

GN05009N

GaAs IC

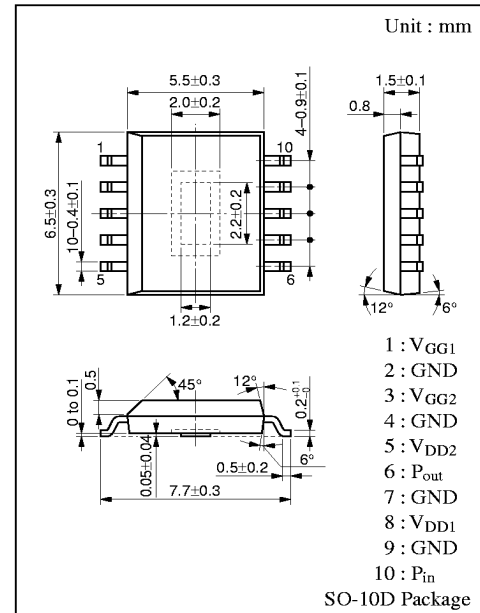
For transmitting amplifier in PHS base station
Other communication equipment

■ Features

- High output power amplifier ($P_{out} = 25.5\text{dBm}$)
- Low consumption current (I_{DD} max. 420mA)
- Small surface-mounting package

■ Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Power supply voltage	V_{DD1}	6	V
	V_{DD2}	6	V
Gate voltage	V_{GG1}	-5	V
	V_{GG2}	-5	V
Circuit current	I_{DD1}	0.12	A
	I_{DD2}	0.36	A
Input current	P_{in}	7	dBm
Operating temperature	T_{opr}	-20 to +90	$^\circ\text{C}$
Storage temperature	T_{stg}	-30 to +120	$^\circ\text{C}$



■ Electrical Characteristics ($T_a = 25 \pm 3^\circ\text{C}$)* 1

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Circuit current * 2, 5	I_{DD}	$V_{DD1} = V_{DD2} = 4.8\text{V}$, $P_{out} = 25.5\text{dBm}$			420	mA
Gate current * 3, 5	I_{GG}	$V_{DD1} = V_{DD2} = 4.8\text{V}$, $P_{out} = 25.5\text{dBm}$			3	mA
Power gain * 5, 6	PG	$V_{DD1} = V_{DD2} = 4.8\text{V}$, $P_{out} = 25.5\text{dBm}$	22		30	dB
Modulation distortion * 5, 6	DM1	$V_{DD1} = V_{DD2} = 4.8\text{V}$, $P_{out} = 25.5\text{dBm}$ 192kHz bandwidth $\pm 600\text{kHz}$ detuning			-56	dBc
Modulation distortion * 5, 7	DM2	$V_{DD1} = V_{DD2} = 4.8\text{V}$, $P_{out} = 25.5\text{dBm}$ 192kHz bandwidth $\pm 900\text{kHz}$ detuning			-60	dBc
Voltage standing wave ratio * 5, 7	V_{SWR}_{in}	$V_{DD1} = V_{DD2} = 4.8\text{V}$, $P_{out} = 25.5\text{dBm}$			3	
Harmonics output ratio * 4, 5, 7		$V_{DD1} = V_{DD2} = 4.8\text{V}$, $P_{out} = 25.5\text{dBm}$			-35	dBc

* 1 Use the attached measurement circuit diagram for electric characteristics.
Common conditions: $f = 1895.15$ to 1917.95 , Duty=1/2 ($t = 5\text{ms}$), $T_a = 25^\circ\text{C}$

* 2 $I_{DD} = I_{DD1} + I_{DD2}$

* 3 Current flowing through the gate pin in attached measurement circuit diagram.

* 4 2nd (2fo), 3rd (3fo), and 4th (4fo) harmonics

* 5 V_{GG} voltage is the voltage adjusted so that I_{DD} is 0.15A when P_{in} is OFF.
 P_{out} for the average output power of $\pi/4$ shift QPSK wave.

* 6 Sampling inspection items ($n = 10/\text{wafer}$) ($c = 0$)

* 7 Design-guaranteed items

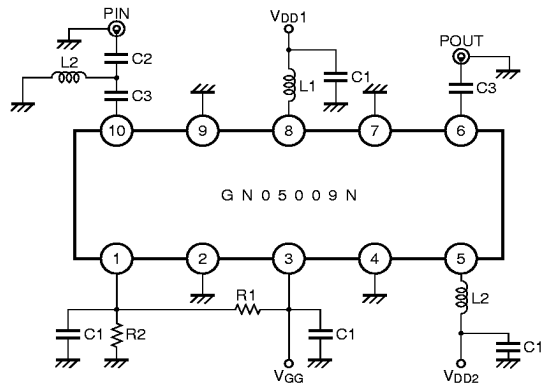
1) Load variation stability must be such that no abnormal oscillation and no noise increase occur under following conditions:

