

PRELIMINARY DATA SHEET

NEC

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC8211TK

SiGe LOW NOISE AMPLIFIER FOR GPS/MOBILE COMMUNICATIONS

DESCRIPTION

The μ PC8211TK is a silicon germanium (SiGe) monolithic integrated circuit designed as low noise amplifier for GPS and mobile communications.

The package is 6-pin lead-less minimold suitable for surface mount.

This IC is manufactured using UHS2 (Ultra High Speed Process) silicon bipolar process.

FEATURES

- Low noise : NF = 1.3 dB TYP.
- High gain : G_P = 18.5 dB TYP.
- Low current consumption : I_{CC} = 3.5 mA TYP. @ V_{CC} = 3.0 V
- Built-in power save function
- High-density surface mounting : 6-pin lead-less minimold package

APPLICATION

- Low noise amplifier for GPS and mobile communications

ORDERING INFORMATION

Part Number	Package	Marking	Supplying Form
μ PC8211TK-E2	6-pin lead-less minimold (1511)	6G	<ul style="list-style-type: none">• Embossed tape 8 mm wide• Pin 1, 6 face the perforation side of the tape• Qty 5 kpcs/reel

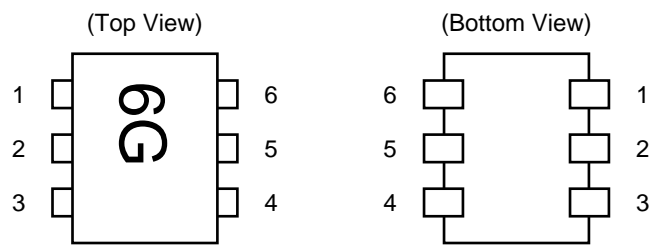
Remark To order evaluation samples, contact your nearby sales office.

Part number for sample order: μ PC8211TK

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

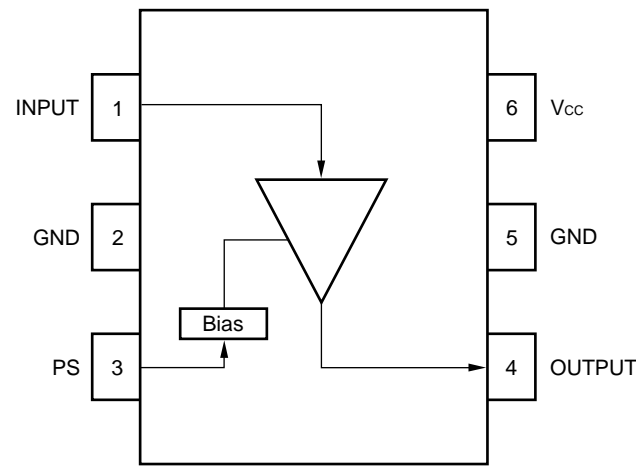
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PIN CONNECTIONS



Pin No.	Pin Name
1	INPUT
2	GND
3	PS
4	OUTPUT
5	GND
6	V _{cc}

INTERNAL BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Test Conditions	Ratings	Unit
Supply Voltage	V _{CC}	T _A = +25°C	4.0	V
Power Dissipation of Package	P _D	T _A = +85°C Note	232	mW
Operating Ambient Temperature	T _A		−40 to +85	°C
Storage Temperature	T _{stg}		−55 to +150	°C
Input Power	P _{in}		+10	dBm

