CREOTECH

DATA SHEET

LXK6101A: 50-4000MHz Gain Block MMIC Amplifier

Applications

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

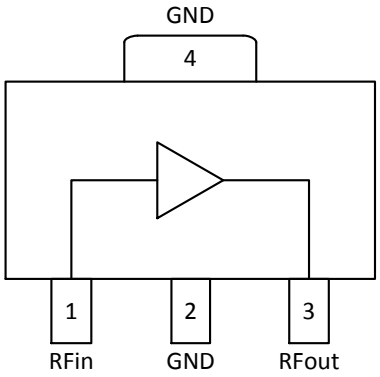
Features

- Frequency band: 50 to 4000MHz
- Typical Gain: 15dB
- OIP3: 30dBm@2GHz
- 50 Ohm input and output impedance
- Single, positive DC supply voltage
- Temperature compensation
- SOT-89 package

Product Description

The LXK6101A 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 LXK6101A is housed in an industry-standard SOT-89 package. A functional block diagram of LXK6101A is shown as following.



LXK6101A Functional Diagram

Pin Names and Descriptions

Pin	Name	Description
1	RFin	RF input. This pin requires an external DC blocking capacitor chosen for the frequency of operation.
2, 4	GND	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°C，V_{DD}=5.0V)

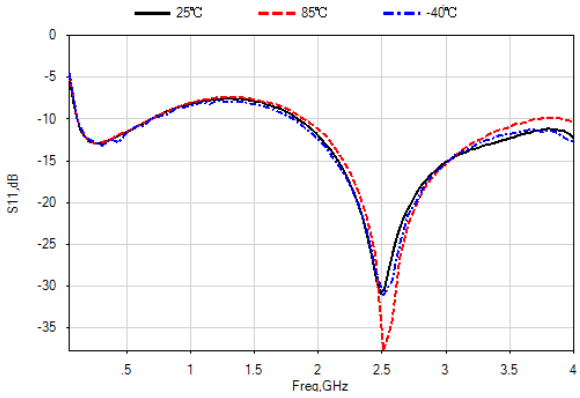
Parameter		Specification			Units
		Min.	Typ.	Max.	
Small Signal Gain	1000MHz		16		dB
	2000MHz		15		
	3000MHz		14		
Output P1dB	1000MHz		18		dBm
	2000MHz		18		
	3000MHz		17		
OIP3	1000MHz		30		dBm
	2000MHz		30		
	3000MHz		28		
Input Return Loss	1000MHz		10		dB
	2000MHz		12		
	3000MHz		16		
Output Return Loss	1000MHz		15		dB
	2000MHz		12		
	3000MHz		20		
Reverse Isolation	1000MHz		23		dB
	2000MHz		25		
	3000MHz		27		
Noise Figure	1000MHz		5.6		dB
	2000MHz		5.7		
	3000MHz		6.2		
Device Operating Voltage			+5.0		V
Device Operating Current			59		mA

Test Conditions:

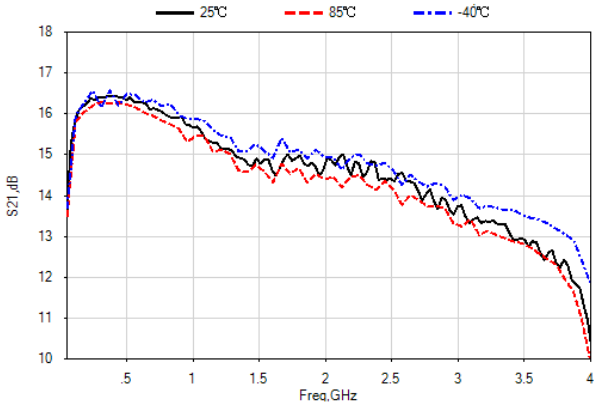
V_{DD}=5V, I_D=59mA, OIP3 Tone Spacing=1MHz, Pout per tone=+5dBm, T_A=25℃, Z_S=Z_L=50Ω.

