



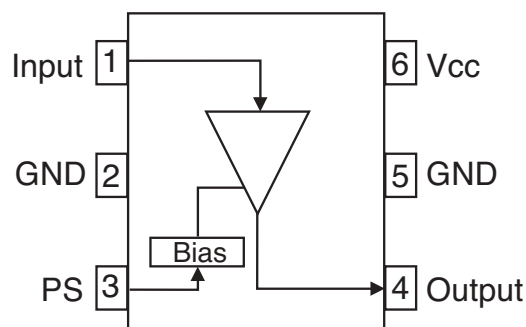
NEC's SiGe LOW NOISE AMPLIFIER FOR GPS/MOBILE COMMUNICATIONS

UPC8211TK

FEATURES

- **LOW NOISE:**
 $N_F = 1.3 \text{ dB TYP.}$
- **HIGH GAIN:**
 $G_P = 18.5 \text{ dB TYP.}$
- **LOW CURRENT CONSUMPTION:**
 $I_{CC} = 3.5 \text{ mA TYP. at } V_{CC} = 3.0 \text{ V}$
- **BUILT-IN POWER SAVE FUNCTION:**
- **HIGH-DENSITY SURFACE MOUNTING:**
6-pin lead less minimold package (1.5 x 1.3 x 0.55 mm)

INTERNAL BLOCK DIAGRAM



APPLICATION

- Low Noise amplifier for GPS and mobile communications
- General purpose low noise amplifier

DESCRIPTION

NEC's UPC8211TK is a silicon germanium (SiGe) monolithic integrated circuit designed as low noise amplifier for GPS and as a general low noise amplifier for mobile communications.

The package is 6-pin lead-less minimold (1.5 x 1.3 x 0.55 mm) suitable for surface mount and optimized for very densely populated compact designs.

This IC is manufactured using NEC's 60 GHz f_T UHS2 (Ultra High Speed Process) silicon bipolar process. This process can realize excellent low noise performance and low power consumption simultaneously.

NEC's stringent quality assurance and test procedures ensure the highest reliability and performance.

ELECTRICAL CHARACTERISTICS,

(Unless otherwise specified, $T_A = +25^\circ\text{C}$, $V_{CC} = 3.0 \text{ V}$, $f_{in} = 1575 \text{ MHz}$, $V_{PS} = 3.0 \text{ V}$)

PART NUMBER PACKAGE OUTLINE			UPC8211TK S06		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I_{CC}	Circuit Current (no input signal)	mA	—	3.5	4.5
	At power save mode ($V_{PS} < 0.8\text{V}$)	μA	—	—	1
GP	Power Gain	dB	15.5	18.5	21.5
NF	Noise Figure	dB	—	1.3	1.5
IIP ₃	3rd Order Distortion Input Intercept Point (Gain = 18.5 dB)	dBm	—	-12	—
RLIN	Input Return Loss	dB	—	-7.5	-6
RLOUT	Output Return Loss	dB	—	-14.5	-10
ISO	Isolation	dBm	—	-32.5	—
VPS ON	Rising Voltage from Power-Saving Mode	V	2.2	—	—
VPS OFF	Falling Voltage from Power-Saving Mode	V	—	—	0.8
Flat	Gain Flatness ($f_{in} \pm 2.5 \text{ MHz}$)	dB	—	—	$\Delta 0.5$
P _{O1} (dB)	Gain1 dB Compression Output Power	dBm	—	-4	—
P _O	Output Power	dBm	-1.5	+2.0	—

ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

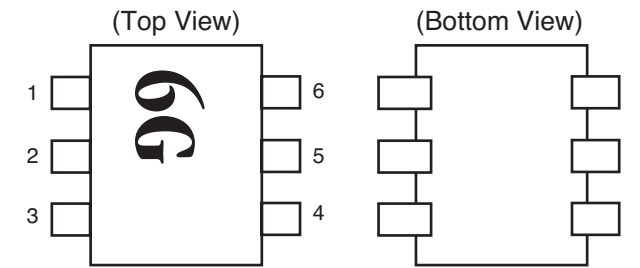
SYMBOLS	PARAMETERS	UNITS	RATINGS
V _{CC}	Supply Voltage	V	4.0
P _D	Power Dissipation	mW	232
T _A	Operating Ambient Temperature	°C	-40 to +85
T _{STG}	Storage Temperature	°C	-55 to +150
P _{IN}	Input Power	dBm	+10

