To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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Phase-out/Discontinued

GaAs INTEGRATED CIRCUIT

μPG2310TK

GaAs MMIC LOW NOISE AMPLIFIER FOR SATELLITE RADIO

DESCRIPTION

The μPG2310TK is a GaAs MMIC LNA for SDARS (Satellite Digital Audio Radio Services). High Gain and Low Distortion suit to driver stage amplifier for Satellite Radio Antenna.

FEATURES

- High gain : G_P = 27.0 dB TYP.
- Low distortion : OIP_3 = +28.5 dBm TYP.
- 6-pin lead-less minimold package (1.5 × 1.1 × 0.55 mm)

APPLICATION

- Satellite Radio Antenna etc.

ORDERING INFORMATION

Part Number	Order Number	Package	Marking	Supplying Form
μPG2310TK-E2	μPG2310TK-E2-A	6-pin lead-less minimold (1511 PKG) (Pb-Free) Note	G4W	• Embossed tape 8 mm wide • Pin 1, 6 face the perforation side of the tape • Qty 5 kpcs/reel

Note With regards to terminal solder (the solder contains lead) plated products (conventionally plated), contact your nearby sales office.

Remark To order evaluation samples, contact your nearby sales office.
Part number for sample order: μPG2310TK

Caution Observe precautions when handling because these devices are sensitive to electrostatic discharge.

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Not all devices/types available in every country. Please check with local NEC Compound Semiconductor Devices representative for availability and additional information.

Document No. PG10576EJ01V0DS (1st edition)
Date Published August 2005 CP(K)
Printed in Japan

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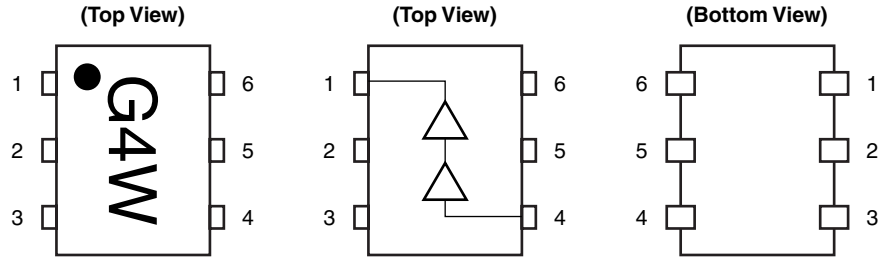
PIN CONNECTIONS AND INTERNAL BLOCK DIAGRAM



Pin No.	Pin Name
1	$V_{CC}2$/OUT
2	GND
3	$V_{CC}1$
4	IN
5	GND
6	GND

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

Parameter	Symbol	Ratings	Unit
Supply Voltage	$V_{CC}1$, $V_{CC}2$	+5.0	V
Input Power	P_{in}	−10	dBm
Total Power Dissipation	P_{tot}	300 Note	mW
Operating Ambient Temperature	T_A	−45 to +85	°C
Storage Temperature	T_{stg}	−55 to +150	°C

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

RECOMMENDED OPERATING RANGE

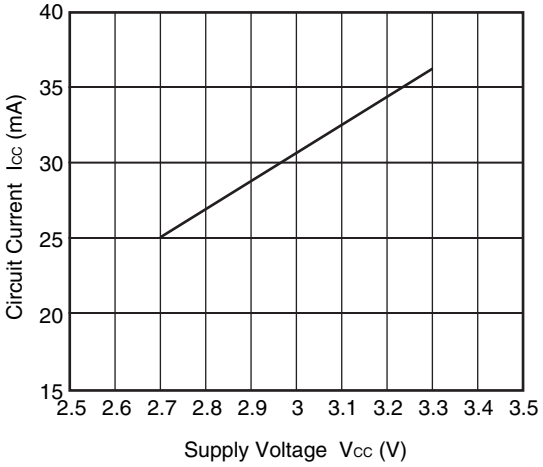
Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Operating Frequency	f_{opt}	2 320	2 340	2 360	MHz
Supply Voltage	$V_{CC}1$, $V_{CC}2$	+2.7	+3.0	+3.3	V
Operating Ambient Temperature	T_A	−45	+25	+85	°C

ELECTRICAL CHARACTERISTICS (T_A = +25°C, $V_{CC}1$ = $V_{CC}2$ = +3.0 V, Z_O = 50 Ω, unless otherwise specified)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_P	f = 2 340 MHz, P_{in} = –30 dBm	25.0	27.0	–	dB
Noise Figure	NF	f = 2 340 MHz	–	1.8	2.0	dB
Input Return Loss	RL_{in}	f = 2 340 MHz, P_{in} = –30 dBm	–	13	–	dB
Output Return Loss	RL_{out}	f = 2 340 MHz, P_{in} = –30 dBm	–	15	–	dB
Output 3rd Order Distortion Intercept Point	OIP_3	f1 = 2 340 MHz, f2 = 2 340.1 MHz	+26.5	+28.5	–	dBm
Circuit Current [Note]	I_{CC}	f = 2 340 MHz, P_{in} = –30 dBm	–	30	35	mA

