

# GN05008N

## GaAs IC

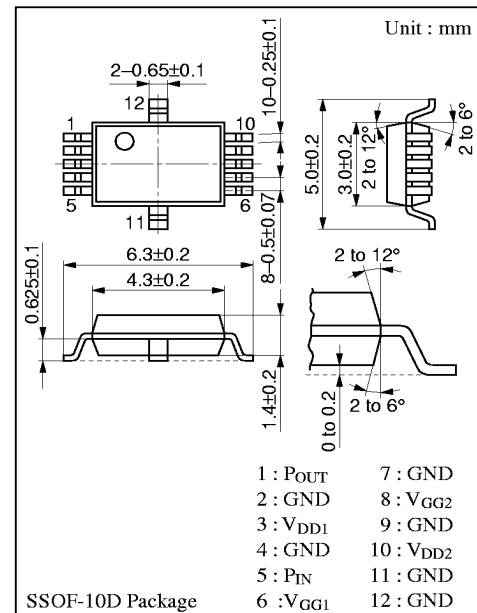
For PHS transmitting front-end amplifier  
Other communication equipment

### ■ Features

- Low consumption current ( $I_{dmax}$ . 180mA)
- Small surface-mounting package
- Built-in matching circuit between stages

### ■ 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       | $I_{DD1}$ | 50           | mA               |
|                       | $I_{DD2}$ | 0.2          | 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 ( $T_a = 25^\circ\text{C}$ )

| Parameter                          | Symbol      | Condition                                                                                                       | Min | Typ  | Max  | Unit |
|------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------|-----|------|------|------|
| Circuit current * 2, 5             | $I_{DD}$    | $V_{DD1} = V_{DD2} = 3.5\text{V}$ , $P_{out} = 21.5\text{dBm}$                                                  |     | 0.13 | 0.18 | A    |
| Gate current * 3, 5                | $I_{GG}$    | $V_{DD1} = V_{DD2} = 3.5\text{V}$ , $P_{out} = 21.5\text{dBm}$                                                  |     |      | 3    | mA   |
| Power gain * 5, 6                  | PG          | $V_{DD1} = V_{DD2} = 3.5\text{V}$ , $P_{out} = 21.5\text{dBm}$                                                  | 20  | 23.5 |      | dB   |
| Modulation distortion * 5, 6       | DM1         | $V_{DD1} = V_{DD2} = 3.5\text{V}$ , $P_{out} = 21.5\text{dBm}$<br>192kHz bandwidth $\pm 600\text{kHz}$ detuning |     | − 60 | − 55 | dBc  |
| Modulation distortion * 5, 7       | DM2         | $V_{DD1} = V_{DD2} = 3.5\text{V}$ , $P_{out} = 21.5\text{dBm}$<br>192kHz bandwidth $\pm 900\text{kHz}$ detuning |     | − 70 | − 60 | dBc  |
| Voltage standing wave ratio * 5, 7 | $VSWR_{in}$ | $V_{DD1} = V_{DD2} = 3.5\text{V}$ , $P_{out} = 21.5\text{dBm}$                                                  |     | 1.3  | 3    |      |
| Harmonics output ratio * 4, 5, 7   |             | $V_{DD1} = V_{DD2} = 3.5\text{V}$ , $P_{out} = 21.5\text{dBm}$                                                  |     | − 40 | − 30 | dBc  |

\* 1 Use the attached measurement circuit diagram for electric characteristics.

Common conditions:  $f = 1.9\text{GHz}$ , Duty=1/8 ( $t = 1\text{ms}$ ),  $T_a = 25 \pm 3^\circ\text{C}$

\* 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

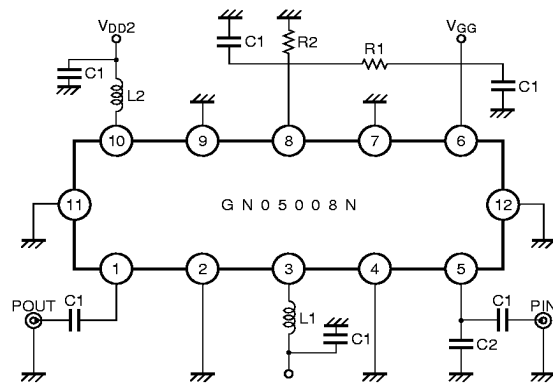
\* 5  $V_{GG}$  voltage is the voltage adjusted so that  $I_{DD}$  is 0.15A when  $P_{in}$  is OFF.

$P_{out}$  for the average output power of  $\pi/4$  shift QPSK wave.

\* 6 Sampling inspection items (AQL= 0.25%)

\* 7 Design-guaranteed items

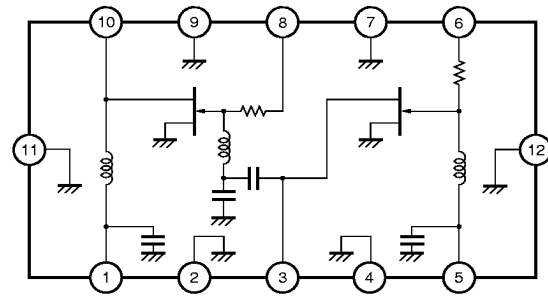
### ■ Measurement Circuit



(Value of each part)

R1=150Ω    L1=3.3nH    C1=100pF  
R2=2.2kΩ    L2=1.5nH    C2=1.5pF

### ■ Function Block Diagram



$P_{in} - P_{out}, I_d$

