CEL

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-A

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

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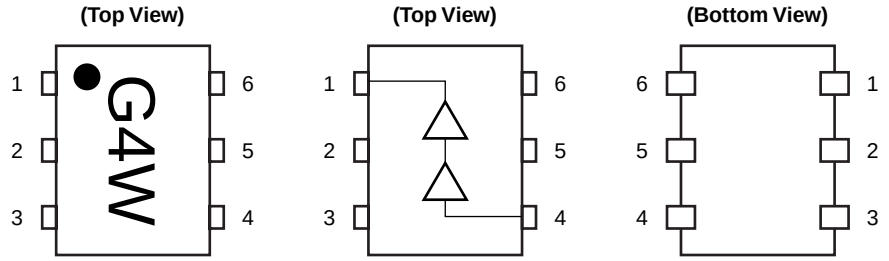
PIN CONNECTIONS AND INTERNAL BLOCK DIAGRAM



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

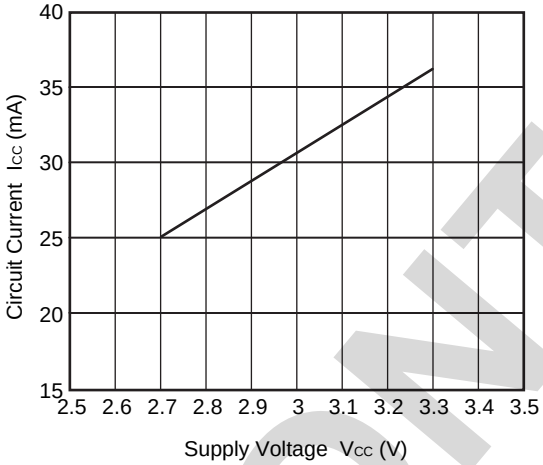
Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Operating Frequency	f_{opt}	2 320	2 340	2 360	MHz
Supply Voltage	$V_{CC}1$, $V_{CC}2$	+2.7	+3.0	+3.3	V
Operating Ambient Temperature	T_A	−45	+25	+85	°C

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

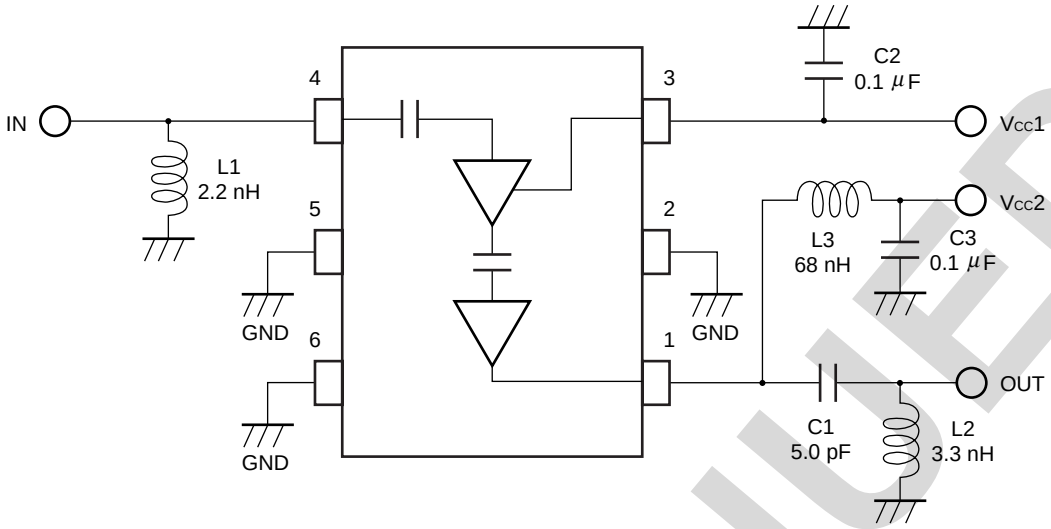
Note Please refer to following chart.

CIRCUIT CURRENT vs. SUPPLY VOLTAGE



Remark The graph indicates nominal characteristics.

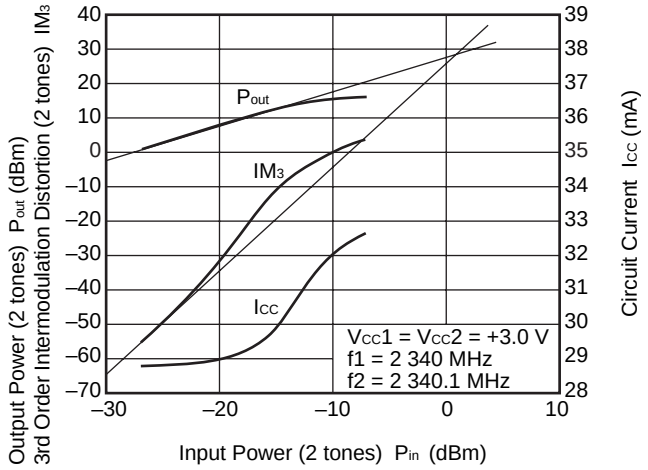
TEST CIRCUIT



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)

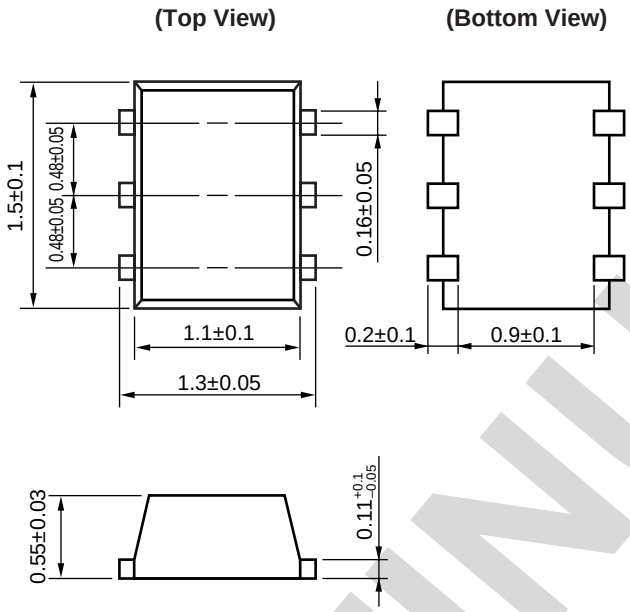
OUTPUT POWER (2 tones), IM_3 (2 tones), I_{CC} vs. INPUT POWER (2 tones)



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)	: 260°C or below	IR260
	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	
Wave Soldering	Peak temperature (molten solder temperature)	: 260°C or below	WS260
	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	
Partial Heating	Peak temperature (terminal temperature)	: 350°C or below	HS350
	Soldering time (per side of device)	: 3 seconds or less	
	Maximum chlorine content of rosin flux (% mass)	: 0.2%(Wt.) or below	

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

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Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL's understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

Restricted Substance per RoHS	Concentration Limit per RoHS (values are not yet fixed)	Concentration contained in CEL devices	
Lead (Pb)	< 1000 PPM	-A	-AZ
		Not Detected	(*)
Mercury	< 1000 PPM	Not Detected	
Cadmium	< 100 PPM	Not Detected	
Hexavalent Chromium	< 1000 PPM	Not Detected	
PBB	< 1000 PPM	Not Detected	
PBDE	< 1000 PPM	Not Detected	

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.