

FLC057WG

C-Band Power GaAs FET

FEATURES

- High Output Power: $P_{1dB} = 27.0\text{dBm}$ (Typ.)
- High Gain: $G_{1dB} = 9.0\text{dB}$ (Typ.)
- High PAE: $\eta_{add} = 38\%$ (Typ.)
- Proven Reliability
- Hermetic Metal/Ceramic Package

DESCRIPTION

The FLC057WG 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	$T_c = 25^\circ\text{C}$	3.75	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 4.4 and -0.25 mA respectively with gate resistance of 1000 Ω .
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}	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	200	300	mA
Transconductance	g_m	$V_{DS} = 5\text{V}, I_{DS} = 125\text{mA}$	-	100	-	mS
Pinch-off Voltage	V_p	$V_{DS} = 5\text{V}, I_{DS} = 10\text{mA}$	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	V_{GSO}	$I_{GS} = -10\mu\text{A}$	-5	-	-	V
Output Power at 1dB G.C.P.	P_{1dB}	$V_{DS} = 10\text{V}$ $I_{DS} \approx 0.6 I_{DSS}$ (Typ.), $f = 8\text{GHz}$	25.5	27.0	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		8.0	9.0	-	dB
Power-added Efficiency	η_{add}		-	38	-	%
Thermal Resistance	R_{th}	Channel to Case	-	27	40	$^\circ\text{C}/\text{W}$

CASE STYLE: WG

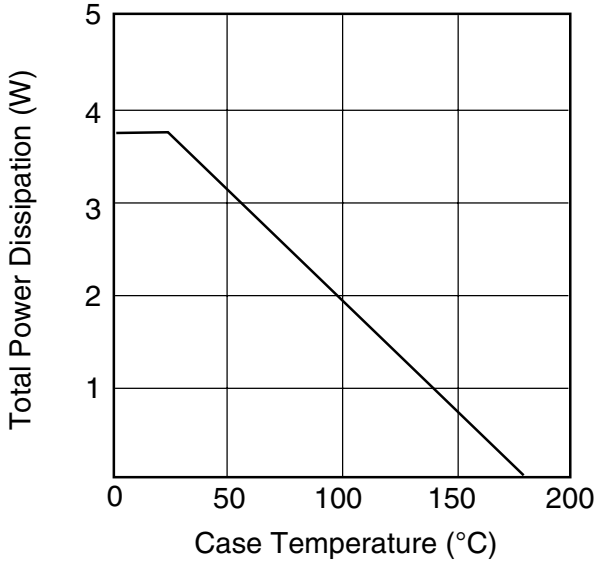
G.C.P.: Gain Compression Point



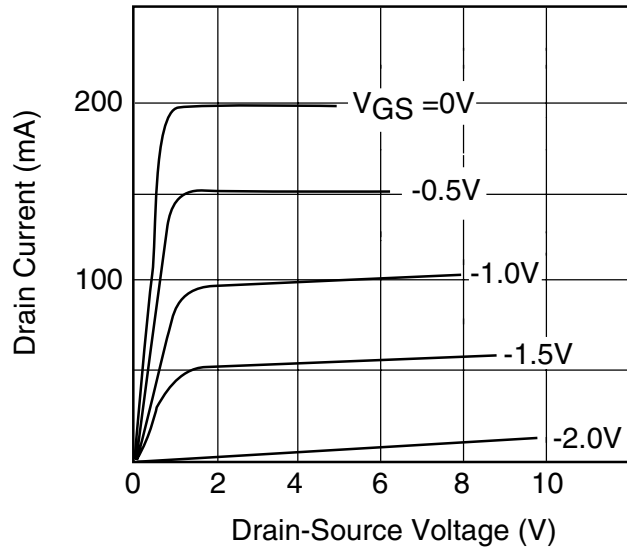
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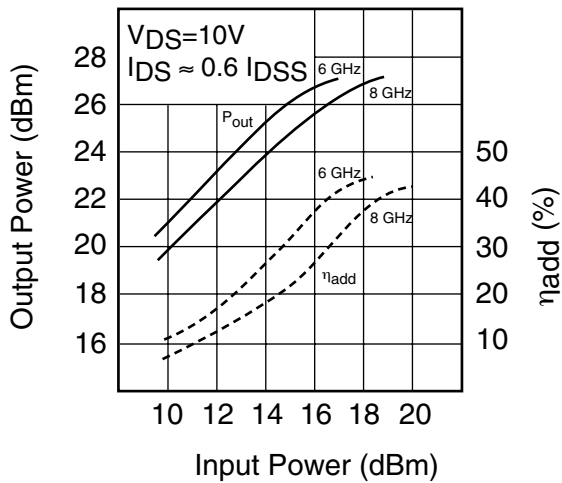
POWER DERATING CURVE



