DATA SHEET

LXK6102A: 50-4000MHz Gain Block MMIC Amplifier

Applications

- Gain Block
- LO&PA driver amplifier
- Wireless wideband systems
- Cellular, PCS, GSM, TD-SCDMA, LTE
- Microwave Radio & Test Equipment
- Beidou systems

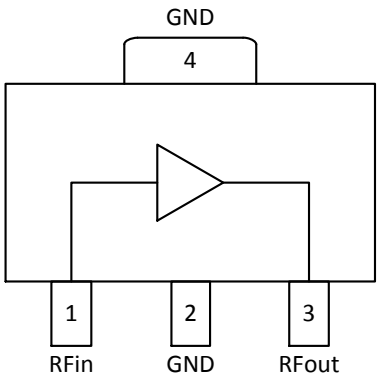
Features

- Frequency band: 50 to 4000MHz
- Typical Gain: 20dB
- OIP3: 32.0dBm
- 50 Ohm input and output impedance
- Single, positive DC supply voltage
- Temperature compensation
- Industry standard SOT-89 package

Product Description

The LXK6102A is a Gain Block MMIC amplifier covering 50 to 4000 MHz. The device is internally matched and can be used as a cascadable 50 Ohm RF gain block applications that required high gain. An active bias network included in the device provides stable current over temperature and process Beta variations.

The LXK6102A is housed in an industry-standard SOT-89 package. A functional block diagram of LXK6102A is shown as following.



LXK6102A Functional Diagram

Pin Names and Descriptions

Pin	Name	Description
1	RFin	RF input. This pin requires the use of an external DC blocking capacitor chosen for the frequency of operation.
2, 4	GND	Connection to ground. Use via holes for best performance to reduce lead inductance as close to ground leads as possible.
3	RFout	RF output and bias pin. DC voltage is present on this pin, therefore a DC blocking capacitor is necessary for proper operation.

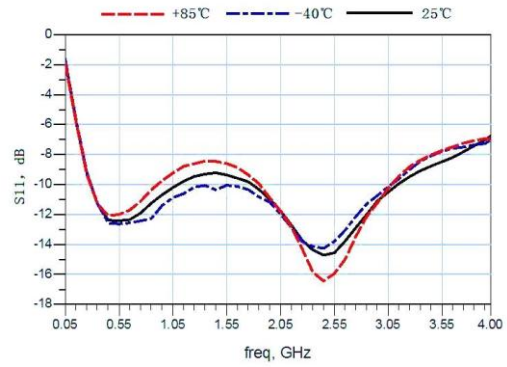
Typical Electrical Specifications (T_A=+25℃, V_{DD}=5.0V)

Parameter		Specification			Units
		Min.	Typ.	Max.	
Small Signal Gain	900MHz		21.0		dB
	1900MHz		19.8		
	2400MHz		19.4		
Output P1dB	900MHz		20.5		dBm
	1900MHz		20.8		
	2400MHz		19.8		
OIP3	900MHz		33.5		dBm
	1900MHz		32.0		
	2400MHz		31.7		
Input Return Loss	900MHz		10		dB
	1900MHz		10		
	2400MHz		14		
Output Return Loss	900MHz		15		dB
	1900MHz		12		
	2400MHz		25		
Reverse Isolation	900MHz		27		dB
	1900MHz		27		
	2400MHz		27		
Noise Figure			4.5		dB
Device Operating Voltage			+5.0		V
Device Operating Current			87		mA

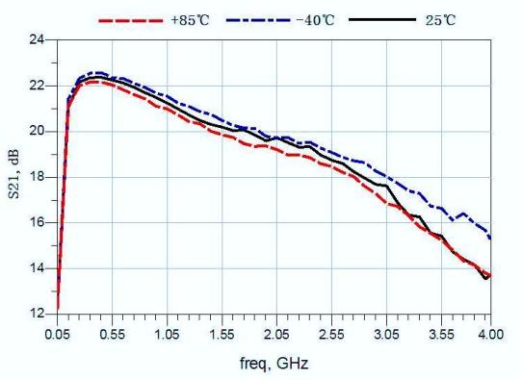
Test Conditions: V_{DD}=5V, I_D=87mA Typ., OIP3 Tone Spacing=1MHz, Pout per tone=0dBm, T_A=25℃, Z_S=Z_L=50Ω

Performance Charts (V_{DD} = 5.0 V, I_D = 85 mA, T_A= 25°C, 50 ohm system)

