

### L-BAND PA DRIVER AMPLIFIER

#### DESCRIPTION

The  $\mu$ PG2115TB is a GaAs MMIC for PA driver amplifiers developed for L-band mobile communication applications.

This device realizes low voltage operation with low current and low distortion characteristics. Moreover, the device has HPF-type input matching circuit built-in, external parts are only three.

The package employed is a 6-pin super minimold.

#### FEATURES

- Low operation voltage:  $V_{DD} = 3.0\text{ V}$
- $f$ : 893 to 960 MHz @  $P_{out} = +8\text{ dBm}$
- Low distortion:  $P_{adj1} = -60\text{ dBc TYP. @ } V_{DD} = 3.0\text{ V, } P_{out} = +8\text{ dBm}$   
External output matching
- Low operation current:  $I_{DD} = 12\text{ mA TYP. @ } V_{DD} = 3.0\text{ V, } P_{out} = +8\text{ dBm}$   
External output matching
- 6-pin super minimold package

#### APPLICATION

- Digital cellular: PDC800MHz etc.

#### ORDERING INFORMATION

Part Number	Package	Marking	Supplying Form
$\mu$ PG2115TB-E3	6-pin super minimold	G2C	Embossed tape 8 mm wide. Pin 1 face the tape perforation side. Qty 3kpcs / reel.

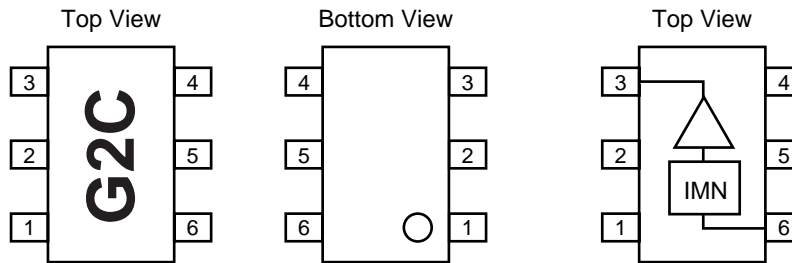
**Remark** To order evaluation samples, please contact your local NEC sales office.  
(Part number for sample order:  $\mu$ PG2115TB)

**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. 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 representative for availability and additional information.

**PIN CONNECTIONS**

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



**Remark** IMN: Input Matching Network

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = +25°C)**

Parameter	Symbol	Ratings	Unit
Supply Voltage	V <sub>DD</sub>	6.0	V
Input Power	P <sub>in</sub>	0	dBm
Total Power Dissipation	P <sub>tot</sub>	140 <sup>Note</sup>	mW
Operating Ambient Temperature	T <sub>A</sub>	-30 to +90	°C
Storage Temperature	T <sub>stg</sub>	-35 to +150	°C

**Note** Mounted on a 50 × 50 × 1.6 mm double copper clad epoxy glass PWB, T<sub>A</sub> = +85°C

**RECOMMENDED OPERATING CONDITIONS (T<sub>A</sub> = +25°C)**

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage	V <sub>DD</sub>	+2.7	+3.0	+3.3	V
Input Power	P <sub>in</sub>	–	–9	–6	dBm

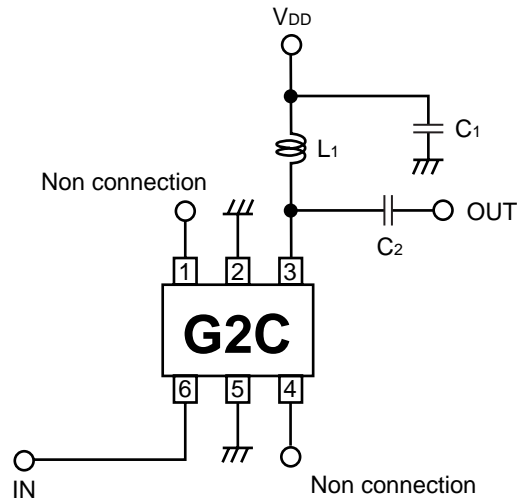
**ELECTRICAL CHARACTERISTICS**

(Unless otherwise specified, T<sub>A</sub> = +25°C, V<sub>DD</sub> = +3.0 V,  $\pi/4$ DQPSK modulated signal input, external output matching)

