | $\eta_{add}$ | | - | 26 | - | % |
| Noise Figure | NF | $V_{DS}$ = 3V, $I_{DS}$ = 20mA (Typ.), f = 12GHz | - | 2.5 | - | dB |
| Associated Gain | Gas | | - | 7 | - | dB |
| Thermal Resistance | $R_{th}$ | Channel to Case | - | 65 | 130 | °C/W |

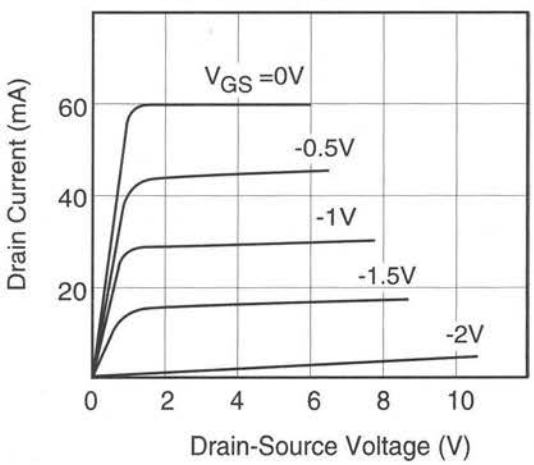
**CASE STYLE:** WF

G.C.P: Gain Compression Point

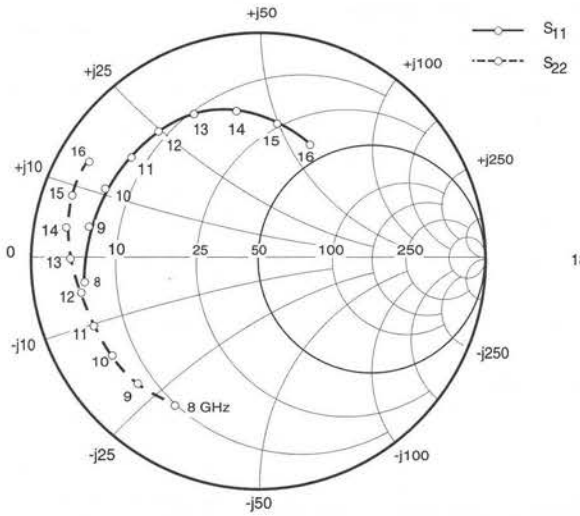
**POWER DERATING CURVE**

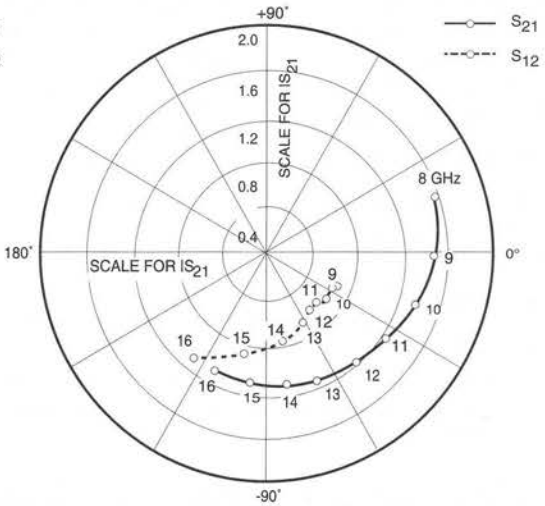



**DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE**




FUJITSU



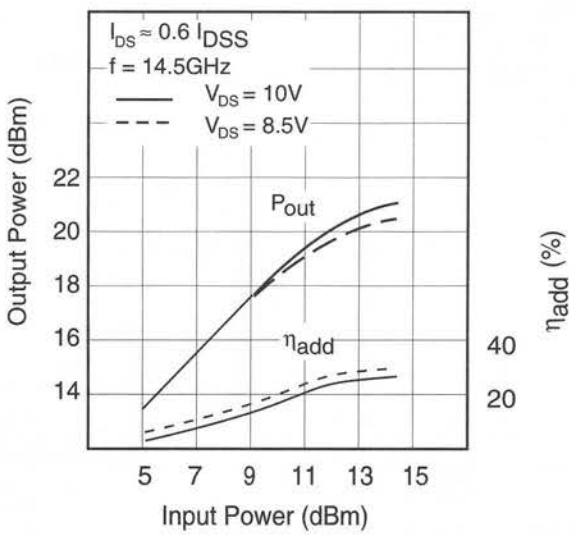




**S-PARAMETERS**

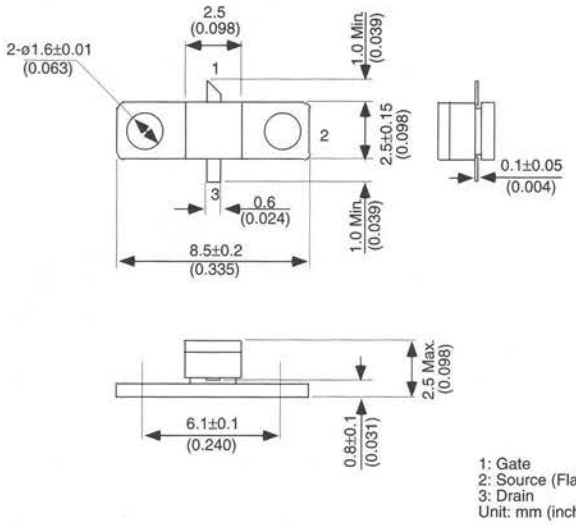
$V_{DS}$ = 10V, $I_{DS}$ = 40mA

| FREQUENCY (MHz) | $S_{11}$ | | $S_{21}$ | | $S_{12}$ | | $S_{22}$ | |
|---|---|---|---|---|---|---|---|---|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 500 | .992 | -13.0 | 2.474 | 167.9 | .007 | 78.0 | .797 | -8.6 |
| 1000 | .985 | -25.1 | 2.454 | 156.7 | .014 | 69.9 | .794 | -16.2 |
| 8000 | .804 | -173.9 | 1.566 | 15.8 | .037 | -23.4 | .760 | -119.1 |
| 9000 | .793 | 169.8 | 1.447 | -1.7 | .035 | -28.1 | .785 | -132.5 |
| 10000 | .770 | 154.9 | 1.335 | -18.1 | .033 | -37.5 | .797 | -145.4 |
| 11000 | .755 | 140.6 | 1.237 | -33.5 | .031 | -43.7 | .804 | -158.0 |
| 12000 | .745 | 127.3 | 1.170 | -48.6 | .030 | -51.4 | .814 | -169.4 |
| 13000 | .726 | 113.6 | 1.129 | -64.4 | .033 | -64.1 | .838 | -180.0 |
| 14000 | .684 | 99.8 | 1.094 | -80.6 | .037 | -80.4 | .864 | 170.3 |
| 15000 | .617 | 83.8 | 1.078 | -97.9 | .044 | -102.9 | .875 | 159.8 |
| 16000 | .535 | 65.7 | 1.074 | -116.4 | .056 | -126.5 | .866 | 149.0 |

**OUTPUT POWER vs. INPUT POWER**



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




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