

L-BAND PA DRIVER AMPLIFIER

DESCRIPTION

The μ PG2126TB is a GaAs MMIC for PA driver amplifier which were developed for dual band mobile phone and another L-band application. The device can operate with 3.6 V TYP., having the high gain and low distortion.

FEATURES

- Supply voltage : $V_{DD1, 2, 3} = 3.1$ to 4.4 V (3.6 V TYP.)
- ★ • Low operation current : $I_{DD1} = 16$ mA TYP. @ $V_{DD1} = 3.6$ V, $f = 925$ MHz, $P_{out} = +8$ dBm
- ★ : $I_{DD2} = 28$ mA TYP. @ $V_{DD2, 3} = 3.6$ V, $f = 1\ 441$ MHz, $P_{out} = +8$ dBm
- ★ • High power gain : $G_{P1} = 16$ dB TYP. @ $V_{DD1} = 3.6$ V, $f = 925$ MHz, $P_{in} = -10$ dBm
- ★ : $G_{P2} = 26$ dB TYP. @ $V_{DD2, 3} = 3.6$ V, $f = 1\ 441$ MHz, $P_{in} = -22$ dBm
- Low distortion : $P_{adj1} = -60$ dBc TYP. @ $V_{DD1, 2, 3} = 3.6$ V, $f = 925$ MHz, $1\ 441$ MHz, $P_{out} = +8$ dBm, $\Delta f = \pm 50$ kHz, 21 kHz Bandwidth.
- High-density surface mounting : 6-pin super minimold package ($2.0 \times 1.25 \times 0.9$ mm)

APPLICATION

- Digital Cellular: dual band mobile phone etc.

ORDERING INFORMATION

| Part Number | Package | Marking | Supplying Form |
|-------------------|----------------------|---------|---|
| μ PG2126TB-E3 | 6-pin super minimold | G2K | <ul style="list-style-type: none"> • Embossed tape 8 mm wide • Pin 1, 2, 3 face the perforation side of the tape • Qty 3 kpcs/reel |

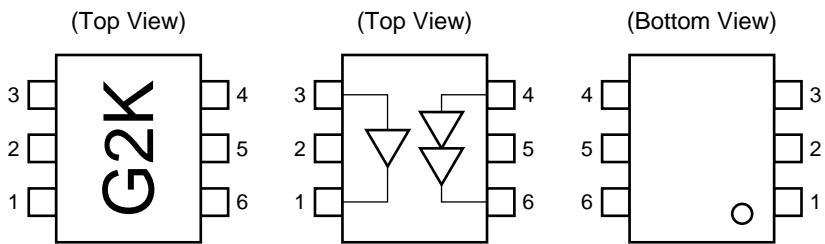
Remark To order evaluation samples, contact your nearby sales office.

Part number for sample order: μ PG2126TB

Caution Electro-static sensitive devices

The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.
Not all devices/types available in every country. Please check with local NEC Compound Semiconductor Devices representative for availability and additional information.

PIN CONNECTIONS, MARKING AND INTERNAL BLOCK DIAGRAM



| Pin No. | Pin Name |
|---------|---------------------------|
| 1 | V _{DD1} /OUTPUT1 |
| 2 | GND |
| 3 | INPUT1 |
| 4 | INPUT2 |
| 5 | V _{DD2} |
| 6 | V _{DD3} /OUTPUT2 |

ABSOLUTE MAXIMUM RATINGS (Unless otherwise specified, T_A = +25°C)

| Parameter | Symbol | Ratings | Unit |
|-----------------------------------|------------------------|---------------------|------|
| Supply Voltage _{1, 2, 3} | V _{DD1, 2, 3} | 6.0 | V |
| Input Power 1 (INPUT1) | P _{in1} | +4 | dBm |
| Input Power 2 (INPUT2) | P _{in2} | −4 | dBm |
| ★ Power Dissipation | P _D | 140 ^{Note} | mW |
| Operating Ambient Temperature | T _A | −30 to +90 | °C |
| Storage Temperature | T _{stg} | −35 to +150 | °C |

Note Mounted on double copper-clad 50 × 50 × 1.6 mm epoxy glass PWB, T_A = +85°C

RECOMMENDED OPERATING RENGE (T_A = +25°C)