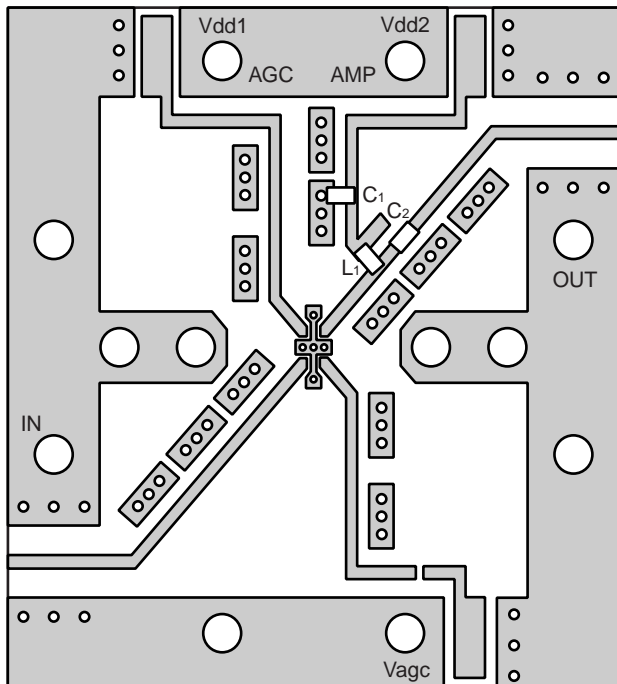
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Operating Frequency	f		893	–	960	MHz
Power Gain	G <sub>p</sub>	P <sub>out</sub> = +8 dBm	14	17	20	dB
Total Current	I <sub>DD</sub>	P <sub>out</sub> = +8 dBm	–	12	16	mA
Adjacent Channel Power Leakage 1	P <sub>adj1</sub>	P <sub>out</sub> = +8 dBm $\Delta f = \pm 50$ kHz, 21 kHz Band Width	–	–60	–55	dBc
Adjacent Channel Power Leakage 2	P <sub>adj2</sub>	P <sub>out</sub> = +8 dBm $\Delta f = \pm 100$ kHz, 21 kHz Band Width	–	–70	–65	dBc

EVALUATION CIRCUIT

V<sub>DD</sub> = +3.0 V, f = 925 MHz



EVALUATION BOARD

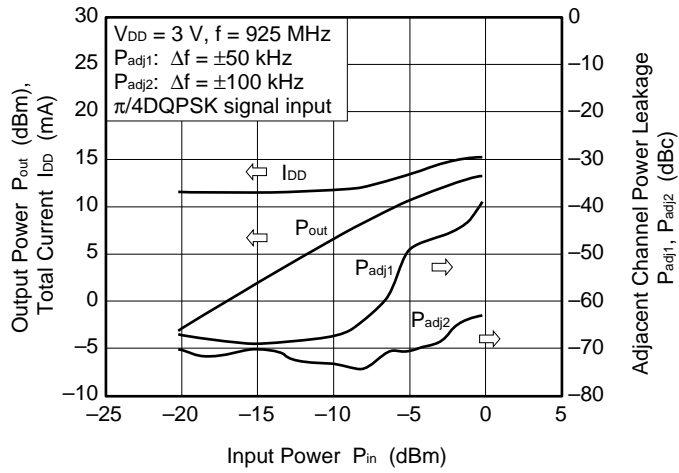


USING THE NEC EVALUATION BOARD

Symbol	Values	Part Number	Maker
C1	1 000 pF	GRM39CH 102 K50	muRata
C2	1.8 pF	GRM39CK 1R8 C50	muRata
L1	10 nH	TFL0816 10N	susumu

**TYPICAL CHARACTERISTICS (T<sub>A</sub> = +25°C)**

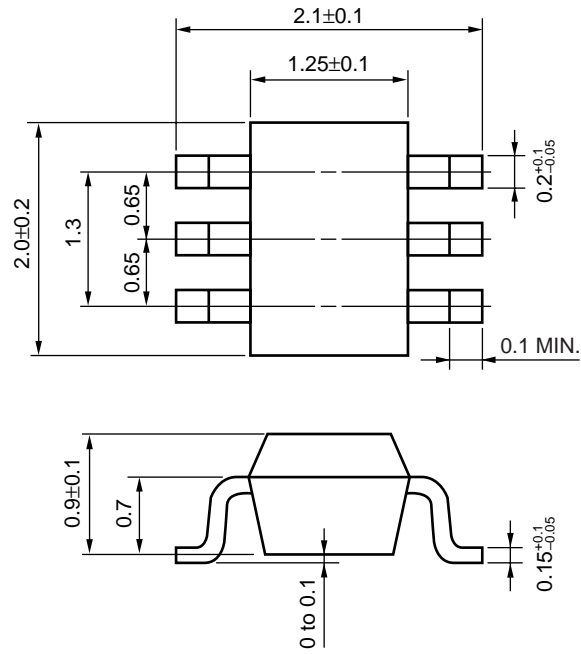
OUTPUT POWER, TOTAL CURRENT,  
ADJACENT CHANNEL POWER LEAKAGE  
vs. INPUT POWER



**Remark** The graph indicates nominal characteristics.

PACKAGE DIMENSIONS

6-PIN SUPER MINIMOLD (UNIT: mm)



**RECOMMENDED SOLDERING CONDITIONS**

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

Soldering Method	Soldering Conditions	Recommended Condition Symbol
Infrared Reflow	Package peak temperature: 235°C or below Time: 30 seconds or less (at 210°C) Count: 3, Exposure limit: None <sup>Note</sup>	IR35-00-3
VPS	Package peak temperature: 215°C or below Time: 40 seconds or less (at 200°C) Count: 3, Exposure limit: None <sup>Note</sup>	VP15-00-3
Wave Soldering	Soldering bath temperature: 260°C or below Time: 10 seconds or less Count: 1, Exposure limit: None <sup>Note</sup>	WS60-00-1
Partial Heating	Pin temperature: 300°C Time: 3 seconds or less (per side of device) Exposure limit: None <sup>Note</sup>	—

**Note** After opening the dry pack, keep it in a place below 25°C and 65% RH for the allowable storage period.

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

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

## 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.**

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