

# FLK012WF

## X-Ku Band Power GaAs FETs

### FEATURES

- High Output Power:  $P_{1dB} = 20.5\text{dBm(Typ.)}$
- High Gain:  $G_{1dB} = 7.5\text{dB(Typ.)}$
- High PAE:  $\eta_{add} = 26\%(\text{Typ.})$
- Proven Reliability
- Hermetic Metal/Ceramic Package



### DESCRIPTION

The FLK012WF is a power GaAs FET that is designed for general purpose applications in the Ku-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 $T_a=25^\circ\text{C}$ )

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	$V_{DS}$		15	V
Gate-Source Voltage	$V_{GS}$		-5	V
Total Power Dissipation	$P_T$	$T_C = 25^\circ\text{C}$	1.15	W
Storage Temperature	$T_{stg}$		-65 to +175	$^\circ\text{C}$
Channel Temperature	$T_{ch}$		175	$^\circ\text{C}$

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 3000 $\Omega$ .

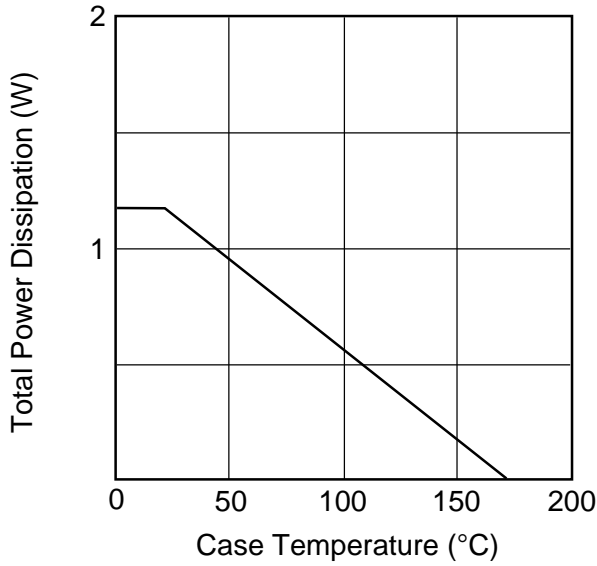
### ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_a=25^\circ\text{C}$ )

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	60	90	mA
Transconductance	$g_m$	$V_{DS} = 5\text{V}, I_{DS} = 40\text{mA}$	-	30	-	mS
Pinch-off Voltage	$V_p$	$V_{DS} = 5\text{V}, I_{DS} = 3\text{mA}$	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -3\mu\text{A}$	-5	-	-	V
Output Power at 1dB G.C.P.	$P_{1dB}$	$V_{DS} = 10\text{V},$ $I_{DS} = 0.6 I_{DSS} (\text{Typ.}),$ $f = 14.5 \text{GHz}$	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	$V_{DS} = 3\text{V},$ $I_{DS} = 20\text{mA (Typ.)},$ $f = 12 \text{GHz}$	-	2.5	-	dB
Associated Gain	$G_{as}$		-	7	-	dB
Thermal Resistance	$R_{th}$	Channel to Case	-	65	130	$^\circ\text{C/W}$