RF Performance Charts (V_{DD} = 5.0 V, I_D = 59 mA, T_A= 25°C, 50 ohm system)

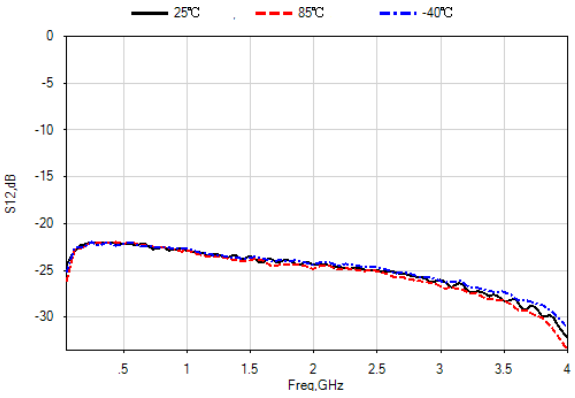
Input Return Loss vs. Temperature



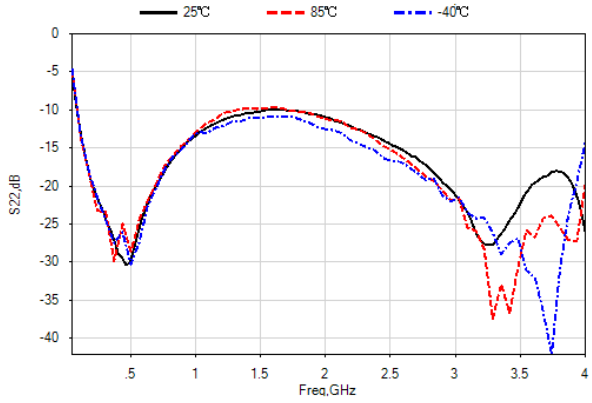
Gain vs. Temperature



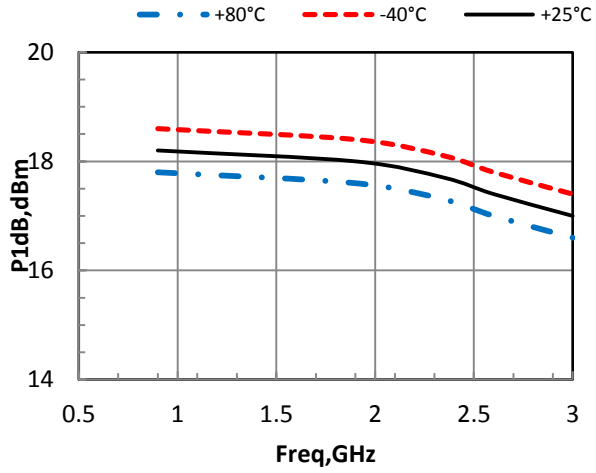
Reverse Isolation vs. Temperature



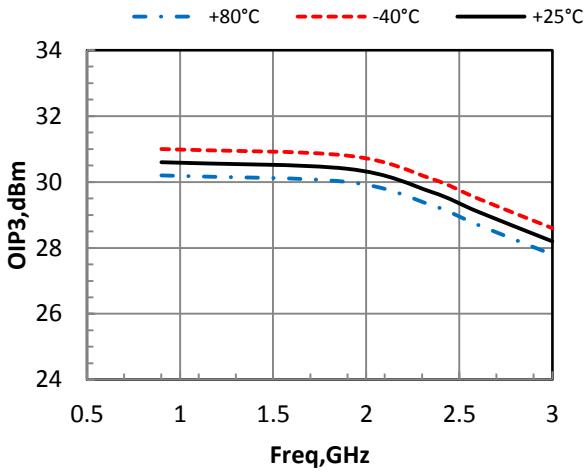
Output Return Loss vs. Temperature



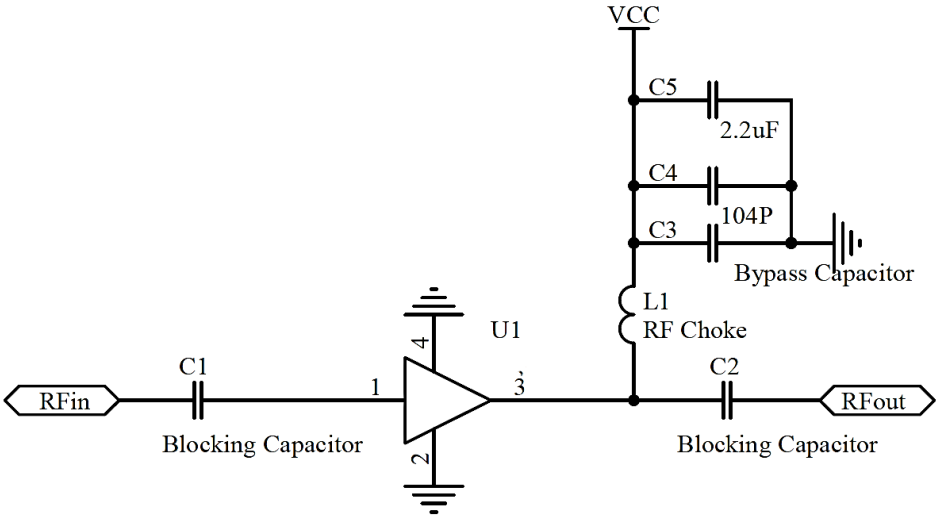
P1dB vs. Temperature



OIP3 vs. Temperature



500MHz to 4.0GHz Application

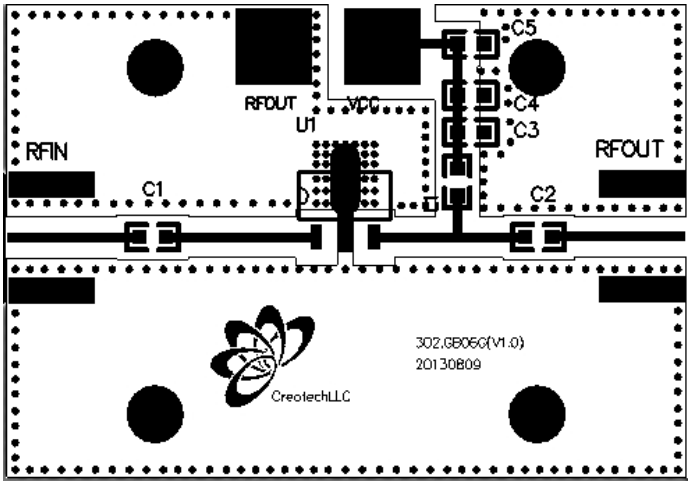


Application Circuit Schematic

