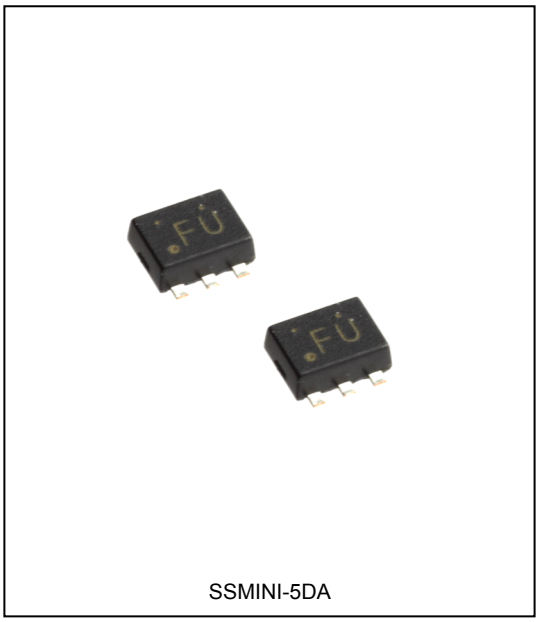
Contributes to Size Reductions of Communication Devices

LNA IC for UHF Band (400 MHz to 800 MHz) Applications AN26015A

■ Overview

• AN26015A is LNA-IC for Single Band LNA-IC for 400MHz to 800 MHz Band Applications.
• Realizing high performance by using 0.18 µm SiGe Bi-CMOS process (fT = 90 GHz, fmax = 140 GHz).
• High/Low Gain-mode is changeable, controlled by integrated CMOS logic circuit.
• Achieving miniaturization by using small size package



SSMINI-5DA

■ Feature

• Low voltage operation	+2.85 V typ.
• Low current consumption	3 mA typ. (High-Gain mode)
	0.1 µA typ. (Low-Gain mode)
• High gain	14.5 dB typ. fRX = 620 MHz (High-Gain mode)
• Low noise figure	1.50 dB typ. fRX = 620 MHz (High-Gain mode)
• Low distortion (IIP3 +10 MHz offset)	-8.0 dBm typ. fRX = 620 MHz (High-Gain mode)
• Small package	

■ Applications

400MHz to 800 MHz Single band LNA

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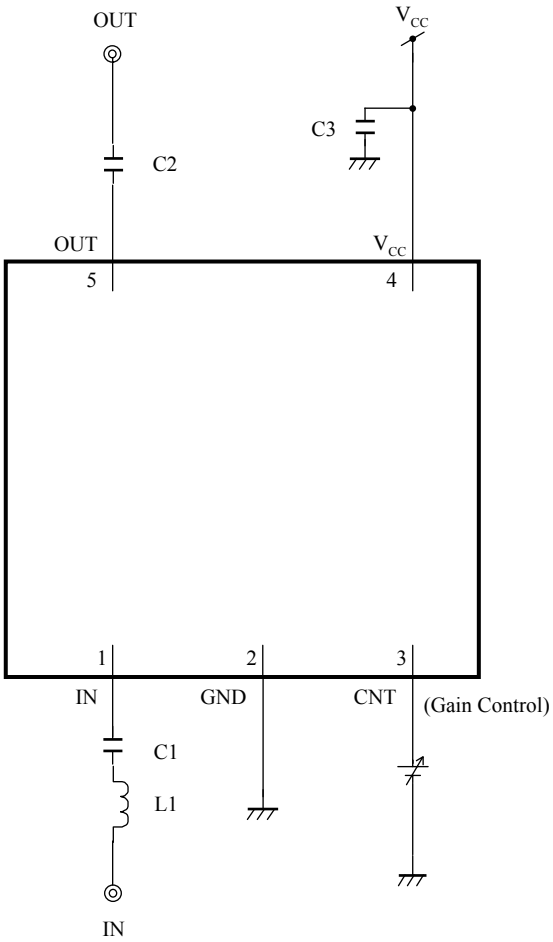
■ Application Circuit Example (Block Diagram)



Notes) • This application circuit is shown as an example but does not guarantee the design for mass production set.
• This block diagram is for explaining functions. The part of the block diagram may be omitted, or it may be simplified.

■ Pin Descriptions

Pin No.	Pin name	Type	Descriptions
1	IN	Input	RF Input
2	GND	Ground	GND
3	CNT	Input	High-Gain / Low-Gain SW
4	V_{CC}	Power Supply	V_{CC}
5	OUT	Output	RF Output

■ Absolute Maximum Ratings

A No.	Parameter	Symbol	Rating	Unit	Notes
1	Supply voltage	V_{CC}	3.6	V	*1
2	Supply current	I_{CC}	18	mA	—
3	Power dissipation	P_D	66	mW	*2
4	Operating ambient temperature	T_{opr}	–20 to +70	°C	*3
5	Storage temperature	T_{stg}	–40 to +125	°C	*3

Notes)*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 = 70°C for the independent (unmounted) IC package without a heat sink.
*3 : Except for the power dissipation, operating ambient temperature, and storage temperature, all ratings are for T_a = 25°C.

■ Operating supply voltage range

Parameter	Symbol	Range	Unit	Notes
Supply voltage range	V_{CC}	2.70 to 3.00	V	*

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

■Electrical Characteristics at VCC = 2.85 V

Note) Ta = 25°C±2°C unless otherwise specified.

B No.	Parameter	Symbol	Test Circuit	Conditions	Limits			Unit	Notes
					Min	Typ	Max		
DC electrical characteristics									
DC-1	Supply current HG	$I_{CC}H$	1	V_{CC} current at High-Gain mode No input signal	—	3.0	4.0	mA	—
DC-2	Supply current LG	$I_{CC}L$	1	V_{CC} current at Low-Gain mode No input signal	—	0.1	10	µA	—
DC-3	Input voltage (High-Gain mode)	VIH	1	VIH = V_{CC} × 0.90	2.57	2.85	—	V	—
DC-4	Input voltage (Low-Gain mode)	VIL	1	VIL = V_{CC} × 0.14	—	0.0	0.4	V	—
DC-5	SW current (High)	IIH	1	Current at CNT pin VIH = V_{CC}	—	24	40	µA	—
LNA AC electrical characteristics (fRXa = 620 MHz, PRX = –30 dBm, CW)									
A-1	Power Gain HG	GHS	1	High-Gain mode, f = fRX	12.5	14.5	16.5	dB	—
A-2	Power Gain LG	GLS	1	Low-Gain mode f = fRX, PRX = – 20 dBm	–2.0	–1.5	—	dB	—
A-3	IIP3 +10 MHz offset	IIP31S	1	f1 = fRX + 10 MHz f2 = fRX + 20 MHz Input 2 signals (f1, f2)	-14.5	–8.0	—	dBm	—