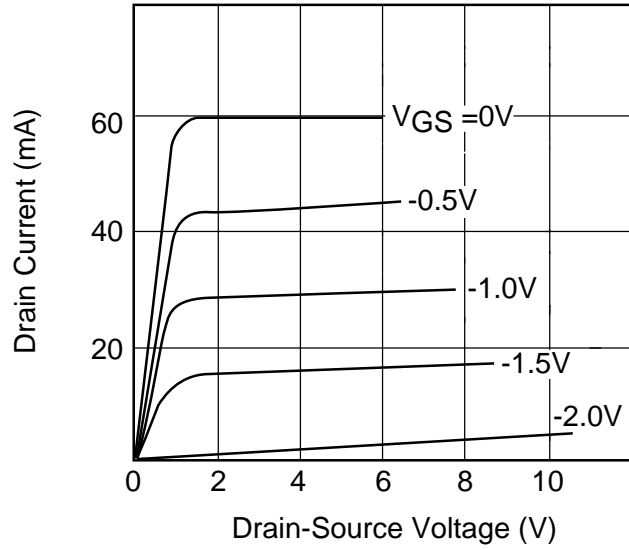
CASE STYLE: WF

G.C.P.: Gain Compression Point

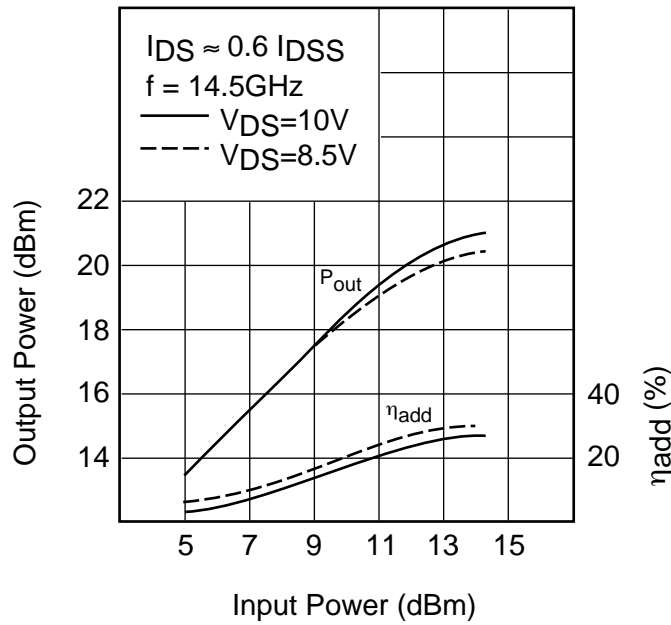
**POWER DERATING CURVE**

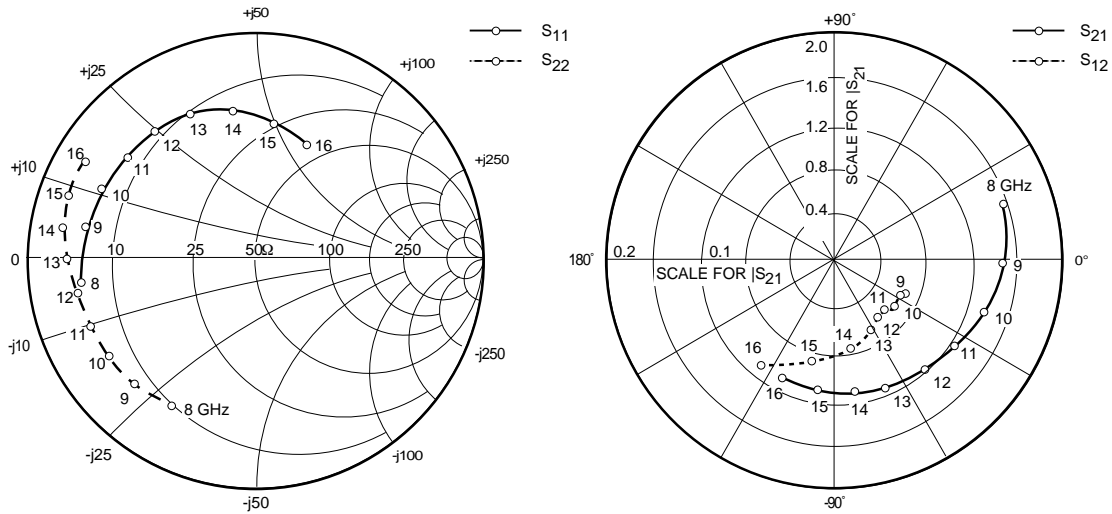


**DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE**



**OUTPUT POWER vs. INPUT POWER**



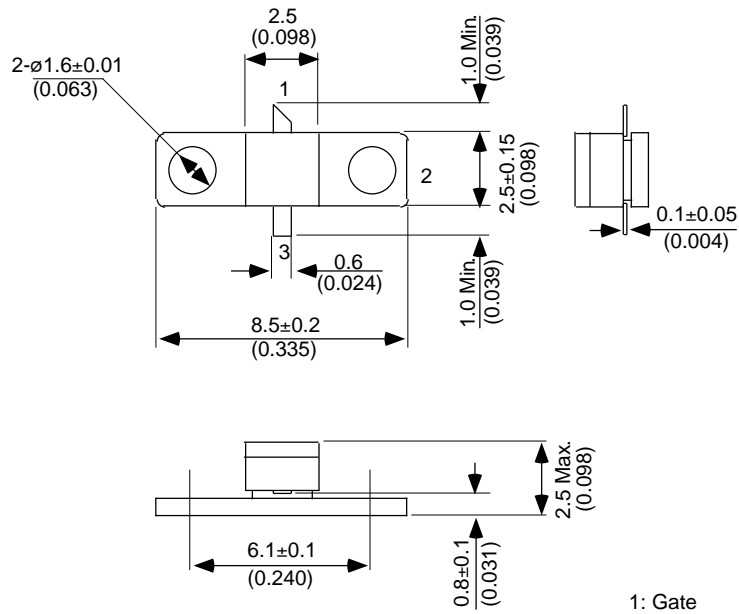


### S-PARAMETERS

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

FREQUENCY (MHZ)	S11		S21		S12		S22	
	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

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



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