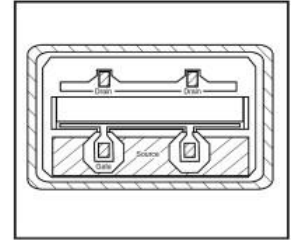


FEATURES

- High Output Power: $P_{1dB} = 31.5\text{dBm}$ (Typ.)
- High Gain: $G_{1dB} = 6.0\text{dB}$ (Typ.)
- High Power Added Efficiency: $PAE = 29.5\%$ (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. Sumitomo Electric's stringent Quality Assurance Program assures the highest reliability and consistent performance.



ABSOLUTE MAXIMUM RATING (Ambient Temperature $T_a=25\text{deg.C}$)

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V_{DS}		15	V
Gate-Source Voltage	V_{GS}		-5	V
Total Power Dissipation	P_{tot}	$T_c = 25\text{deg.C}$	8.3	W
Storage Temperature	T_{stg}		-65 to +175	deg.C
Channel Temperature	T_{ch}		175	deg.C

Sumitomo Electric 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 200ohm.
3. The operating channel temperature (T_{ch}) should not exceed 145deg.C.

ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_a=25\text{deg.C}$)

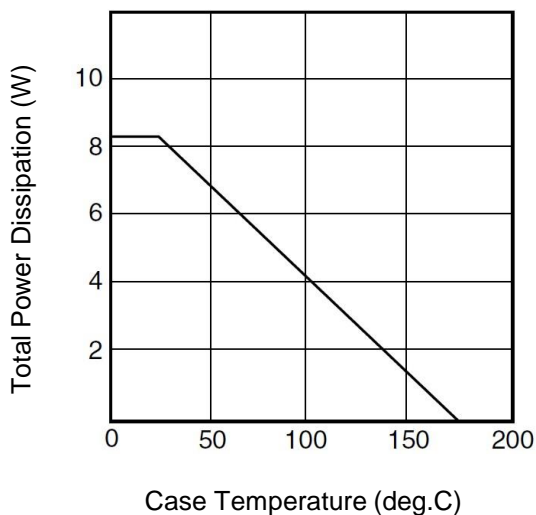
Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	$V_{DS} = 5V, V_{GS} = 0V$	-	600	900	mA
Transconductance	g_m	$V_{DS} = 5V, I_{DS} = 400\text{mA}$	150	300	-	mS
Pinch-off Voltage	V_p	$V_{DS} = 5V, I_{DS} = 30\text{mA}$	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	V_{GSO}	$I_{GS} = -30\mu A$	-5	-	-	V
Output Power at 1dB Gain Compression Point	P_{1dB}	$V_{DS} = 10V$	30.5	31.5	-	dBm
Power Gain at 1dB Gain Compression Point	G_{1dB}	$I_{DS} \approx 0.6I_{DSS}$ $f = 8\text{GHz}$	5.0	6.0	-	dB
Power-added Efficiency	PAE		-	29.5	-	%
Thermal Resistance	R_{th}	Channel to Case	-	15	18	deg.C/W

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

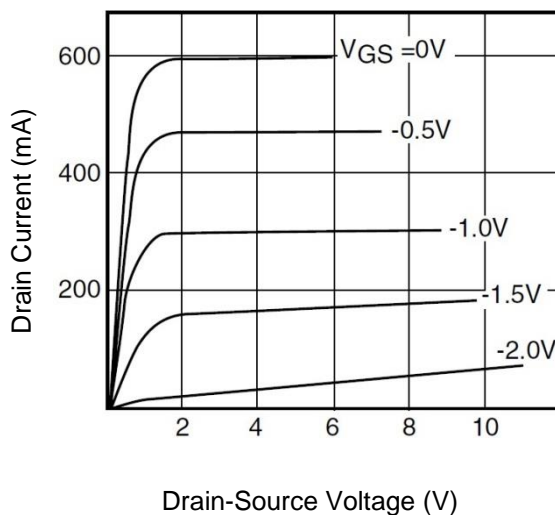
The chip must be enclosed in a hermetically sealed environment for optimum performance and reliability.

RoHS Compliance	Yes
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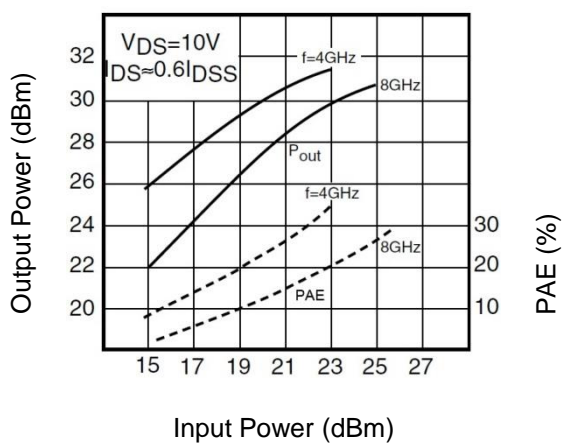
POWER DERATING CURVE



