

# DATA SHEET

Part No.	AN18401A
Package Code No.	QFN028-P-0405B

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# AN18401A

## Down Converter IC for GPS

### ■ Overview

AN18401A, using SiGe process, realizes on-chip LNA with low noise figure and ultra low-power current consumption. As not only the LNA but also VCO is completely built in the IC, it enables further miniaturization of GPS modules and a reduction of components.

### ■ Features

- A single chip IC for the LNA block with low noise figure (NF = 1.6 dB)
- Low current consumption: 24 mA
- Achievement of saving the space of sets according to significant reduction of external parts (LNA, BPF, VCO, etc)

### ■ Applications

- For portable terminal, car navigation system

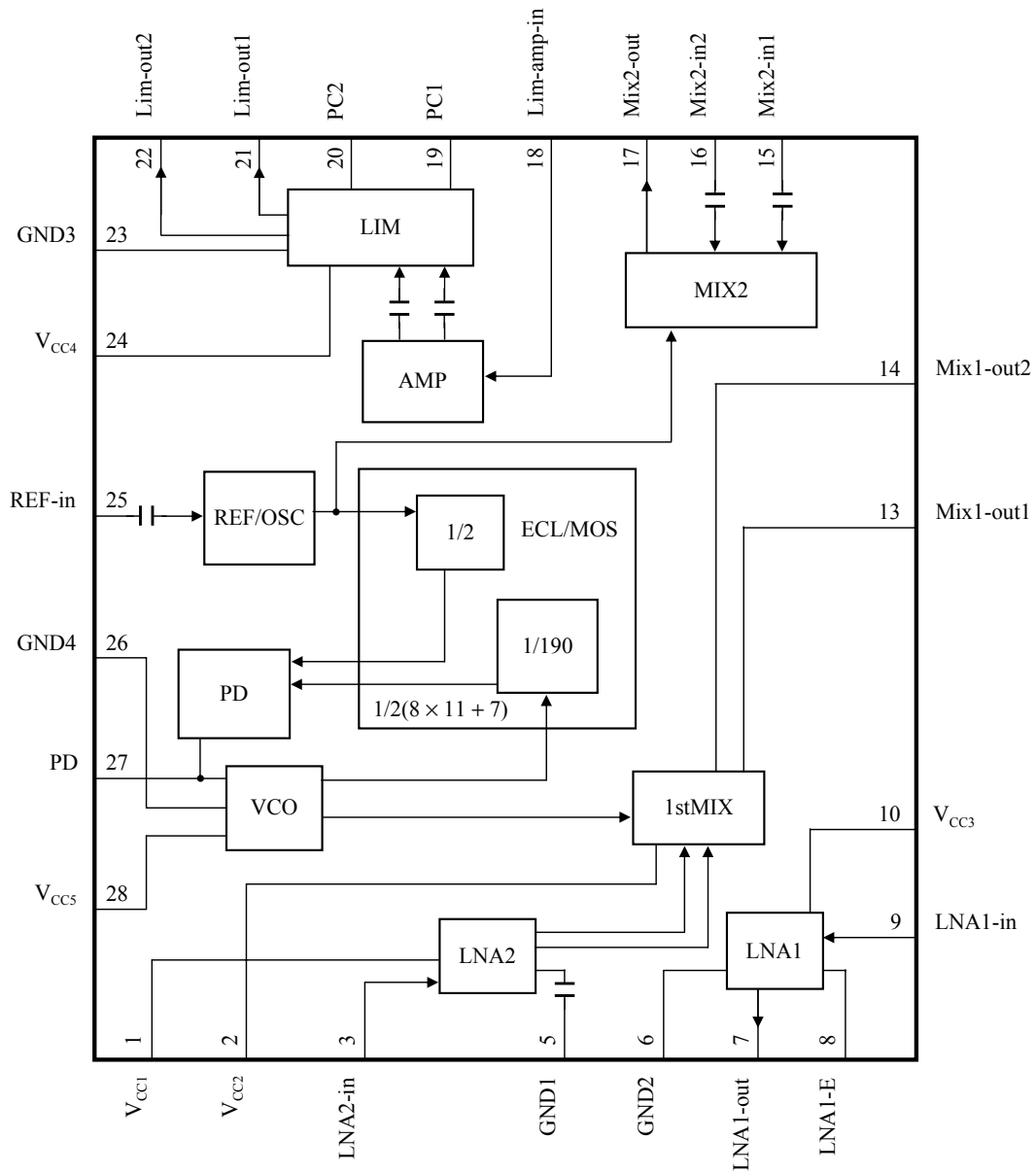
### ■ Package

- 4-direction 28-pin plastic quad flat non-leaded package (QFN type)

