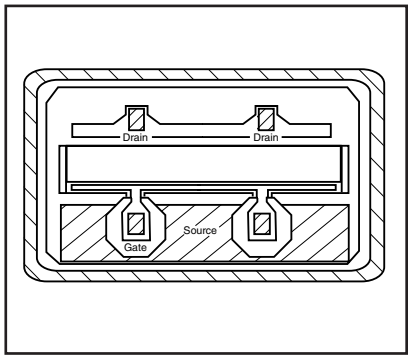
FLC157XP

GaAs FET & HEMT Chips

FEATURES

- High Output Power: P_{1dB} = 31.5dBm (Typ.)
- High Gain: G_{1dB} = 6.0dB(Typ.)
- High PAE: η_{add} = 29.5%(Typ.)
- Proven Reliability



DESCRIPTION

The FLC157XP chip 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 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_{tot}	T_c = 25°C	8.3	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 9.6 and -1.0 mA respectively with gate resistance of 200Ω.
3. The operating channel temperature (T_{ch}) should not exceed 145°C.

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	-	600	900	mA
Transconductance	g_m	V_{DS} = 5V, I_{DS} = 400mA	150	300	-	mS
Pinch-off Voltage	V_p	V_{DS} = 5V, I_{DS} = 30mA	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	V_{GSO}	I_{GS} = -30μA	-5	-	-	V
Output Power at 1dB Gain Compression Point	P_{1dB}	V_{DS} = 10V $I_{DS} \approx 0.6 I_{DSS}$ f = 8GHz	30.5	31.5	-	dBm
Power Gain at 1dB Gain Compression Point	G_{1dB}		5.0	6.0	-	dB
Power-added Efficiency	η_{add}		-	29.5	-	%
Thermal Resistance	R_{th}	Channel to Case	-	15	18	°C/W

Note: RF parameter sample size 10pcs. criteria (accept/reject)=(2/3)

The chip must be enclosed in a hermetically sealed environment for optimum performance and reliability.

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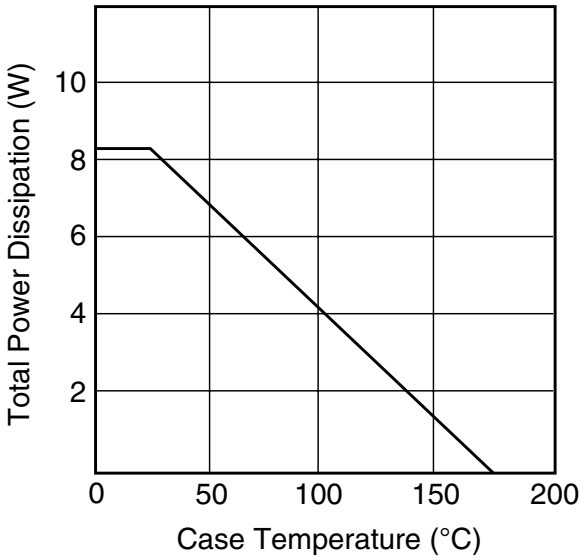
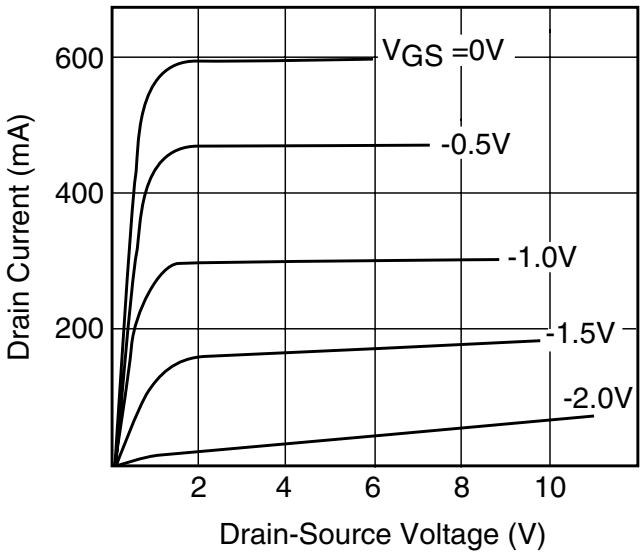
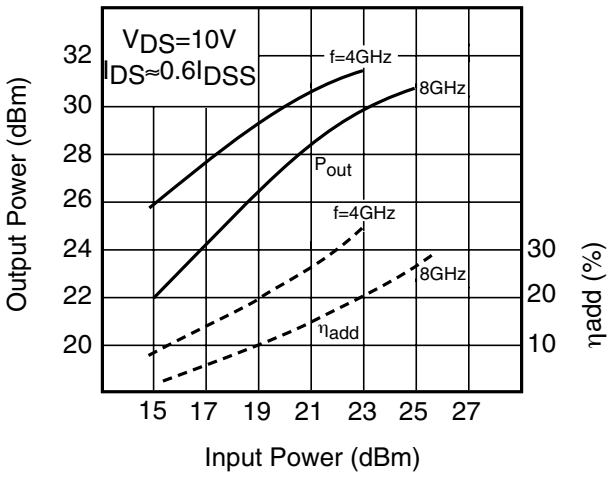
POWER DERATING CURVE