Note:

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

Evaluation PCB



Application Circuit PCB Layout

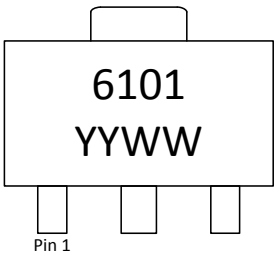
Recommended Component Values for Key Application Frequencies

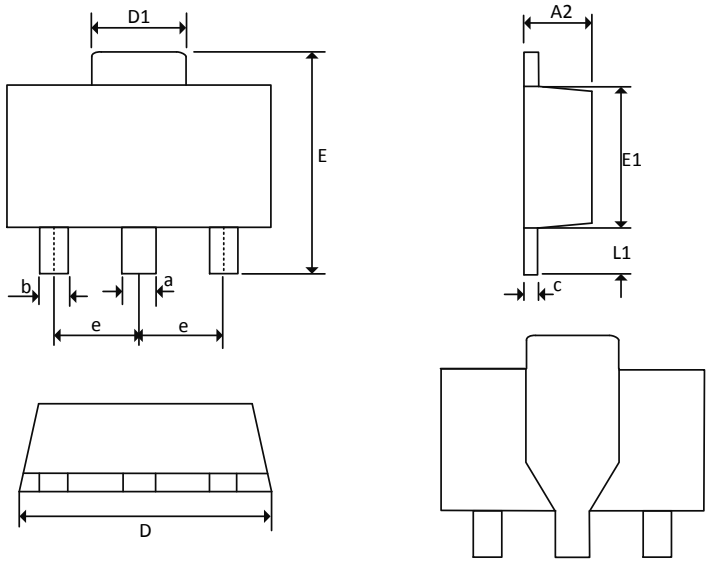
Reference Designator	Frequency (MHz)		
	1000	2000	3000
U1	LXK6101A		
L1	100nH	33nH	22nH
C1,C2,C3	100pF	47pF	15pF
C4	0.1uF		
C5	2.2uF		

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
LXK6101A	Gain Block
EVB-302.GB06G V1.0	Evaluation Board

Document Change History

Revision	Date	Notes
1.0	Aug. 10, 2016	Update