

# FLC107WG

## C-Band Power GaAs FET

### FEATURES

- High Output Power:  $P_{1dB} = 30.0\text{dBm(Typ.)}$
- High Gain:  $G_{1dB} = 8.0\text{dB(Typ.)}$
- High PAE:  $\eta_{add} = 36\%(Typ.)$
- Proven Reliability
- Hermetic Metal/Ceramic Package



### DESCRIPTION

The FLC107WG 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 $T_a=25^\circ\text{C}$ )

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	$V_{DS}$		15	V
Gate-Source Voltage	$V_{GS}$		-5	V
Total Power Dissipation	$P_T$	$T_C = 25^\circ\text{C}$	7.5	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 8.8 and -0.5 mA respectively with gate resistance of 500 $\Omega$ .
3. The operating channel temperature ( $T_{Ch}$ ) should not exceed 145 $^\circ\text{C}$ .

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

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	400	600	mA
Transconductance	$g_m$	$V_{DS} = 5\text{V}, I_{DS} = 250\text{mA}$	-	200	-	mS
Pinch-off Voltage	$V_p$	$V_{DS} = 5\text{V}, I_{DS} = 20\text{mA}$	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -20\mu\text{A}$	-5	-	-	V
Output Power at 1dB G.C.P.	$P_{1dB}$	$V_{DS} = 10\text{V},$ $I_{DS} = 0.6 I_{DSS} (Typ.),$ $f = 8\text{GHz}$	28.5	30.0	-	dBm
Power Gain at 1dB G.C.P.	$G_{1dB}$		7.0	8.0	-	dB
Power-added Efficiency	$\eta_{add}$		-	36	-	%
Thermal Resistance	$R_{th}$	Channel to Case	-	16	20	$^\circ\text{C/W}$

CASE STYLE: WG

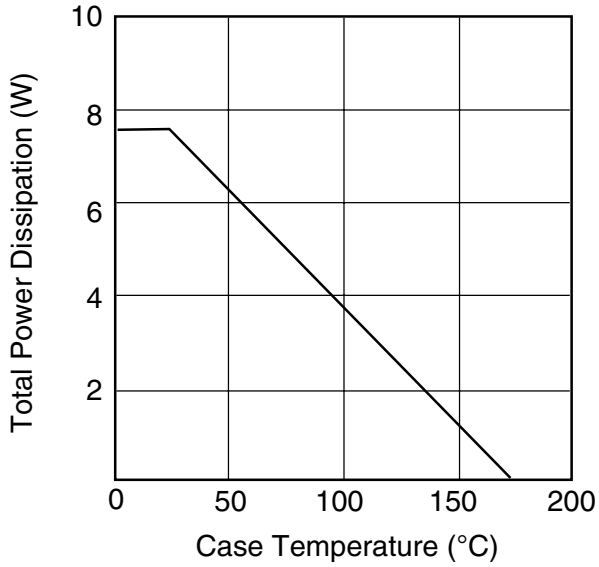
G.C.P.: Gain Compression Point



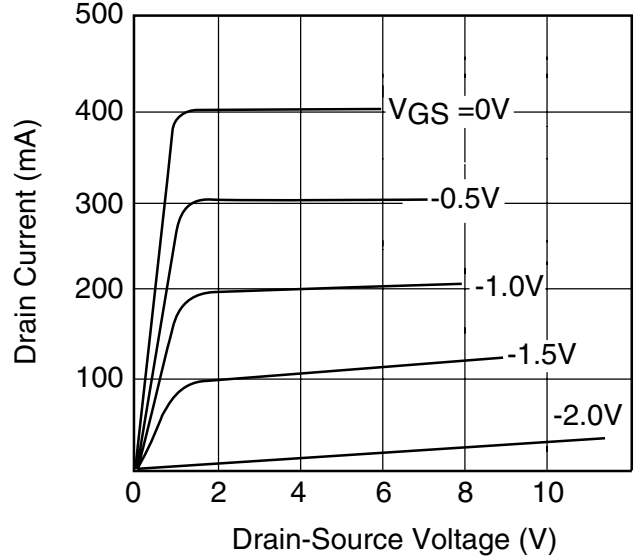
# FLC107WG

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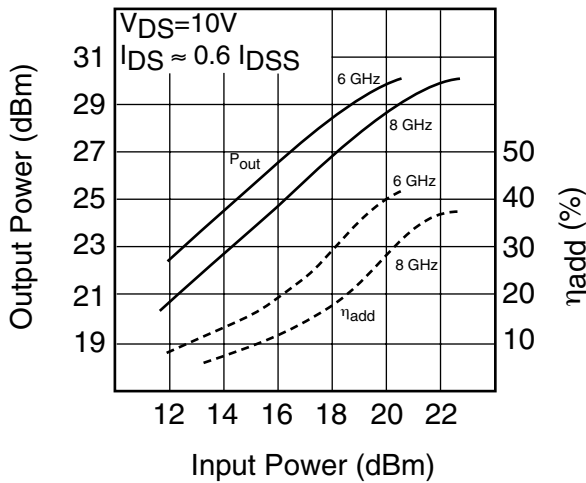
**POWER DERATING CURVE**