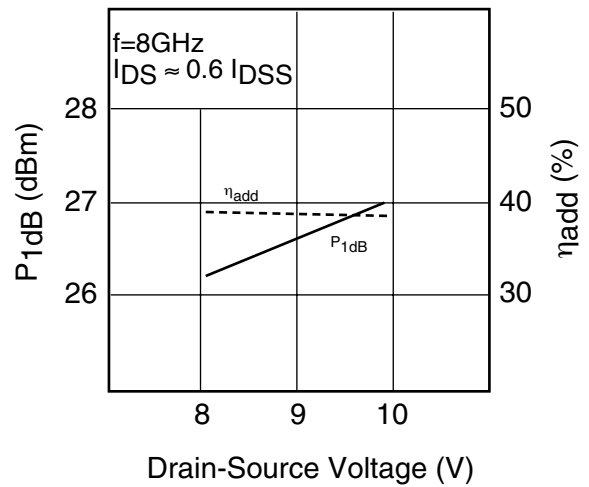
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



OUTPUT POWER vs. INPUT POWER

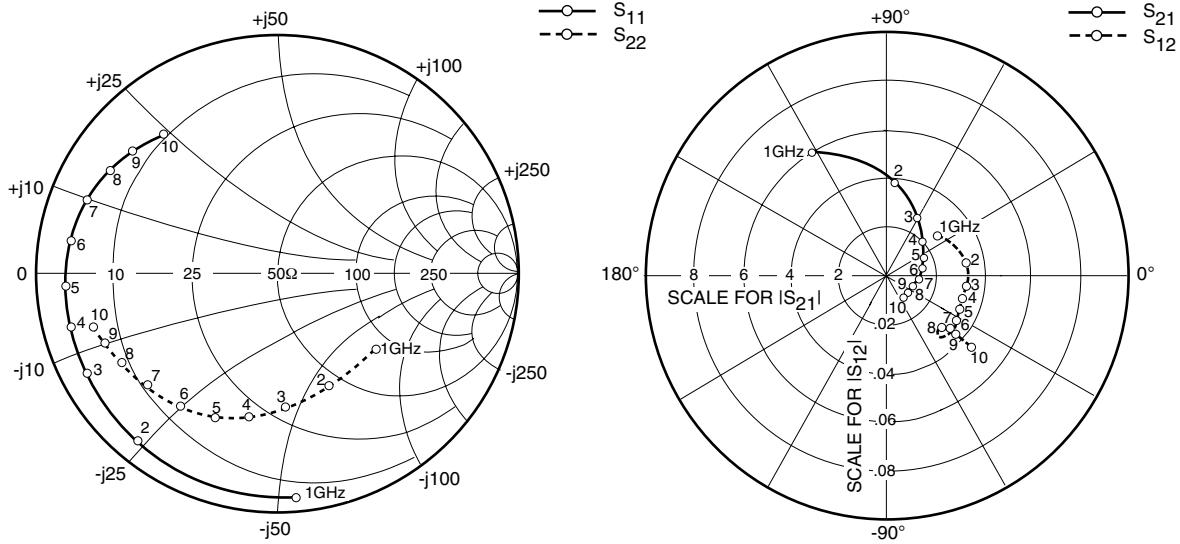


P_{1dB} & η_{add} vs. V_{DS}



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S-PARAMETERS

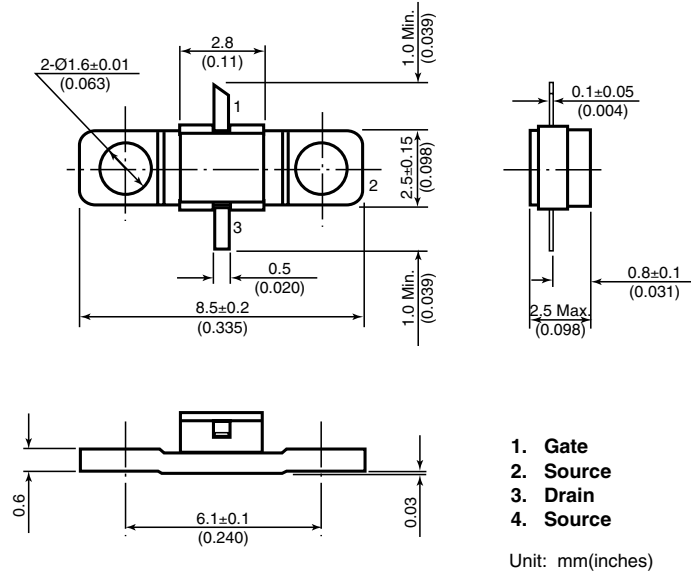
$V_{DS} = 10V, I_{DS} = 125mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	.973	-47.9	7.249	147.9	.016	60.6	.545	-20.4
1000	.941	-85.1	5.946	121.8	.026	38.1	.519	-38.2
2000	.912	-129.5	3.846	86.0	.033	8.9	.514	-66.2
3000	.897	-151.8	2.675	62.2	.033	-8.5	.562	-86.5
4000	.889	-164.8	2.058	44.1	.032	-17.6	.618	-101.2
5000	.881	-176.2	1.712	27.8	.033	-25.1	.658	-113.0
6000	.869	171.6	1.506	11.2	.033	-31.0	.689	-125.1
7000	.847	159.0	1.339	-6.1	.035	-39.4	.717	-138.5
8000	.816	148.5	1.199	-21.6	.033	-41.3	.745	-149.3
9000	.787	139.7	1.125	-35.4	.037	-41.0	.773	-157.4
10000	.740	129.4	1.149	-49.4	.045	-40.5	.796	-163.1

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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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Printed in U.S.A. FCSI0598M200