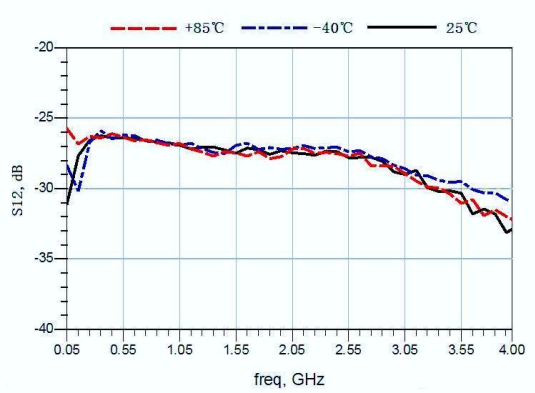
Input Return Loss vs. Temperature



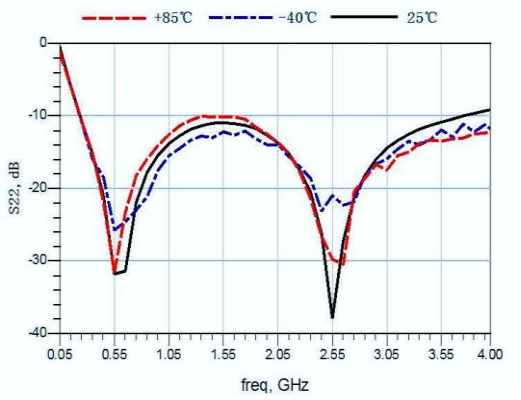
Gain vs. Temperature



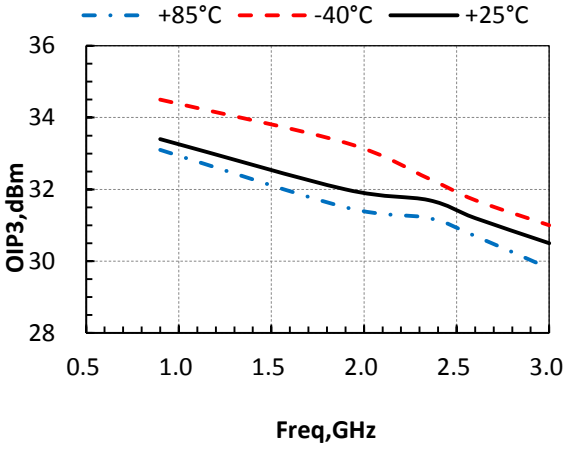
Reverse Isolation vs. Temperature



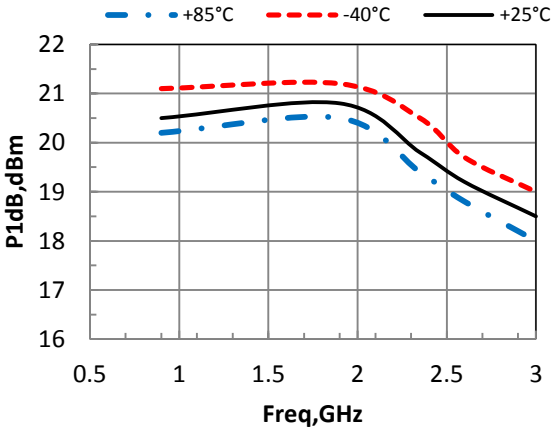
Output Return Loss vs. Temperature



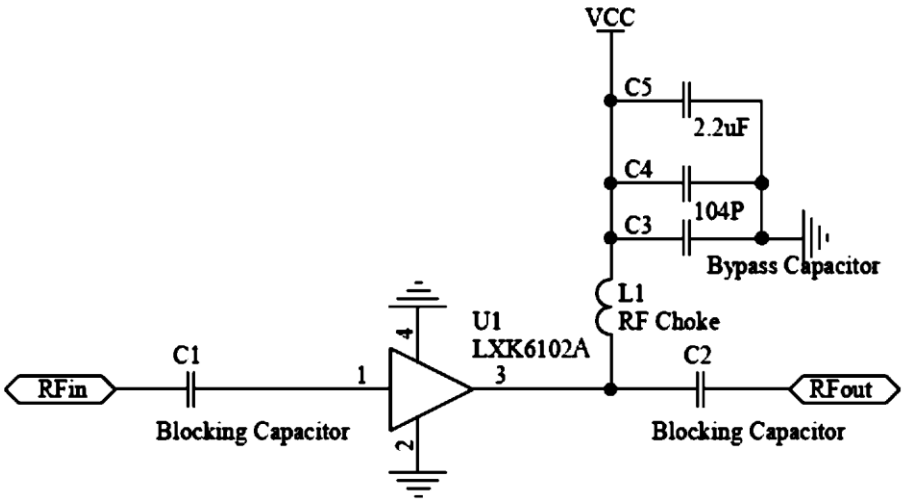
P1dB vs. Temperature



OIP3 vs. Temperature



800MHz to 3.5GHz Application Circuit

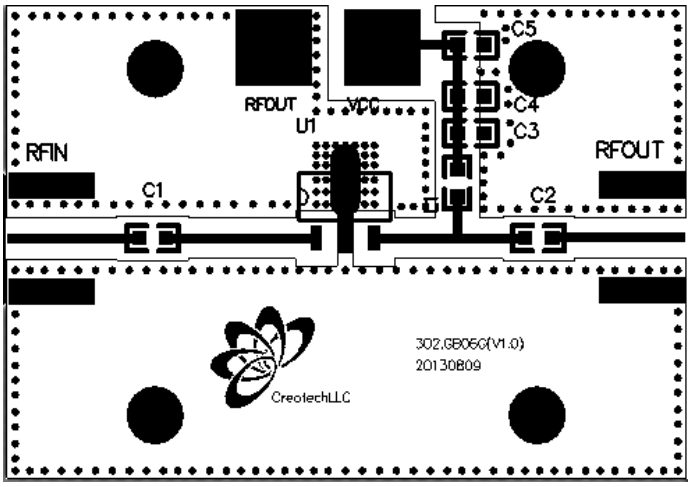


Application Circuit Schematic

Note:

1.External blocking capacitor are required on RFin and RFout, chosen for the frequency of operation.

Evaluation PCB



Application Circuit PCB Layout

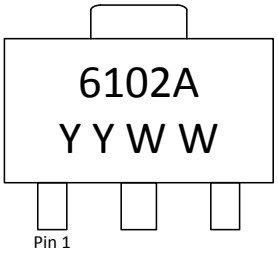
Recommended Component Values for Key Application Frequencies

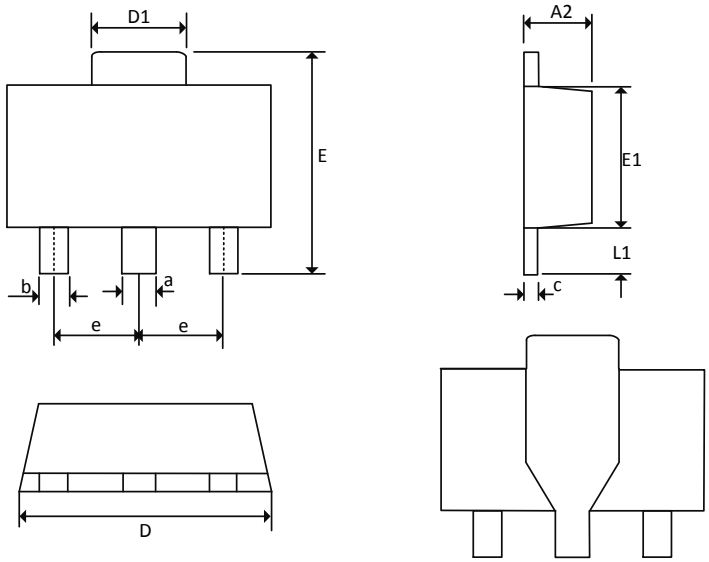
Reference Designator	Frequency (MHz)		
	900	1900	2400
L1	56nH	33nH	22nH
C1,C2,C3	56pF	47pF	15pF

Absolute Maximum Ratings

Parameters	Rating	Units
Max Device Voltage(V_{DD})	7	V
Max Device Current(I_D)	220	mA
Max RF Input Power	10	dBm
Max Operating Dissipated Power	0.55	W
Storage Temperature	-40 to 125	℃
Operating Temperature	-40 to 80	℃
Junction Temperature	150	℃
Thermal Resistance	105	℃/W
Electrostatic Discharge, Human Body Model	1000	V

Package Diagram





Symbol	Millimeter		
	Min	Nom	Max
A2	1.40	1.50	1.60
a	0.46	-	0.55
b	0.38	-	0.47
c	0.40	-	0.45
D	4..30	4.50	4.70
D1	1.70REF		
E	4.00	4.20	4.40
E1	2.30	2.50	2.70
e	1.50BSC		
L1	0.80	1.00	1.20

Ordering Information

Part No.	Description
LXK6102A	Gain Block
EVB-LXK6102A-01	Evaluation Board

Document Change History

Revision	Date	Notes
1.0	Oct. 13, 2016	Created