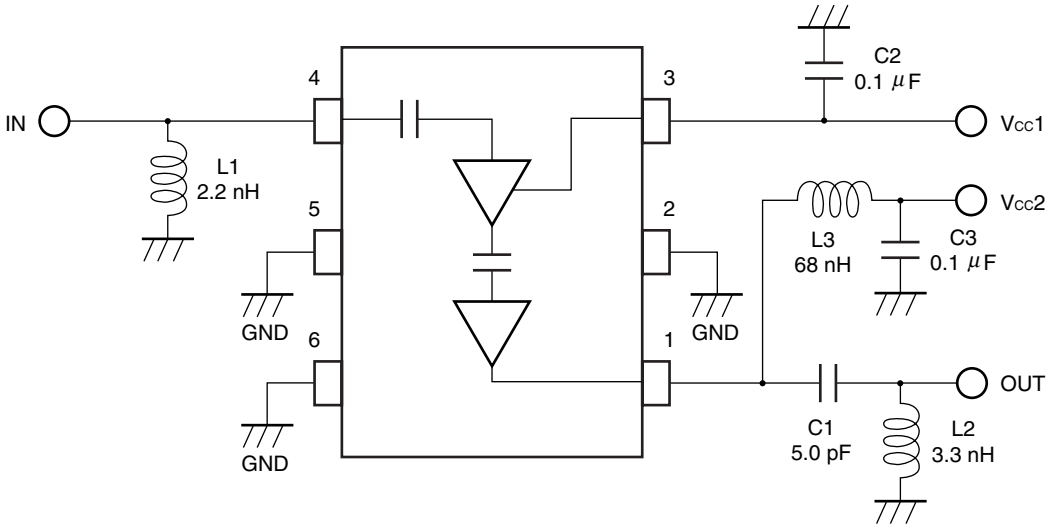
Note Please refer to following chart.

CIRCUIT CURRENT vs. SUPPLY VOLTAGE



Remark The graph indicates nominal characteristics.

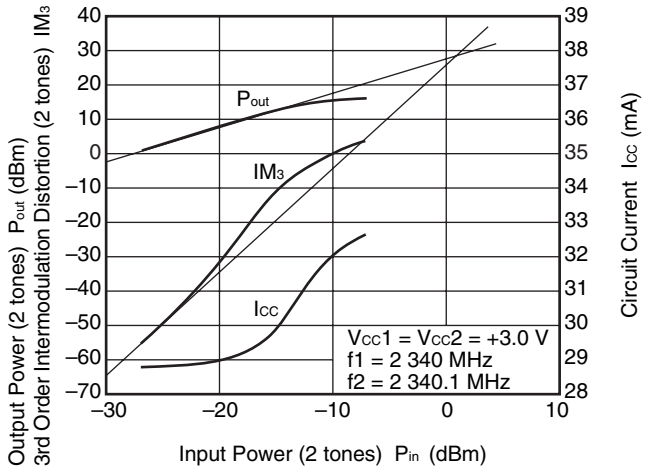
TEST CIRCUIT



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

TYPICAL CHARACTERISTICS (T_A = +25°C, unless otherwise specified)

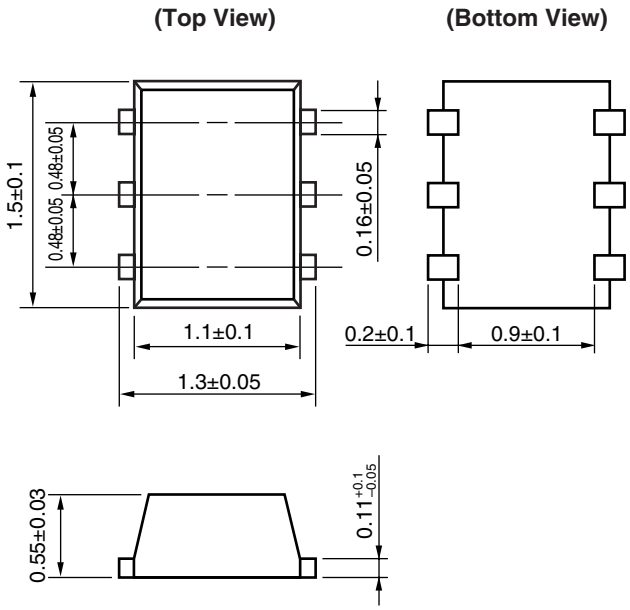
OUTPUT POWER (2 tones), IM_3 (2 tones), I_{CC} vs. INPUT POWER (2 tones)



Remark The graph indicates nominal characteristics.

PACKAGE DIMENSIONS

6-PIN LEAD-LESS MINIMOLD (1511 PKG) (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) Time at peak temperature Time at temperature of 220°C or higher Preheating time at 120 to 180°C Maximum number of reflow processes Maximum chlorine content of rosin flux (% mass)	: 260°C or below : 10 seconds or less : 60 seconds or less : 120±30 seconds : 3 times : 0.2%(Wt.) or below	IR260
Wave Soldering	Peak temperature (molten solder temperature) Time at peak temperature Preheating temperature (package surface temperature) Maximum number of flow processes Maximum chlorine content of rosin flux (% mass)	: 260°C or below : 10 seconds or less : 120°C or below : 1 time : 0.2%(Wt.) or below	WS260
Partial Heating	Peak temperature (terminal temperature) Soldering time (per side of device) Maximum chlorine content of rosin flux (% mass)	: 350°C or below : 3 seconds or less : 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

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▶**For further information, please contact**

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