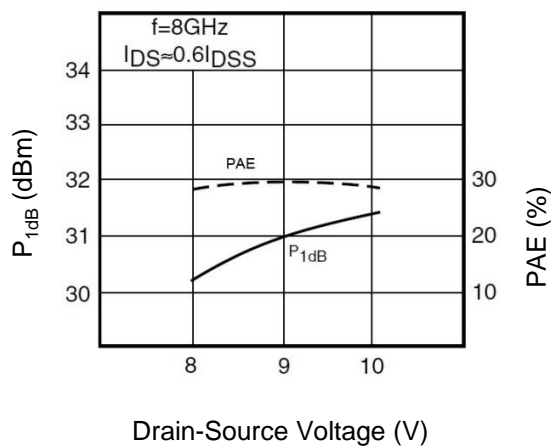
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



OUTPUT POWER vs. INPUT POWER



P_{1dB} & PAE vs. V_{DS}



Typical on chip measurements

S-PARAMETERS

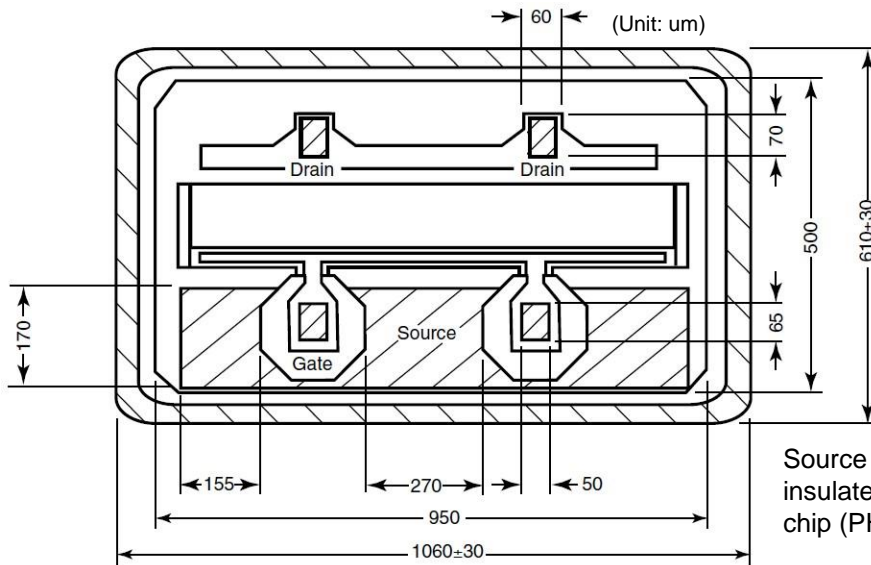
$V_{DS} = 10V$, $I_{DS} = 400mA$

Freq (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.993	-25.9	15.864	165.0	0.013	76.4	0.185	-39.7
500	0.918	-98.4	10.322	123.1	0.041	40.2	0.293	-115.6
1000	0.881	-134.6	6.162	100.0	0.049	24.2	0.337	-139.9
2000	0.868	-159.5	3.250	77.3	0.051	15.8	0.375	-150.6
3000	0.868	-169.8	2.178	61.7	0.051	14.8	0.413	-152.6
4000	0.871	-176.3	1.625	48.3	0.050	16.3	0.456	-153.5
5000	0.875	178.9	1.284	36.0	0.050	19.3	0.503	-154.9
6000	0.881	174.8	1.051	24.6	0.050	23.3	0.550	-156.8
7000	0.886	171.2	0.878	13.8	0.052	27.9	0.597	-159.3
8000	0.892	167.8	0.743	3.7	0.054	32.5	0.641	-162.2
9000	0.897	164.6	0.633	-5.8	0.057	36.7	0.682	-165.4
10000	0.903	161.5	0.541	-14.6	0.061	40.2	0.720	-168.7
11000	0.907	158.4	0.462	-22.9	0.067	42.8	0.753	-172.1
12000	0.912	155.5	0.393	-30.5	0.072	44.6	0.783	-175.6

NOTE:* The data includes bonding wires.

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

CHIP OUTLINE



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

Die Thickness: 60+/-20um

■ BARE DIE INDEMNIFICATION

All devices are DC probed and visually inspected at SEI, and non-compliant devices are removed. The RF electrical characteristics of the bare dice are warranted by the sampling inspection procedures. The standard sampling inspection procedure shall include the number of the sampling dice, position of the sampling dice in the wafer and RF electrical characteristics of the sampling dice measured in the test fixture. Customer shall understand that all the bare dice will not be 100% RF tested by SEI. It is the customer responsibility to verify performance of the devices.

Customer shall comply with the storage and handling requirements for condition and period of storage of the bare dice agreed by customer and SEI. Warranty will not apply when customer disregards the storage and handling requirements.

Warranty will not apply to the electrical characteristics and product quality to the bare dice after assembly by customer.

SEI will indemnify customer for warranty failures, provided however that the indemnification to customer shall be limited to supply of bare dice for substitution.

CAUTION

Sumitomo Electric Device Innovations, Inc. 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.