CXA3222N

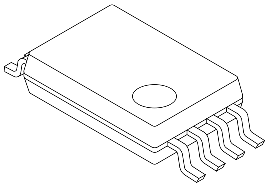
TX Gain Control Amplifier

For the availability of this product, please contact the sales office.

Description

CXA3222N is a TX gain control amplifier suitable for CDMA cellular/PCS phone.

8 pin SSOP (Plastic)



Features

- Wide gain control range
- Linear gain slope
- Wideband operation (50MHz to 300MHz)
- Very small package (8 Pin SSOP)
- Low voltage operation
- High output IP3
- Power save function included

Absolute Maximum Ratings

• Supply voltage	VCC	6	V
• Operating temperature	Topr	–55 to +125	°C
• Storage temperature	Tstg	–65 to +150	°C
• Supply voltage range		–0.3 to 6	V
• Logic input voltage		–0.3 to VCC + 0.3	V
• Signal input voltage		–0.3 to VCC + 0.3	V
• Differential signal input voltage		0 to 2.5	V

Operating Condition

Supply voltage	VCC	2.7 to 3.8	V

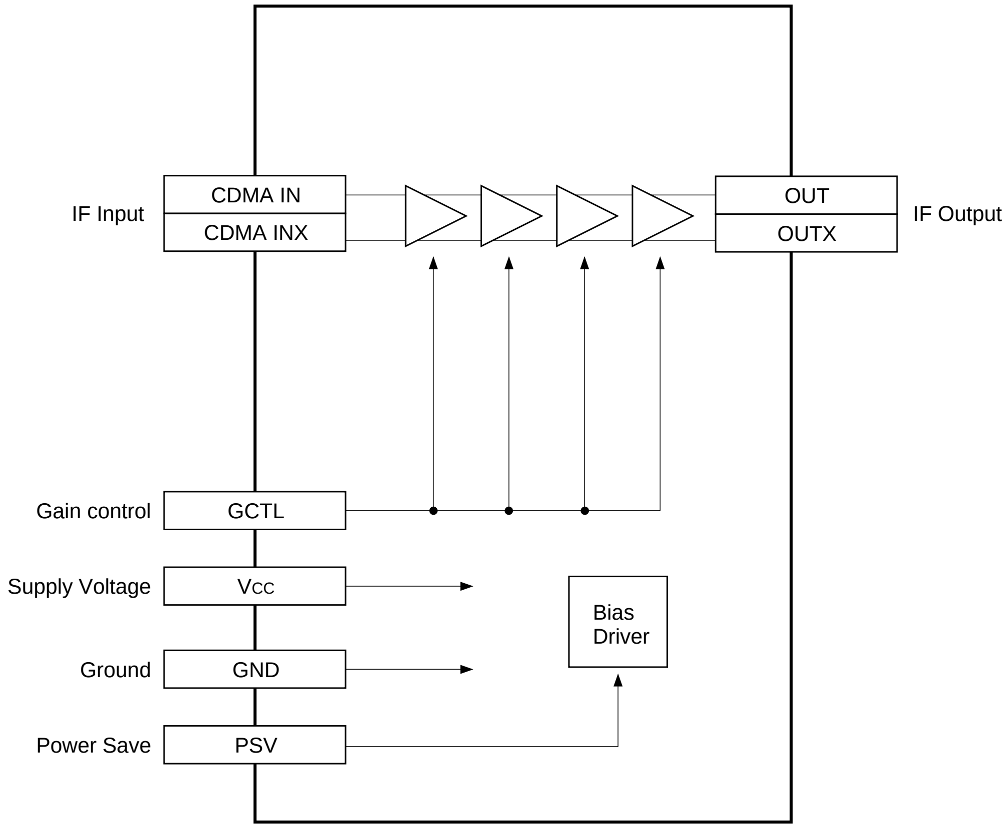
Applications

CDMA cellular/PCS phone

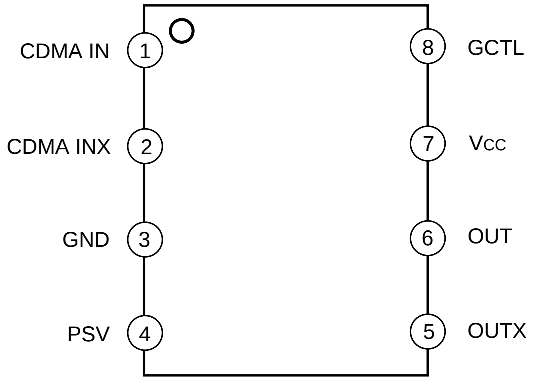
Structure

Bipolar silicon monolithic IC

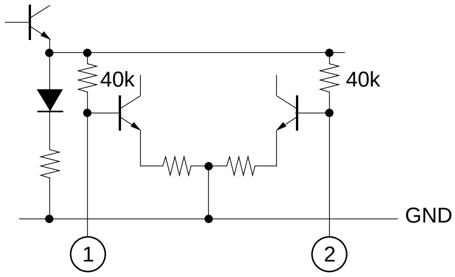
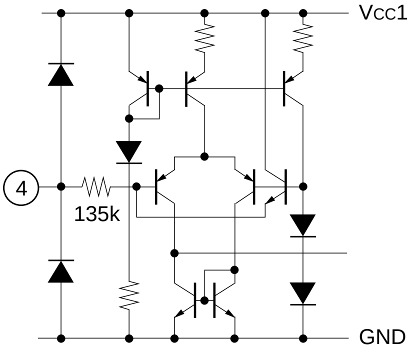
