

# PRELIMINARY DATA SHEET: CE3509M4

## L TO S BAND LOW NOISE AMPLIFIER

### Features :

- Low noise figure and high associated gain  
NF=0.40dB Typ., Ga=17.5dB Typ.  
@Vdd=3.3V, Idd=10mA, f=1.575GHz

### Description :

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

### Applications :

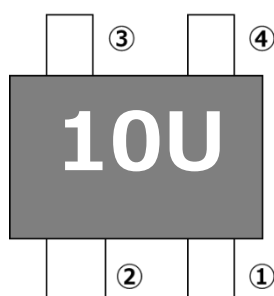
- GPS Car Antenna LNA-IC
- Satellite Radio (SDARS, DMB, etc.) Antenna LNA-IC
- Low Noise Amplifier for Microwave Communication



### 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
CE3509M4	CE3509M4-C2	Flat-lead 4-pin thin-type super minimold package	10U	<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 15Kpcs/reel</li> </ul>



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### Absolute Maximum Ratings :

Parameter	Symbol	Rating	Unit
Supply Voltage	Vdd	4.0	V
Input Power	Pin	+15	dBm
Operating Ambient Temperature	T <sub>A</sub>	-45~+85	°C
Storage Temperature	Tstg	-55~+150	°C

### Recommended Operating Range :

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

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage	Vdd	TBD	3.3	TBD	V
Supply Current	Idd	5	10	30	mA

### Electrical Characteristics:

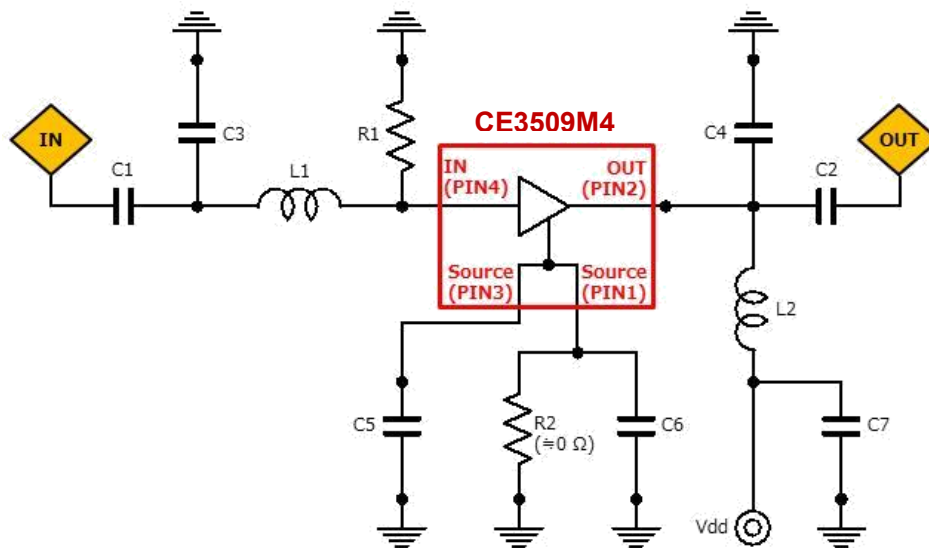
(T<sub>A</sub>=+25°C, unless otherwise specified)

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Power Gain	Gain	Vdd=3.3V, Idd=10mA, f=1.575GHz	TBD	15 or 17.5	-	dB
Noise Figure	NF		-	0.4	TBD	dB
Input 3rd Order Intercept Point	IIP3	Vdd=3.3V, Id=10mA, f=1.575GHz	-	1.5	-	dBm
Output Power at 1dB Compression Point	P <sub>O(1dB)</sub>	Vdd=3.3V, Idd=10mA (Non-RF) f=1.575GHz	-	11.0	-	dBm

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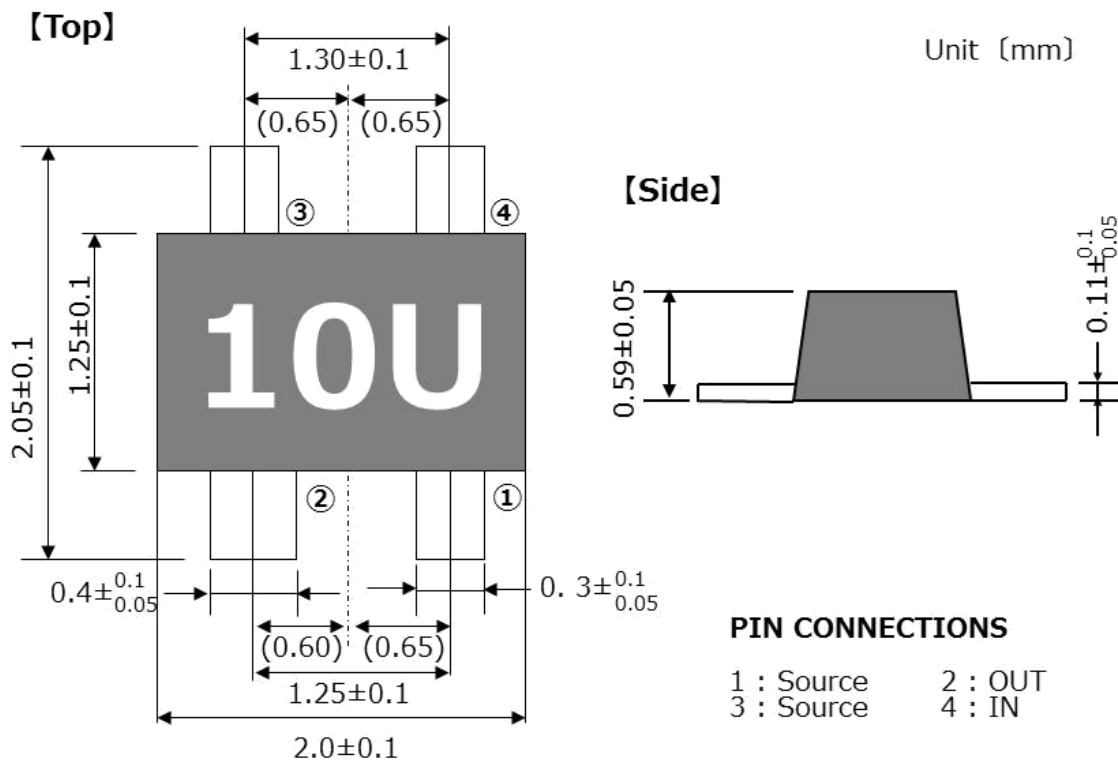
### Application Circuit:



**Note1:** R1 is an external source resistor for I<sub>dd</sub> adjustment

**Note2:** Each component constant (recommended value) in the application circuit will be defined by the Evaluation Board Information

### 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	Change to current version	Page(s)
CDS-0043-01	Preliminary data sheet	N/A