

# DATA SHEET: CA3509M4

## L TO S BAND LOW NOISE AMPLIFIER IC

### Features :

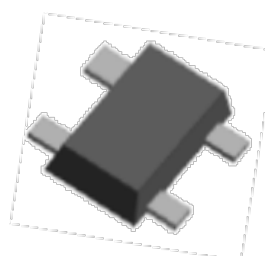
- Low noise figure and high associated gain  
NF=0.4dB Typ., Ga=17.0dB Typ.  
@Vdd=3.0V, Idd=15mA, f=1.575GHz

### Description :

- Low Noise and High Gain
- On chip Bias supply circuit
- On chip ESD protection diode

### Applications :

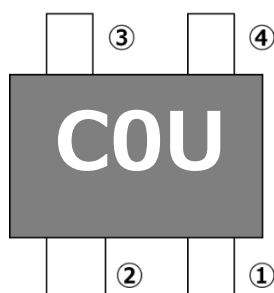
- Low Noise Amplifier IC for Global Navigation Satellite Systems (GNSS) like GPS, GLONASS, Beidou and Galileo
- Low Noise Amplifier IC for Satellite Radio (SDARS, DMB, etc.) Antenna
- Low Noise Amplifier for Microwave Communication



### Package :

- Flat-lead 4-pin thin-type super minimold package

### PIN Configuration :



PIN No.	PIN Name
1	Source
2	OUT
3	Source
4	IN

### Ordering Information :

Part Number	Order Number	Package	Marking	Supplying Form
CA3509M4	CA3509M4-C2B	Flat-lead 4-pin thin-type super minimold package	COU	<ul style="list-style-type: none"> <li>• Embossed 8 mm wide</li> <li>• Pin 1 (Source), Pin 2 (OUT)</li> <li>• Face the perforation side of the Tape</li> <li>• Qty 5Kpcs/reel</li> </ul>

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### Absolute Maximum Ratings :

Parameter	Symbol	Rating	Unit
Supply Voltage	Vdd	4.0	V
RF Input Power	P <sub>RFIn</sub>	+13	dBm
Operating Ambient Temperature	T <sub>A</sub>	-45~+85	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

### Recommended Operating Range :

(T<sub>A</sub>=+25°C, unless otherwise specified)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage	Vdd	2.7	3.0	3.3	V

### Electrical Characteristics:

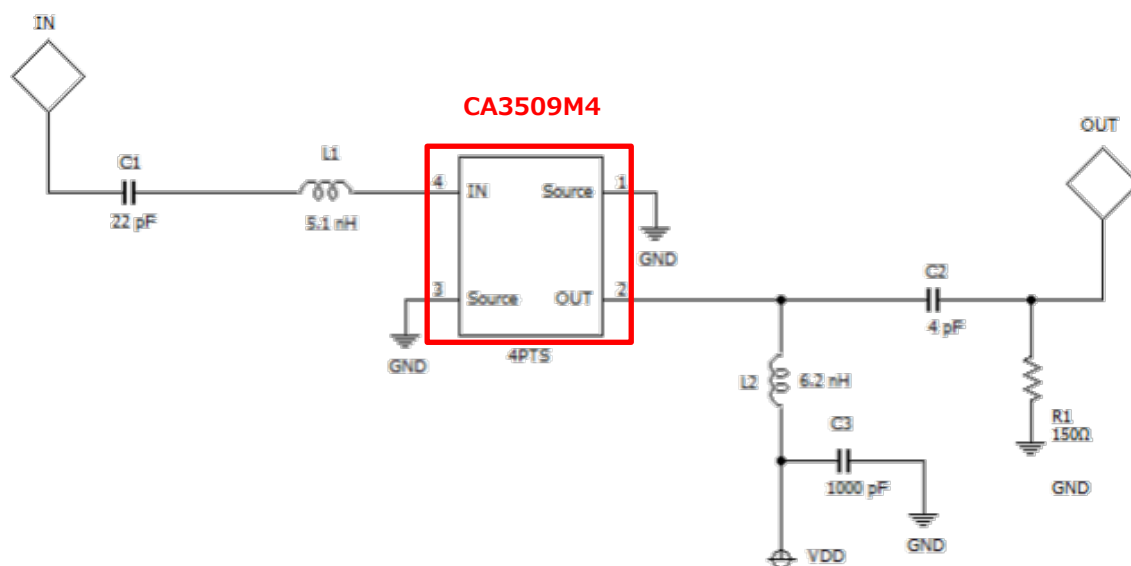
(T<sub>A</sub>=+25°C, unless otherwise specified) \*With Matching Circuit

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Supply Current	I <sub>dd</sub>	Vdd=3.0V	11.4	15.0	20.6	mA
Power Gain	Gain	Vdd=3.0V, Idd=15mA, f=1.575GHz	15.5	17.0	-	dB
Noise Figure	NF		-	0.40	0.65	dB
Input 3rd Order Intercept Point	IIP3	Vdd=3.0V, Id=15mA, f=1.575GHz	-	+4.5	-	dBm
Output Power at 1dB Compression Point	P <sub>O(1dB)</sub>	Vdd=3.0V, Idd=15mA (Non-RF) f=1.575GHz	-	12.0	-	dBm