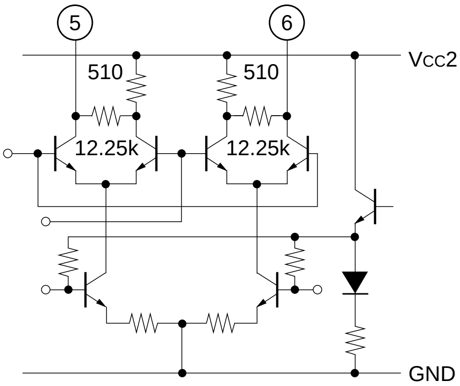
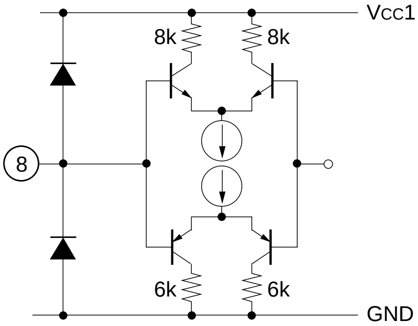
Block Diagram



Pin Configuration



Pin Description

Pin No.	Symbol	Pin voltage TYP (V)	Equivalent circuit	Description
1	CDMA IN	1.1		Differential input pins for CDMA transmit IF signal.
2	CDMA INX	1.1		
3	GND	0		Ground.
4	PSV	—		Power save function pin. High: Active Low: Power save
5	OUTX	—		Differential output pins for transmit IF signal. Open collector output.
6	OUT	—		
7	Vcc	3.0		Positive power supply.
8	GCTL	—		Gain control pin.

Electrical Characteristics

DC Characteristics

(V_{CC} = 3.0V, Ta = 27°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current consumption 1	$I_{CC}1$	Vpsv = 3.0V, Vgctl = 1.5V, Pin 7	10	15.7	21.5	mA
Current consumption 2	$I_{CC}2$	Vpsv = 0 V, Vgctl = 1.5V, Pin 7	5	18	40	µA
Input current pin 4H	IpsvH	Vpsv = 3.0V			1	
Input current pin 4L	IpsvL	Vpsv = 0 V	–15			
Input current pin 8H	IgctlH	Vgctl = 3.0V			1	
Input current pin 8L	IgctlL	Vgctl = 0.5V	–1			
PSV high voltage	VpsH	Pin 4	2.5			V
PSV low voltage	VpsL	Pin 4			0.5	