Notes:
1. Mounted on a double-sided copper-clad 50 x 50 x 1.6 mm epoxy glass PWB

RECOMMENDED
OPERATING CONDITIONS

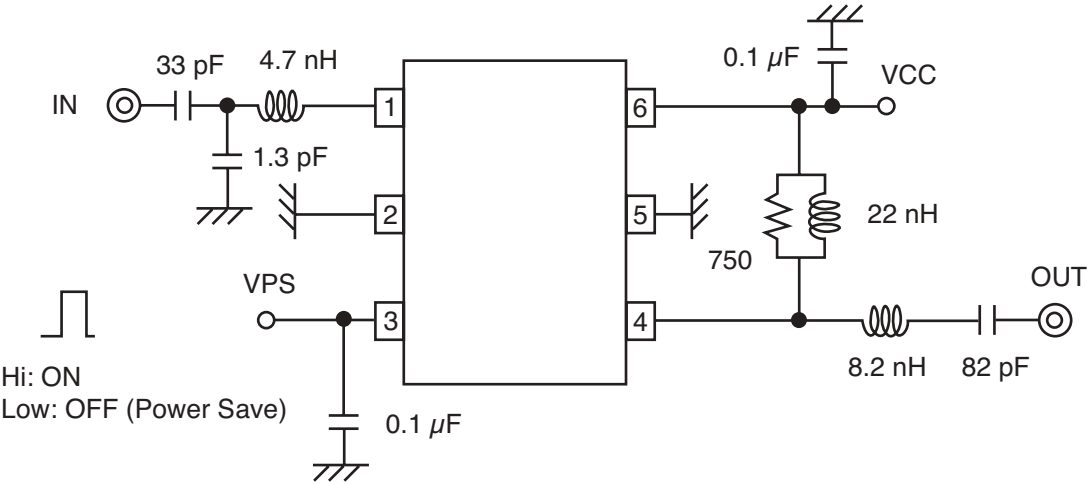
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V _{CC}	Supply Voltage	V	2.7	3.0	3.3
T _A	Operating Ambient Temperature	°C	-25	+25	+85
f _{in}	Operating Frequency Range	MHz	–	1575	–

PIN CONNECTIONS



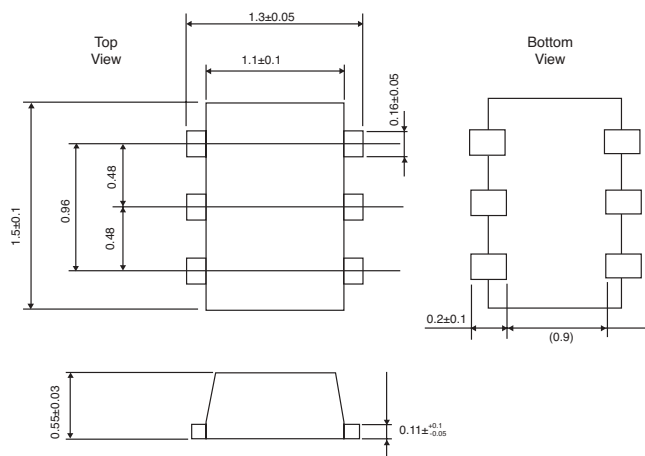
PIN NO.	PIN NAME
1	INPUT
2	GND
3	PS
4	OUTPUT
5	GND
6	V _{CC}

TEST CIRCUITS



OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE S06



ORDERING INFORMATION

PART NUMBER	QTY
UPC8211TK-E2	5K/Reel

Note:

Embossed tape, 8 mm wide. Pins 4, 5, 6 are in tape pull-out direction.