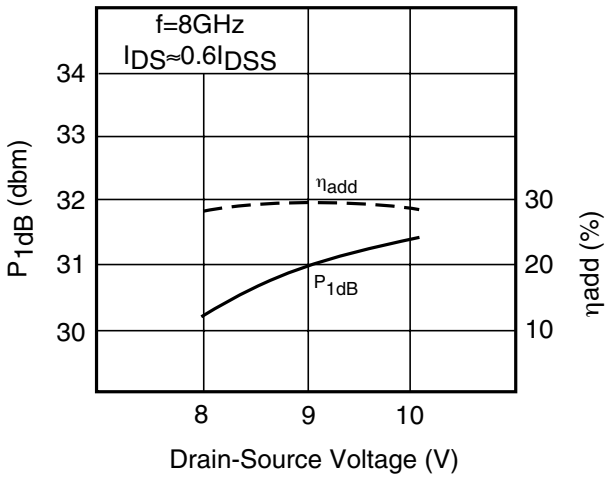
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



OUTPUT POWER vs. INPUT POWER



P_{1dB} & η_{add} vs. V_{DS}



S-PARAMETERS

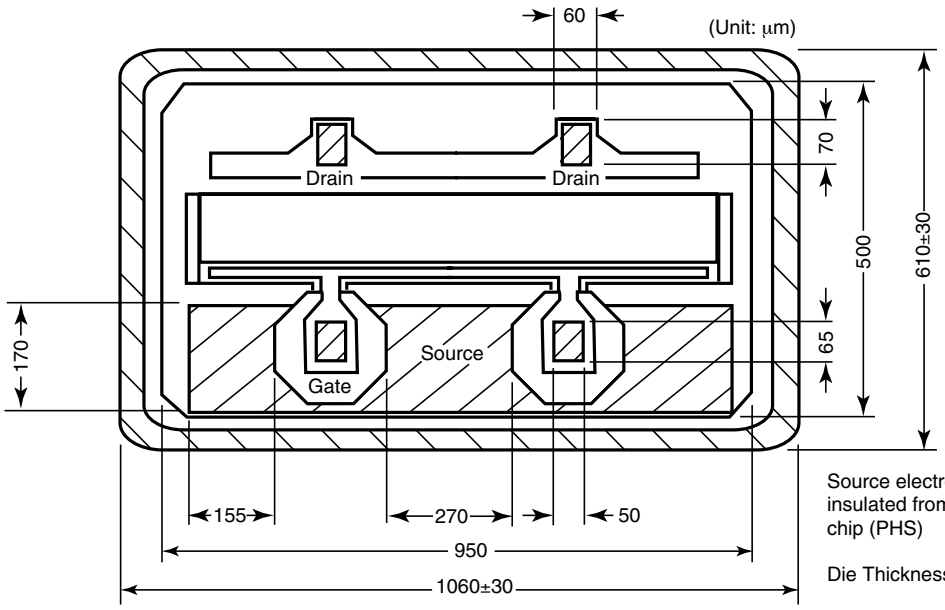
V_{DS} = 10V, I_{DS} = 400mA

FREQUENCY	S11		S21		S12		S22	
(MHZ)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	.993	-25.9	15.864	165.0	.013	76.4	.185	-39.7
500	.918	-98.4	10.322	123.1	.041	40.2	.293	-115.6
1000	.881	-134.6	6.162	100.0	.049	24.2	.337	-139.9
2000	.868	-159.5	3.250	77.3	.051	15.8	.375	-150.6
3000	.868	-169.8	2.178	61.7	.051	14.8	.413	-152.6
4000	.871	-176.3	1.625	48.3	.050	16.3	.456	-153.5
5000	.875	178.9	1.284	36.0	.050	19.3	.503	-154.9
6000	.881	174.8	1.051	24.6	.050	23.3	.550	-156.8
7000	.886	171.2	.878	13.8	.052	27.9	.597	-159.3
8000	.892	167.8	.743	3.7	.054	32.5	.641	-162.2
9000	.897	164.6	.633	-5.8	.057	36.7	.682	-165.4
10000	.903	161.5	.541	-14.6	.061	40.2	.720	-168.7
11000	.907	158.4	.462	-22.9	.067	42.8	.753	-172.1
12000	.912	155.5	.393	-30.5	.072	44.6	.783	-175.6

NOTE:* The data includes bonding wires.

n: number of wires Gate n=2 (0.3mm length, 25µm Dia Au wire)
Drain n=2 (0.3mm length, 25µm Dia Au wire)
Source n=4 (0.3mm length, 25µm Dia Au wire)

CHIP OUTLINE



Source electrodes are electrically insulated from the bottom of the chip (PHS)

Die Thickness: 60±20μm

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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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