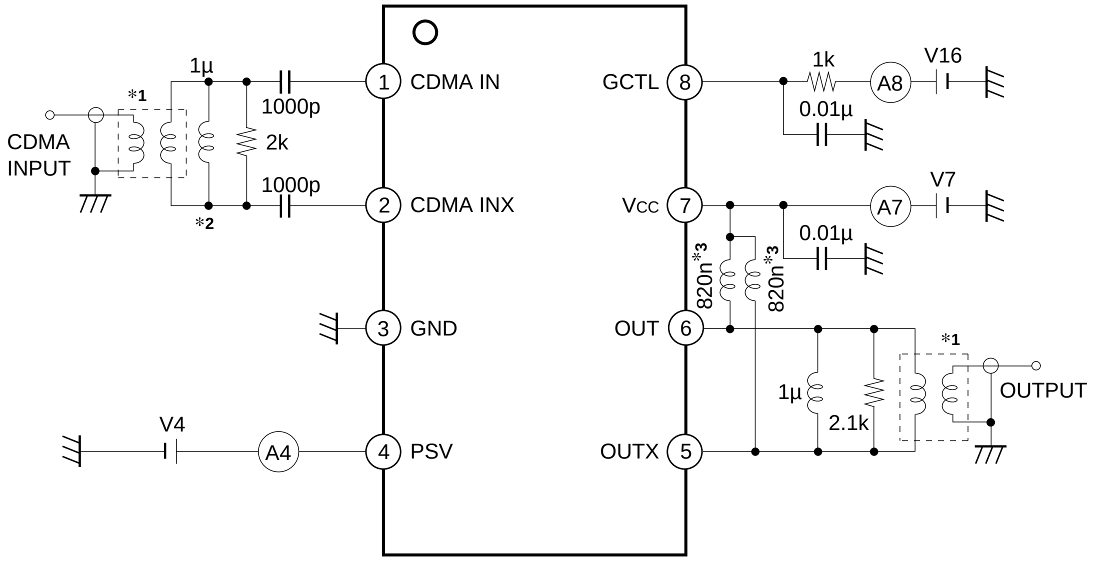
AC Characteristics

(V_{CC} = 3.0V, Ta = 27°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating frequency range	Fr		50		300	MHz
Gain 2.3	G2.3	f = 130.38MHz, level = –22.5dBm, Vgctl = 2.3V	13	17	21	dB
Gain 1.5	G1.5	Vgctl = 1.5V	–28	–24	–20	
Gain 1.0	G1.0	Vgctl = 1.0V	–58	–54	–50	
Gain 0.7	G0.7	Vgctl = 0.7V	–75	–70	–65	
Gain slope	G_{CLIN}	Gain at Vgctl = 2.0V – Gain at Vgctl = 1.0V	56	59	62	dB/V
Input level 3rd order intercept point	IIP3	G = 15dB[*1] f1 = 129.38MHz, f2 = 131.38MHz Measure of 130.38MHz	–8.5	–4.5		dBm
Noise Figure	NF	G = 15dB[*1] Measure of 130.38MHz		28	32	dB

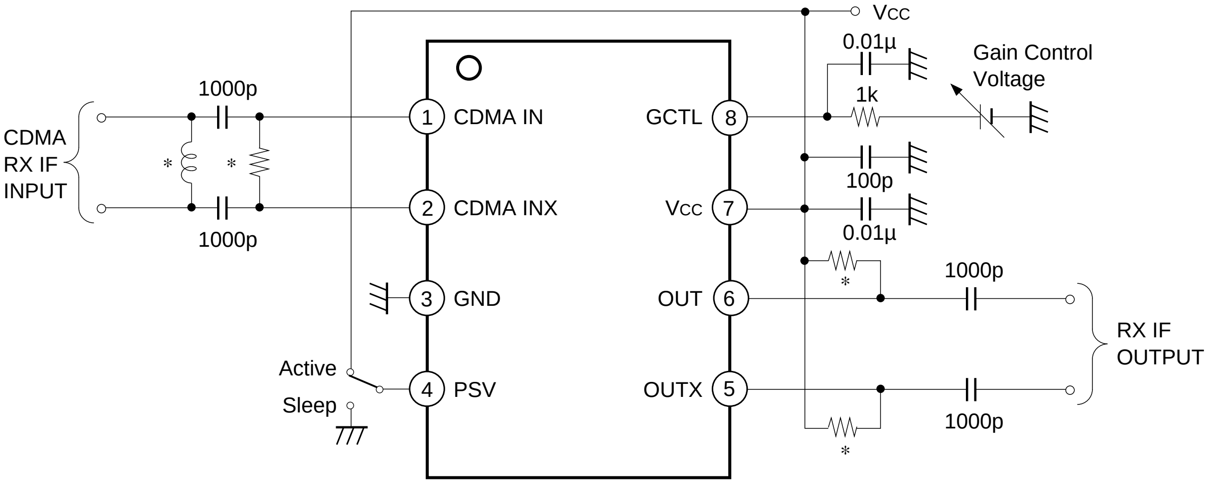
[*1] Adjust GCTL voltage, and set the overall gain to 15dB.