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit |
|-----------------------------------|------------------------|-------|------|-------|------|
| Supply Voltage _{1, 2, 3} | V _{DD1, 2, 3} | 3.1 | 3.6 | 4.4 | V |
| Input Power 1 (INPUT1) | P _{in1} | − | − | −10 | dBm |
| Input Power 2 (INPUT2) | P _{in2} | − | − | −20 | dBm |
| ★ Operating Frequency 1 | f _{opt1} | 893 | − | 960 | MHz |
| ★ Operating Frequency 2 | f _{opt2} | 1 429 | − | 1 453 | MHz |

ELECTRICAL CHARACTERISTICS -INPUT1-OUTPUT1-

(Unless otherwise specified, T_A = +25°C, V_{DD1} = 3.6 V, π /4DQPSK modulated signal input, External input and output matching)

| Parameter | Symbol | Test Conditions | MIN. | TYP. | MAX. | Unit |
|----------------------------------|-------------------|--|------|------|------|------|
| Operating Frequency 1 | f _{opt1} | | 893 | 925 | 960 | MHz |
| Power Gain 1 | G _{P1} | P _{in} = -10 dBm | 14 | 16 | 18 | dB |
| Circuit Current 1 | I _{DD1} | P _{out} = +8 dBm | — | 16 | 20 | mA |
| Adjacent Channel Power Leakage 1 | P _{adj1} | P _{out} = +8 dBm, $\Delta f = \pm 50$ kHz, 21 kHz Bandwidth | — | -60 | -55 | dBc |
| Adjacent Channel Power Leakage 2 | P _{adj2} | P _{out} = +8 dBm, $\Delta f = \pm 100$ kHz, 21 kHz Bandwidth | — | -70 | -65 | dBc |

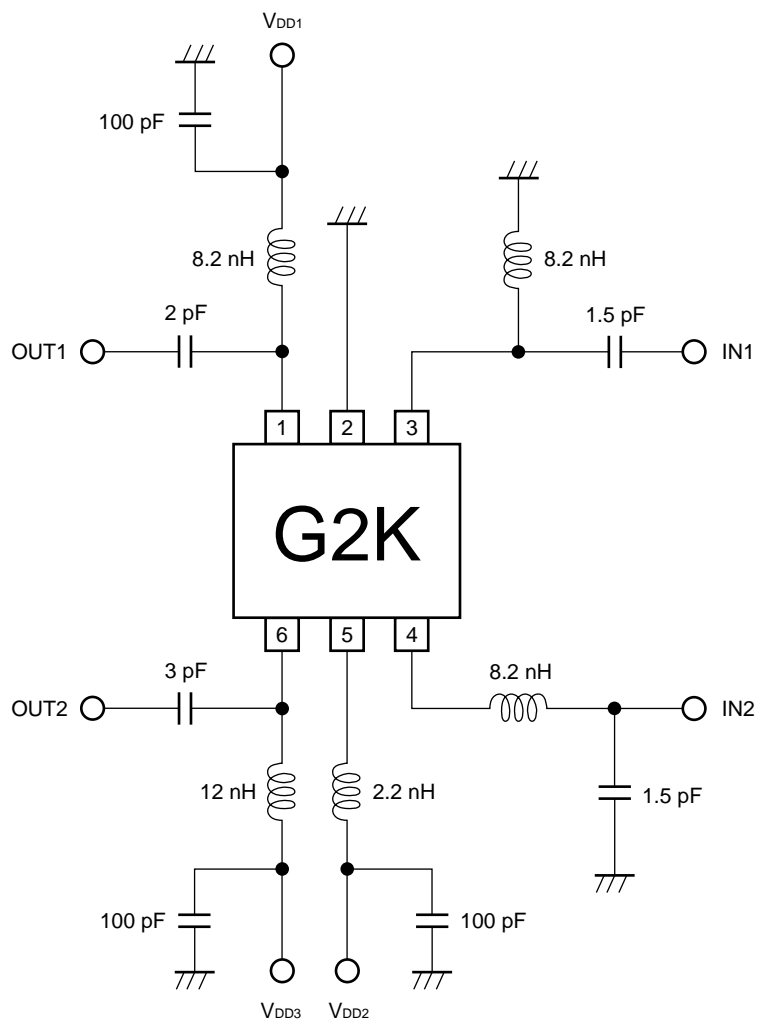
ELECTRICAL CHARACTERISTICS -INPUT2-OUTPUT2-

(Unless otherwise specified, T_A = +25°C, V_{DD2} = V_{DD3} = 3.6 V, π /4DQPSK modulated signal input, External input and output matching)

