

### L-BAND PA DRIVER AMPLIFIER

#### DESCRIPTION

The  $\mu$ PG173TA is L-Band PA driver amplifier developed for digital cellular telephone and PCS applications. This device feature high output power and low distortion with 2.8 V low voltage and 25 mA low current operation. It is housed in a very small 6 pin mini-mold package available on tape-and-reel and easy to install and contributes to miniaturizing the systems.

#### FEATURES

- Low Operation Voltage :  $V_{DD} = 2.8$  V
- Low distortion :  $P_{adj1} = -60$  dBc typ. @  $V_{DD} = 2.8$  V,  $f_{RF} = 925$  to  $960$  MHz,  $P_{out} = +9$  dBm  
External output matching
- Low operation Current :  $I_{DD} = 25$  mA typ. @  $V_{DD} = 2.8$  V,  $f_{RF} = 925$  to  $960$  MHz,  $P_{out} = +9$  dBm  
External output matching
- 6 pin mini-mold package

#### APPLICATION

- Digital Cellular: PDC, GSM, IS-95, IS-136, PCS etc.

#### ORDERING INFORMATION

PART NUMBER	PACKAGE	PACKING FORM
$\mu$ PG173TA-E3	6 pin Mini-Mold	Carrier tape width is 8 mm, Quantity is 3 kpcs per reel.

**Remark** For sample order, please contact your local NEC sales office. (Part number for sample order:  $\mu$ PG173TA)

#### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

PARAMETERS	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD}$	6.0	V
Input Power	$P_{in}$	-8	dBm
Total Power Dissipation	$P_{tot}$	170 <sup>Note</sup>	mW
Operating Temperature	$T_A$	-30 to +90	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-35 to +150	$^\circ\text{C}$

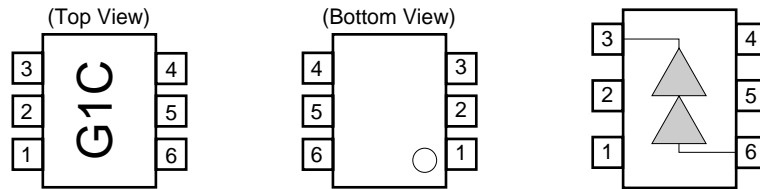
**Note** Mounted on a  $50 \times 50 \times 1.6$  mm double copper clad epoxy glass PWB,  $T_A = +85^\circ\text{C}$

**Caution** The IC must be handled with care to prevent static discharge because its circuit composed of GaAs HJ-FET.

The information in this document is subject to change without notice.

## PIN CONNECTION AND INTERNAL BLOCK DIAGRAM

Pin No.	Connection	Pin No.	Connection
1	V <sub>DD1</sub>	4	Non Connection
2	GND	5	GND
3	V <sub>DD2</sub> & OUT	6	IN

RECOMMENDED OPERATING CONDITIONS ( $T_A = 25^\circ\text{C}$ )

PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage 1, 2	V <sub>DD1, 2</sub>	+2.7	+2.8	+3.0	V
Input Power	P <sub>in</sub>		-18		dBm

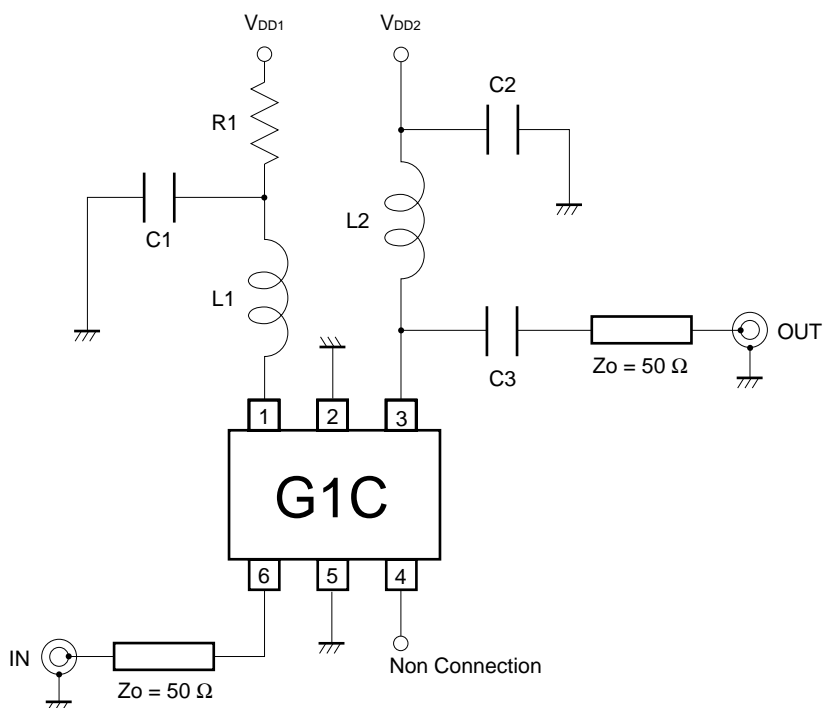
## ELECTRICAL CHARACTERISTICS

(Unless otherwise specified,  $T_A = 25^\circ\text{C}$ , V<sub>DD1</sub> = V<sub>DD2</sub> = +2.8 V,  $\pi$ /4DQPSK modulated signal input, External output matching)