Measurement Circuit



*1 TOKO, Inc. B5FL 616DS-1135
*2 Coilcraft, Inc. 1008HS-102TKBC
*3 Coilcraft, Inc. 1008HS-821TKBC

Application Circuit



* Must be adjusting values to result a best impedance matching between BPF filter and this IC.

Design Reference Values

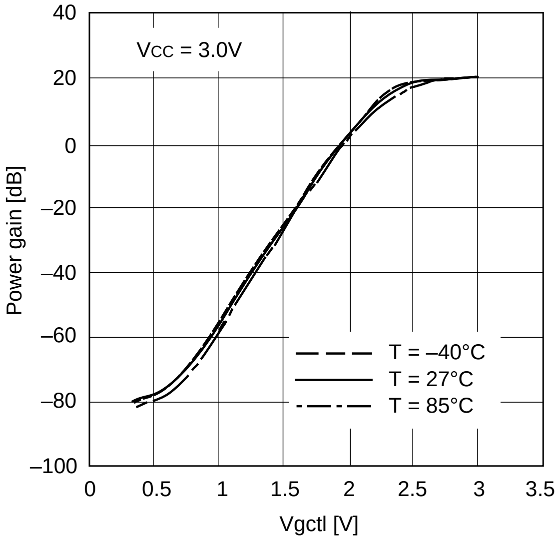
Single ended measurement (V_{CC} = 3.0V, Ta = 27°C)

Item	Symbol	Conditions	Typ.	Unit
Input resistance	Rin	f = 130.38MHz, Vgctl = 1.5V	10	kΩ
Input capacitance	Cin		0.92	pF
Output resistance	Rout		6	kΩ
Output capacitance	Cout		0.9	pF

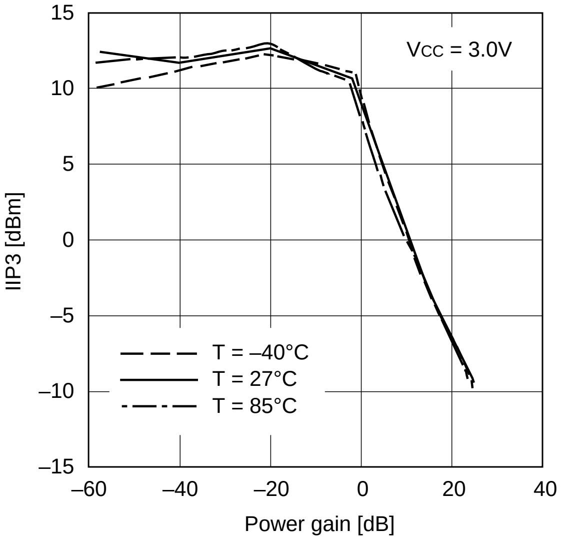
Notes on Operation

1) This IC is a wideband amplifier with wide gain control range. The decouping capacitors between GND Pin and V_{CC} Pin should be as close to the IC as possible.
2) The resistors connected to Pins 5 and 6 should be as close to the IC as possible.
3) This IC assumes the excellent characteristics when the differential input impedance between Pins 1 and 2 is 500Ω. Refer to the Measurement Circuit for the external element settings, etc.
4) Pay attention to handling this IC because its electrostatic discharge strength is weak.