| Parameter | Symbol | Test Conditions | MIN. | TYP. | MAX. | Unit |
|----------------------------------|-------------------|--|-------|-------|-------|------|
| Operating Frequency 2 | f _{opt2} | | 1 429 | 1 441 | 1 453 | MHz |
| Power Gain 2 | G _{P2} | P _{in} = -22 dBm | 24 | 26 | 28 | dB |
| Circuit Current 2 | I _{DD2} | P _{out} = +8 dBm | — | 28 | 32 | mA |
| Adjacent Channel Power Leakage 3 | P _{adj3} | P _{out} = +8 dBm, $\Delta f = \pm 50$ kHz, 21 kHz Bandwidth | — | -60 | -55 | dBc |
| Adjacent Channel Power Leakage 4 | P _{adj4} | P _{out} = +8 dBm, $\Delta f = \pm 100$ kHz, 21 kHz Bandwidth | — | -70 | -65 | dBc |

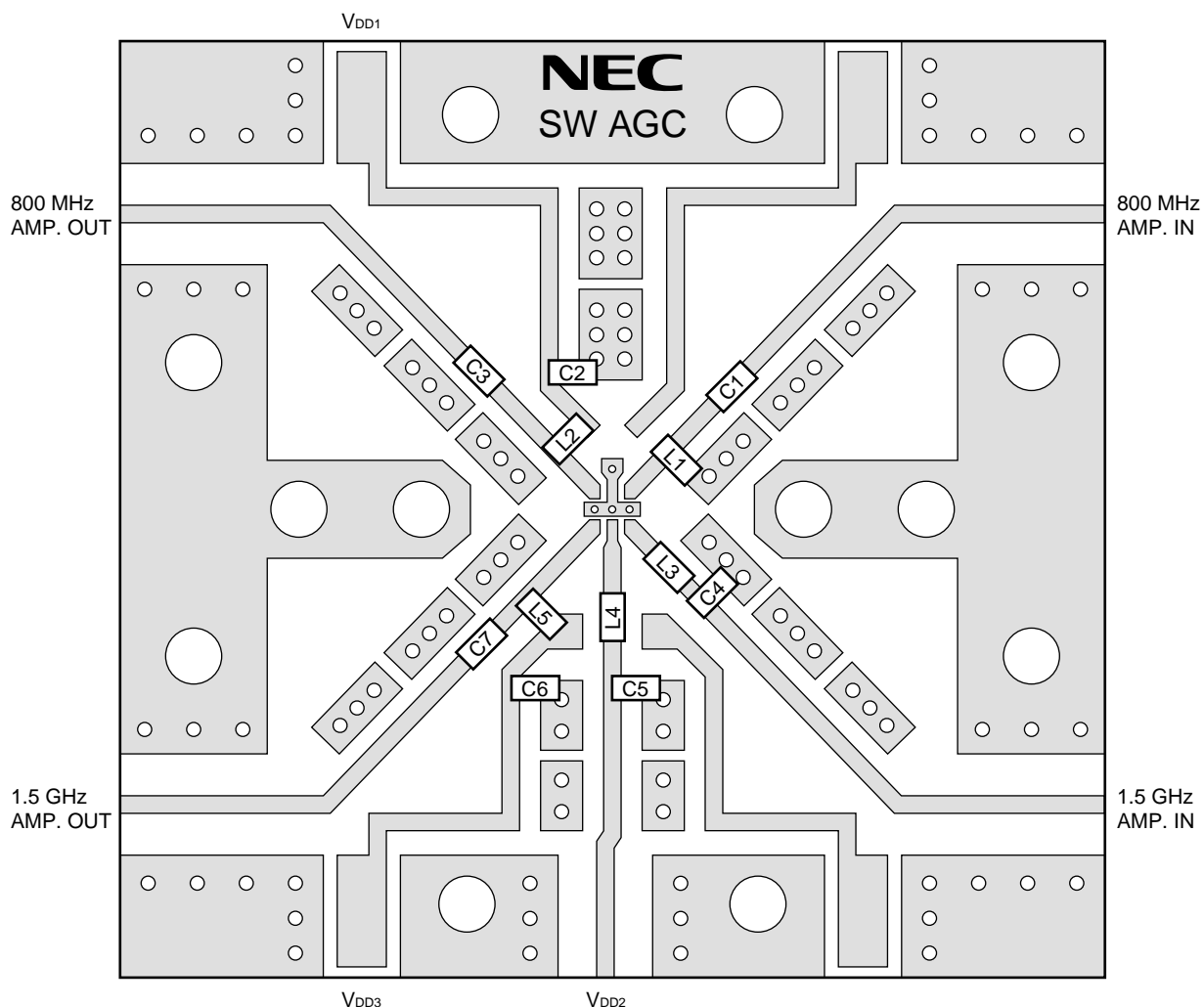
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EVALUATION CIRCUIT ($V_{DD1, 2, 3} = 3.6 \text{ V}$, $f = 925 \text{ MHz}$ (INPUT1-OUTPUT1), $f = 1\,441 \text{ MHz}$ (INPUT2-OUTPUT2))



The application circuits and their parameters are for reference only and are not intended for use in actual design-ins.