Note Mounted on double-side copper-clad 50 × 50 × 1.6 mm epoxy glass PWB

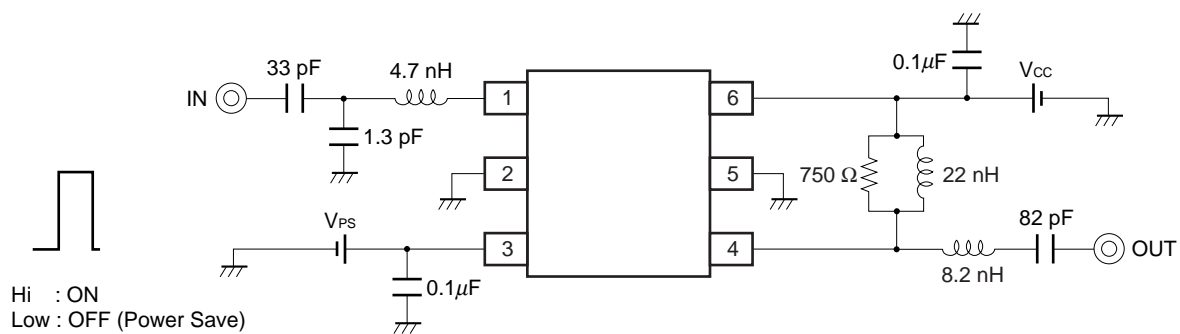
RECOMMENDED OPERATING RANGE

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Supply Voltage	V _{CC}		2.7	3.0	3.3	V
Operating Ambient Temperature	T _A		−25	+25	+85	°C
Operating Frequency Range	f _{in}		–	1 575	–	MHz

ELECTRICAL CHARACTERISTICS (T_A = +25°C, V_{CC} = 3.0 V, f_{in} = 1 575 MHz, V_{PS} = 3.0 V, unless otherwise specified)

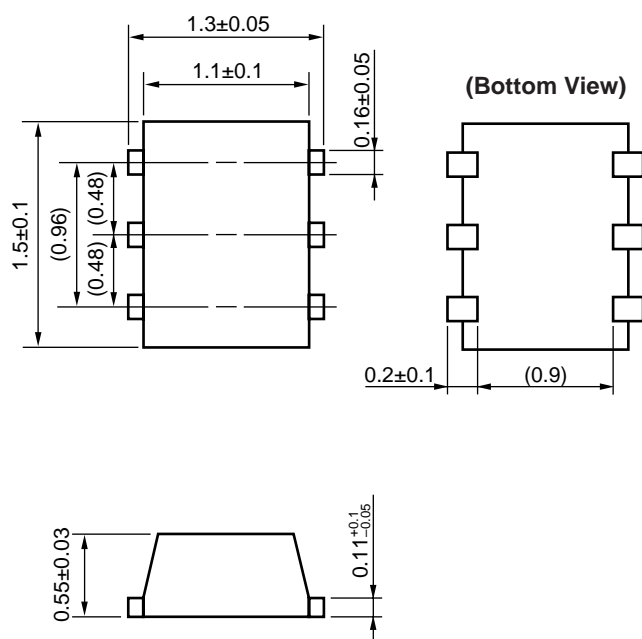
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Circuit Current	I _{CC}	No Signal	2.5	3.5	4.5	mA
		At Power Save Mode (V _{PS} ≤ 0.8 V)	–	–	1	μA
Power Gain	G _P		15.5	18.5	21.5	dB
Noise Figure	NF		–	1.3	1.5	dB
Input 3rd Order Distortion Intercept Point	IIP ₃	Gain = 18.5 dB	–	−12	–	dBm
Input Return Loss	RL _{in}		–	−7.5	−6.0	dB
Output Return Loss	RL _{out}		–	−14.5	−10.0	dB
Isolation	ISL		–	−32.5	–	dBm
Rising Voltage From Power-Saving Mode	V _{PSon}		2.2	–	–	V
Falling Voltage From Power-Saving Mode	V _{PSoff}		–	–	0.8	V
Gain Flatness	Flat	f _{in} ± 2.5 MHz	–	–	±0.5	dB
Gain 1 dB Compression Output Power	P _O (1 dB)		–	−4	–	dBm
Output Power	P _O	P _{in} = −10 dBm	−1.5	+2.0	–	dBm

TEST CIRCUIT



PACKAGE DIMENSIONS

6-PIN LEAD-LESS MINIMOLD (1511) (UNIT: mm)



Remark () : Reference value

NOTES ON CORRECT USE

- (1) Observe precautions for handling because of electro-static sensitive devices.
- (2) Form a ground pattern as widely as possible to minimize ground impedance (to prevent undesired oscillation).
All the ground pins must be connected together with wide ground pattern to decrease impedance difference.
- (3) The bypass capacitor should be attached to Vcc line.

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
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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