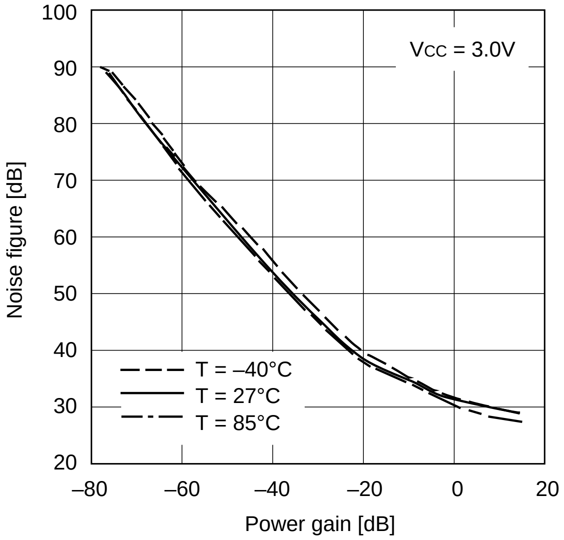
Sensitivity



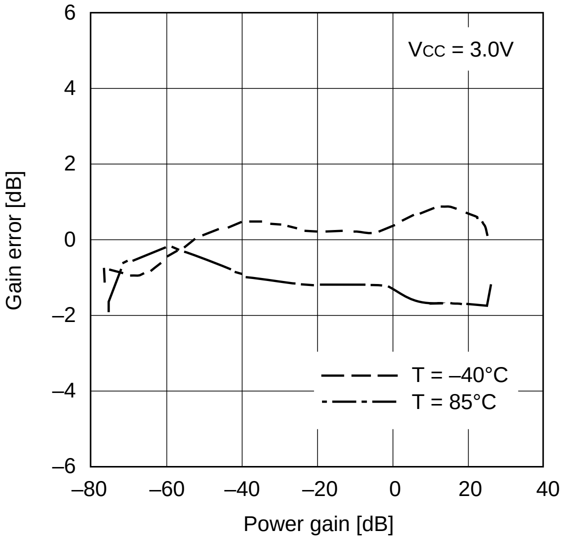
IIP3



Noise Figure

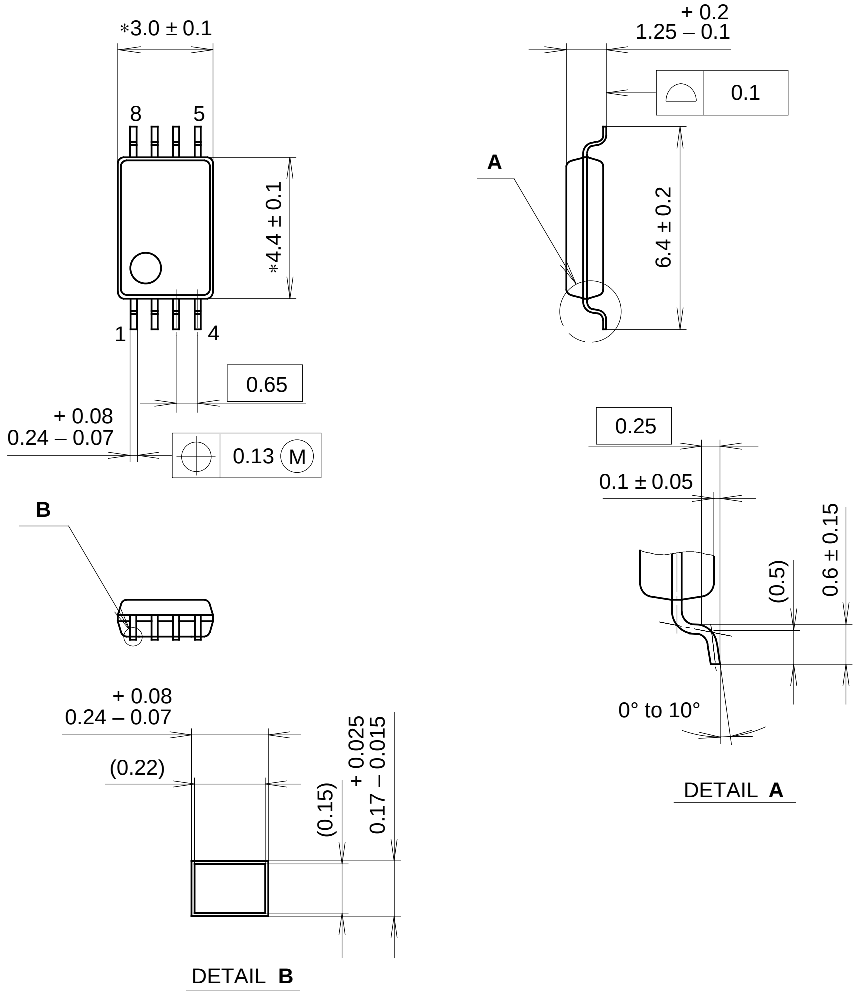


Gain Error from Room Temp



Package Outline Unit: mm

8PIN SSOP (PLASTIC)



NOTE: Dimension "∗" does not include mold protrusion.

SONY CODE	SSOP-8P-L01
EIAJ CODE	SSOP008-P-0044
JEDEC CODE	———————

PACKAGE STRUCTURE

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER / PALLADIUM PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.04g