ILLUSTRATION OF THE TEST CIRCUIT ASSEMBLED ON EVALUATION BOARD

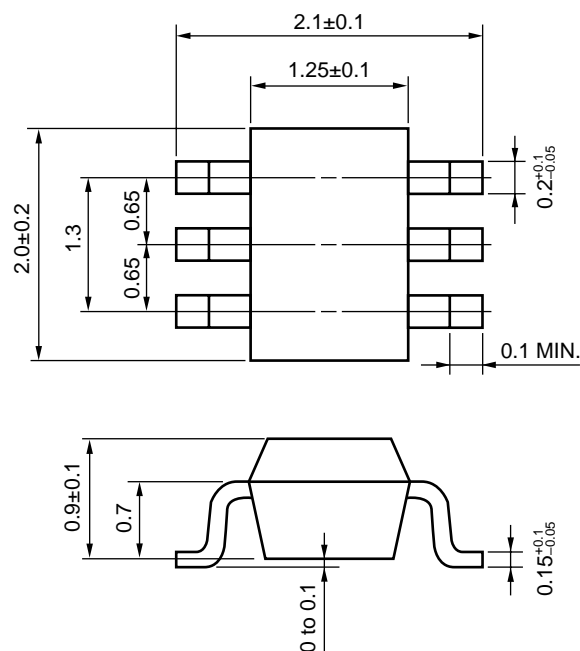


COMPONENT LIST

| Symbol | Rating | Part Number | Manufacturer |
|------------|--------|---------------|--------------|
| L1, L2, L3 | 8.2 nH | TFL0816-8N2 | Susumu |
| L4 | 2.2 nH | TFL0816-2N2 | Susumu |
| L5 | 12 nH | TFL0816-12N | Susumu |
| C1, C4 | 1.5 pF | GRM39CK1R5C50 | muRata |
| C2, C5, C6 | 100 pF | GRM39CH101J50 | muRata |
| C3 | 2 pF | GRM39CK020C50 | muRata |
| C7 | 3 pF | GRM39CJ030C50 | muRata |

PACKAGE DIMENSIONS

6-PIN SUPER MINIMOLD (UNIT: mm)



RECOMMENDED SOLDERING CONDITIONS

This product should be soldered and mounted under the following recommended conditions. For soldering methods and conditions other than those recommended below, contact your nearby sales office.

| Soldering Method | Soldering Conditions | Condition Symbol |
|------------------|---|------------------|
| Infrared Reflow | Peak temperature (package surface temperature) : 260°C or below Time at peak temperature : 10 seconds or less Time at temperature of 220°C or higher : 60 seconds or less Preheating time at 120 to 180°C : 120±30 seconds Maximum number of reflow processes : 3 times Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below | IR260 |
| VPS | Peak temperature (package surface temperature) : 215°C or below Time at temperature of 200°C or higher : 25 to 40 seconds Preheating time at 120 to 150°C : 30 to 60 seconds Maximum number of reflow processes : 3 times Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below | VP215 |
| Wave Soldering | Peak temperature (molten solder temperature) : 260°C or below Time at peak temperature : 10 seconds or less Preheating temperature (package surface temperature) : 120°C or below Maximum number of flow processes : 1 time Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below | WS260 |
| Partial Heating | Peak temperature (pin temperature) : 350°C or below Soldering time (per side of device) : 3 seconds or less Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below | HS350 |

Caution Do not use different soldering methods together (except for partial heating).

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M8E 00.4-0110

SAFETY INFORMATION ON THIS PRODUCT

| | | |
|----------------|---------------|---|
| Caution | GaAs Products | <p>The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested.</p> <ul style="list-style-type: none"> • Do not destroy or burn the product. • Do not cut or cleave off any part of the product. • Do not crush or chemically dissolve the product. • Do not put the product in the mouth. <p>Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.</p> |
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►Business issue

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►Technical issue

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