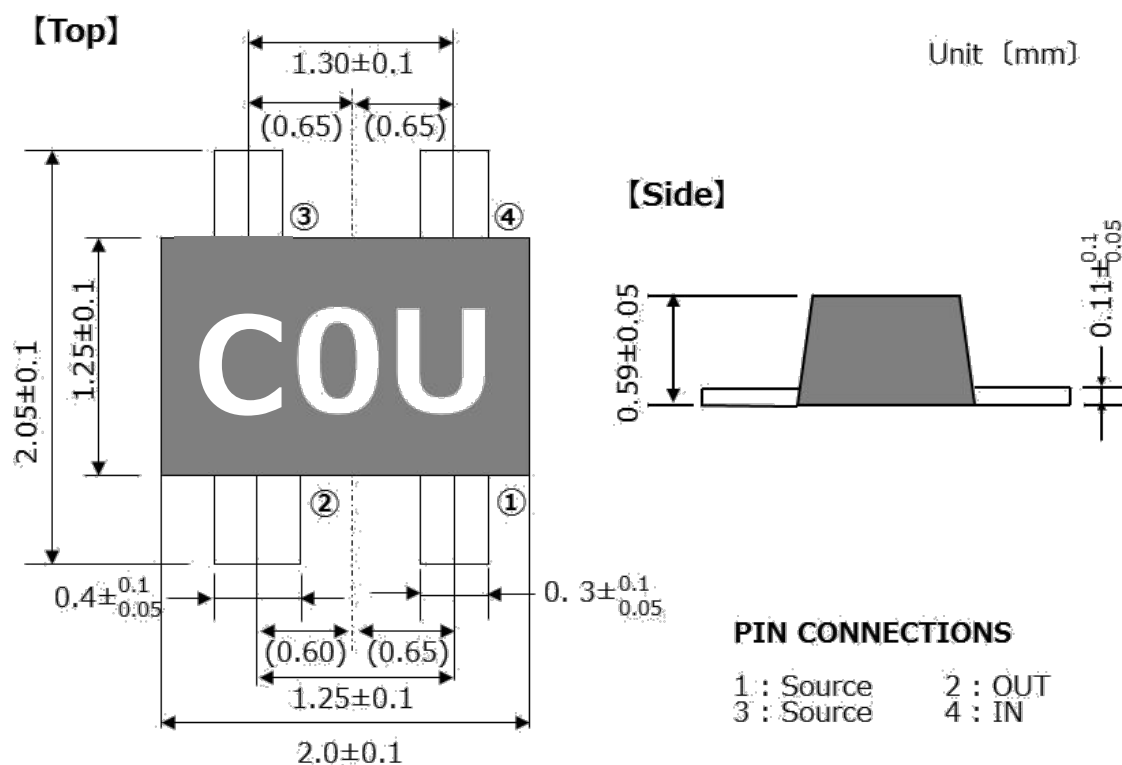
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### Application Circuit:



### Package Dimensions :



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[Caution in the gallium arsenide (GaAs) product handling]

This product uses gallium arsenide (GaAs) of the toxic substance appointed in laws and ordinances. GaAs vapor and powder are hazardous to human health if inhaled or ingested.

- Do not dispose in fire or break up this product.
- Do not chemically make gas or powder with this product.
- When discard this product, please obey the law of your country.
- Do not lick the product or in any way allow it to enter the mouth.

[CAUTION]

Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions should be used at all times.

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### Revision History

Version	Changes to current version	Page(s)
CDS-0043-01 Jan 2018	Preliminary data sheet	N/A
CDS-0043-02 March 2018	<ul style="list-style-type: none"> <li>•Revised Supply Voltage</li> <li>•Revised Application Circuit</li> </ul>	1, 2, 3 3
CDS-0043-02 June 2018	Changed part number from CE3509M4 to CA3509M4	All
CDS-0043-03 Aug 2018	<ul style="list-style-type: none"> <li>•Revised RF Input Power from +15 to +13 dBm</li> <li>•Revised Supply Voltage from 2.85V to 3.0V</li> <li>•Revised Output Power at 1dB Compression Point from 11 to 12dBm</li> <li>•Changed Application Circuit</li> </ul>	1, 2 1, 2 2 3
CDS-0043-03a Dec 2018	Changed marking information	1, 3
CDS-0043-05 March 2019	Removed "Preliminary" Updated part number and reel size Updated Electrical Characteristics tables	All 1 2
CDS-0043-06 May 2019	Revised Max Supply Current (from 20.2mA to 20.6mA)	2
CDS-0043-07 Oct 2019	The Supply Current Spec was moved to the Electrical Characteristics table	2



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