PARAMETERS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Frequency	f		925		960	MHz
Linear Gain	G <sub>L</sub>	P <sub>in</sub> = -18 dBm	27	28.5		dB
Total Current	I <sub>DD</sub>	P <sub>in</sub> = -18 dBm		25	30	mA
Adjacent Channel Power Leakage 1	P <sub>adj1</sub>	P <sub>out</sub> = +9 dBm, $\Delta f = \pm 50$ kHz		-60	-55	dBc
Adjacent Channel Power Leakage 2	P <sub>adj2</sub>	P <sub>out</sub> = +9 dBm, $\Delta f = \pm 100$ kHz		-65	-60	dBc
Input Return Loss	RL <sub>in</sub>			10		dB
Output Return Loss	RL <sub>out</sub>	External matching		10		dB

# EVALUATION CIRCUIT (Preliminary)

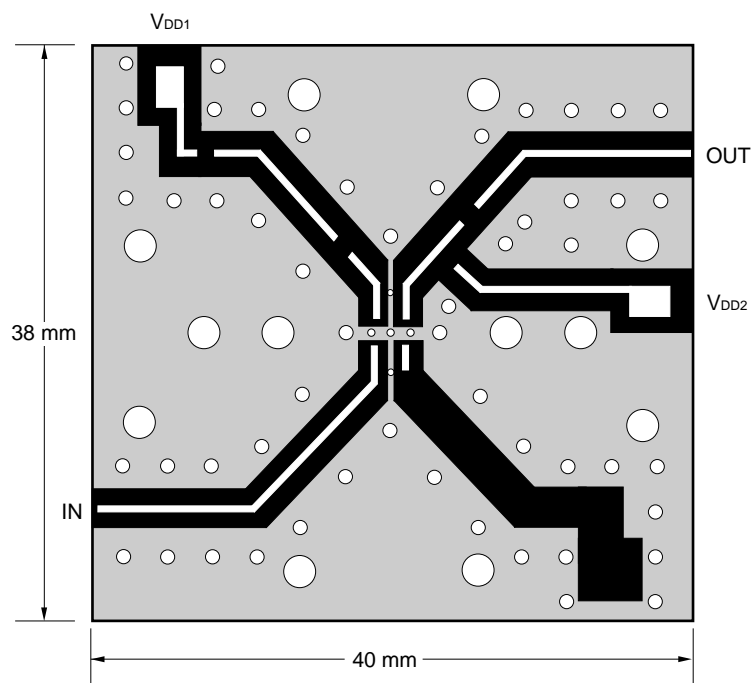
$V_{DD1} = V_{DD2} = +2.8\text{ V}$ ,  $f = 925\text{ to }960\text{ MHz}$



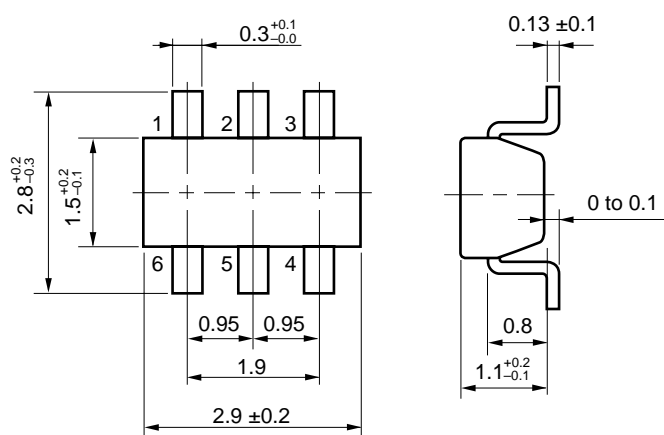
Using the NEC Evaluation board

C1, C2	1000 pF
C3	2.0 pF
R1	10 Ω
L1	8.2 nH
L2	10 nH

EVALUATION BOARD (Epoxy Glass,  $\varepsilon = 4.6$ , 0.4 mm thickness)



6 PIN MINI-MOLD PACKAGE DIMENSIONS (UNIT: mm)



**RECOMMENDED SOLDERING CONDITIONS**

This Product should be soldered in the following recommended conditions. Other soldering methods and conditions than the recommended conditions are to be consulted with our sales representatives.

Soldering process	Soldering conditions	Recommended condition symbol
Infrared ray reflow	Package peak temperature: 235°C Hour: within 30 s. (more than 210°C) Time: 3 times, Limited days: no. <sup>Note</sup>	IR35-00-3
VPS	Package peak temperature: 215°C Hour: within 40 s. (more than 200°C) Time: 3 times, Limited days: no. <sup>Note</sup>	VP15-00-3
Wave Soldering	Soldering tub temperature: less than 260°C, Hour: within 10 s. Time: 1 time, Limited days: no. <sup>Note</sup>	WS60-00-1
Pin part heating	Pin area temperature: less than 300°C, Hour: within 3 s. Limited days: no. <sup>Note</sup>	

**Note** It is the storage days after opening a dry pack, the storage conditions are 25°C, less than 65%, RH.

**Caution** The combined use of soldering method is to be avoided (However, except the pin area heating method).

For details of recommended soldering conditions for surface mounting, refer to information document **SEMICONDUCTOR DEVICE MOUNTING TECHNOLOGY MANUAL (C10535E)**.

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## Caution

**The Great Care must be taken in dealing with the devices in this guide.**

**The reason is that the material of the devices is GaAs (Gallium Arsenide), which is designated as harmful substance according to the law concerned.**

**Keep the law concerned and so on, especially in case of removal.**

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

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Anti-radioactive design is not implemented in this product.