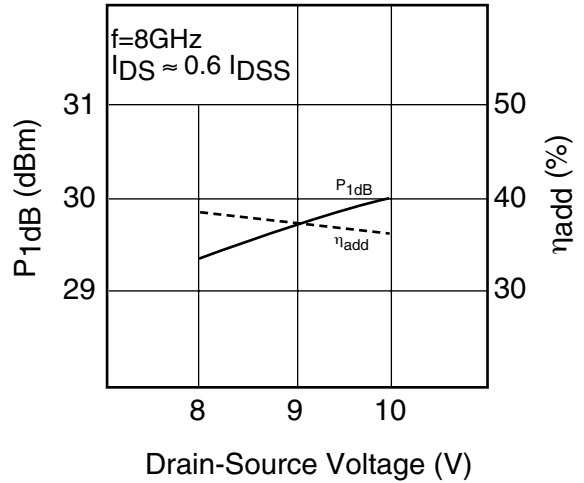
**DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE**



**OUTPUT POWER vs. INPUT POWER**

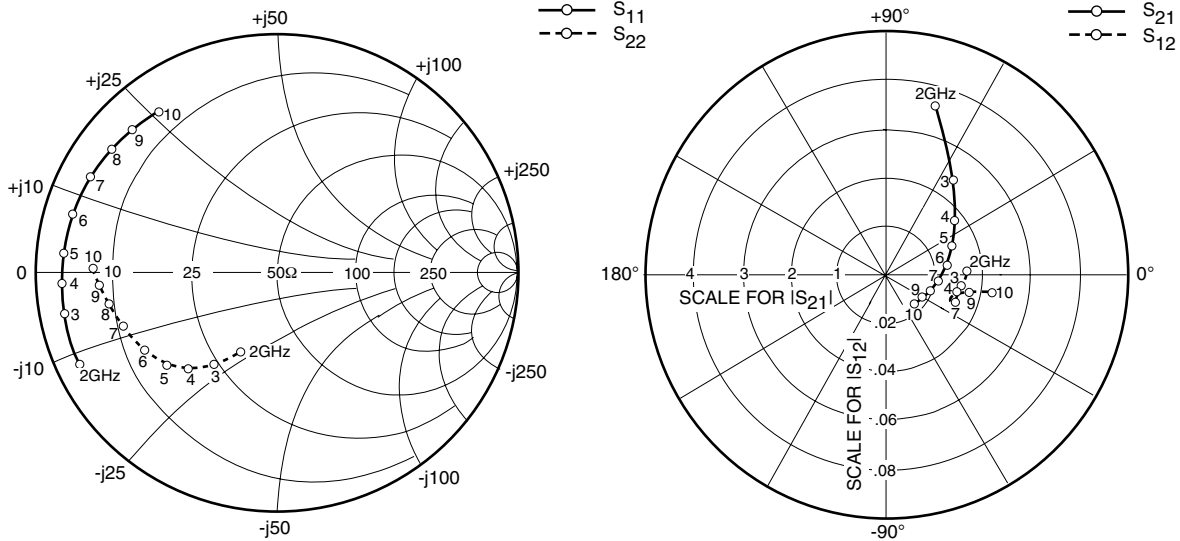


**P<sub>1dB</sub> & η<sub>add</sub> vs. V<sub>DS</sub>**



# FLC107WG

## C-Band Power GaAs FET



### S-PARAMETERS

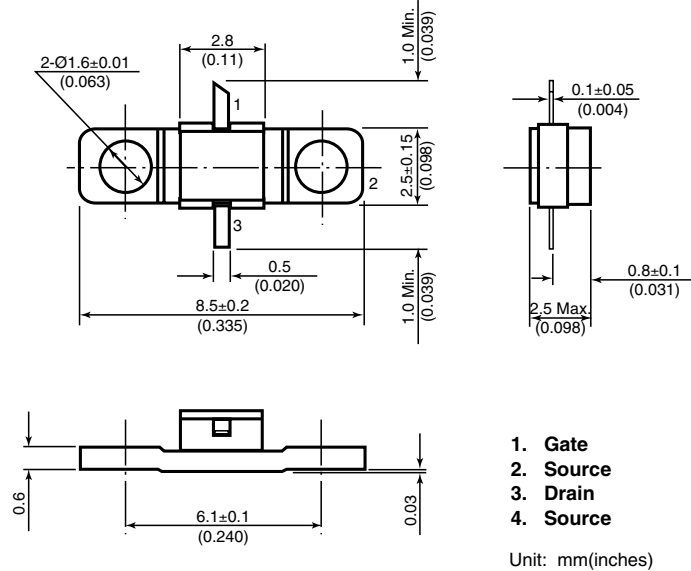
$V_{DS} = 10V, I_{DS} = 250mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	.945	-80.8	10.188	131.0	.024	44.6	.260	-61.5
1000	.912	-121.7	6.711	103.4	.031	21.6	.277	-91.4
2000	.901	-154.5	3.629	73.4	.033	.3	.368	-114.0
3000	.897	-168.3	2.404	54.1	.031	-10.1	.469	-124.2
4000	.894	-176.5	1.817	38.7	.029	-14.0	.548	-131.8
5000	.890	174.8	1.494	24.1	.029	-16.6	.601	-139.3
6000	.884	164.2	1.288	8.7	.029	-17.9	.640	-148.9
7000	.871	152.7	1.117	-7.3	.030	-22.5	.676	-160.1
8000	.851	143.1	.968	-21.1	.030	-15.8	.708	-168.9
9000	.841	135.2	.875	-32.8	.034	-12.8	.737	-175.2
10000	.831	126.5	.854	-44.2	.044	-10.3	.759	179.6

# FLC107WG

## C-Band Power GaAs FET

### Case Style "WG" Metal-Ceramic Hermetic Package



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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.

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