Condition: $V_{DD1} = V_{DD2} = 3.5$ to 5V , $V_{GG} = (* 1)$, $P_{in} = -25$ to $+7\text{dBm}$, load $V_{SWR} \leq 3$, full phase

2) On damage capability, no damage should not occur under following conditions:

Condition: $V_{DD1} = V_{DD2} = 0$ to 5.2V , $V_{GG} = (* 1)$, $P_{in} = -25$ to $+7\text{dBm}$, load $V_{SWR} \leq 3$, full phase, $t < 10\text{s}$

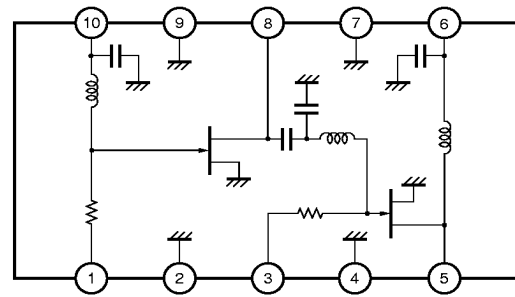
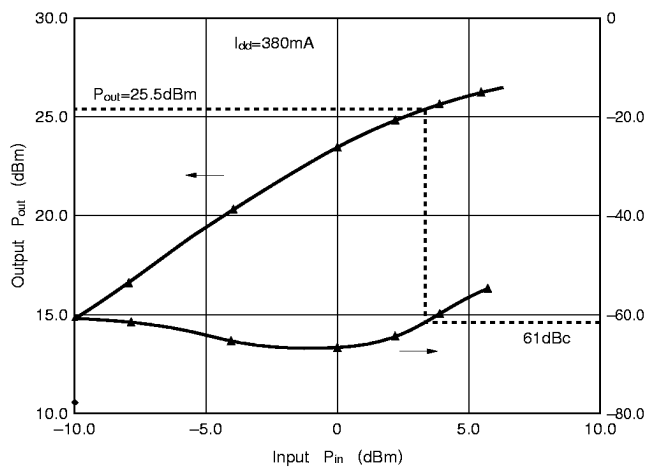
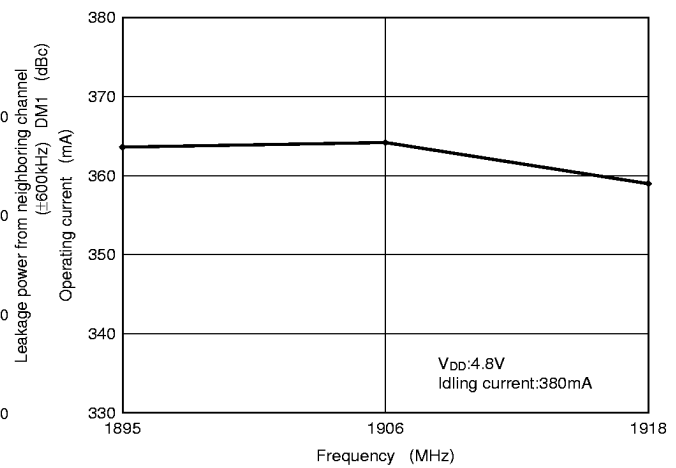
■ Measurement Circuit



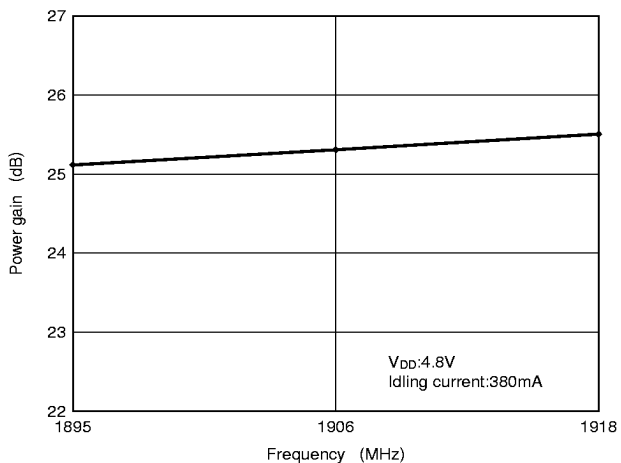
〈Value of each part〉

R1= 560Ω L1= 8.2nH C1=100pF, 10μF
R2=1.8kΩ L2=5.6nH C2=1pF
C3=100pF

■ Function Block Diagram

P – P_{out}(Adj)f – I_d

f – Gain



f – Adj