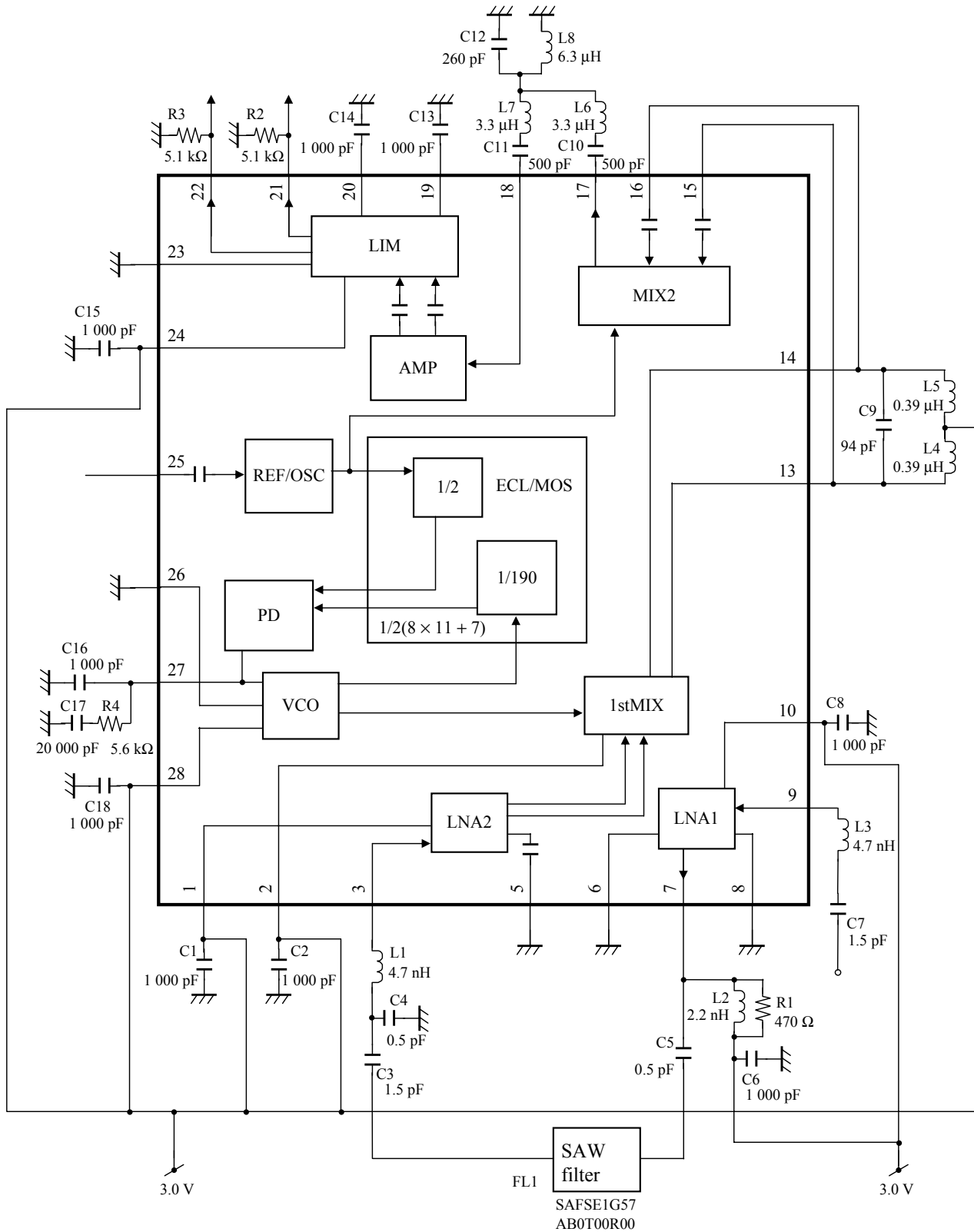
### ■ Type

- SiGe Bi-CMOS IC

■ Block Diagram



■ Application Circuit Example



## ■ Pin Descriptions

Pin No.	Pin name	Type	Description
1	V <sub>CC1</sub>	Power supply	V <sub>CC</sub> (LNA2)
2	V <sub>CC2</sub>	Power supply	V <sub>CC</sub> (1st Mix)
3	LNA2-in	Input	LNA2 input
4	N.C.	—	No connection
5	GND1	Ground	GND (LNA2)
6	GND2	Ground	GND (LNA1)
7	LNA1-out	Output	LNA1 output
8	LNA1-E	—	LNA1 transistors emitter
9	LNA1-in	Input	LNA1 input
10	V <sub>CC3</sub>	Power supply	V <sub>CC</sub> (LNA1)
11	N.C.	—	No connection
12	N.C.	—	No connection
13	Mix1-out1	Output	Mix1 output 1
14	Mix1-out2	Output	Mix1 output 2
15	Mix2-in1	Input	Mix2 input 1
16	Mix2-in2	Input	Mix2 input 2
17	Mix2-out	Output	Mix2 output
18	Lim-amp-in	Input	Lim-amp input
19	PC1	—	Lim-amp bypass capacitor 1
20	PC2	—	Lim-amp bypass capacitor 2
21	Lim-out1	Output	Lim-amp output 1
22	Lim-out2	Output	Lim-amp output 2
23	GND3	Ground	GND (Lim-amp/PLL)
24	V <sub>CC4</sub>	Power supply	V <sub>CC</sub> (Lim-amp/PLL)
25	REF-in	Input	REF signal input
26	GND4	Ground	GND (VCO)
27	PD	Output	PD output
28	V <sub>CC5</sub>	Power supply	V <sub>CC</sub> (VCO)

### ■ Absolute Maximum Ratings

A No.	Parameter	Symbol	Rating	Unit	Note
1	Supply voltage	$V_{CC}$	3.2	V	*1
2	Supply current	$I_{CC}$	60	mA	—
3	Power dissipation	$P_D$	182	mW	*2
4	Operating ambient temperature	$T_{opr}$	-40 to +85	°C	*3
5	Storage temperature	$T_{stg}$	-55 to +150	°C	*3

Note) \*1: The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.

\*2: The power dissipation shown is the value at  $T_a = 85^\circ\text{C}$  for the independent (unmounted) IC package.

\*3: Except for the power dissipation, operating ambient temperature, and storage temperature, all ratings are for  $T_a = 25^\circ\text{C}$ .

### ■ Operating Supply Voltage Range

Parameter	Symbol	Range	Unit	Note
Supply voltage range	$V_{CC}$	2.7 to 3.15	V	*

Note) \*: The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.

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