Differential Linear Amplifier
LI370

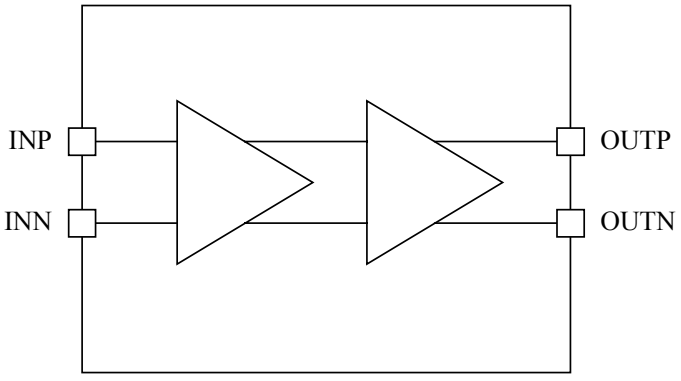
PRODUCT DESCRIPTION

LI370 is a differential amplifier with 0.2% (-55dBc) THD at 1GHz and better than 0.5% (-46dBc) THD at up to 3GHz with 1.2Vp-p (0.6Vp-p single-ended) output. The amplifier can be used as single-ended to differential, single-ended to single-ended, differential to single-ended, or differential to differential amplifier. Both the inputs and outputs are biased at 0V for ideal interfacing with most devices. The small-signal 3dB bandwidth is 4GHz while a ±0.2dB gain flatness is maintained from DC to 2GHz.

KEY FEATURES

- 4 GHz small-signal bandwidth
- ±0.2dB gain flatness DC to 2GHz
- 12dB differential, 6dB single-ended small signal gain
- 0.2% THD at 1GHz with 1.2Vp-p differential (0.6Vp-p S.E.) output
- 0.5% THD at 3GHz with 1.2Vp-p differential (0.6Vp-p S.E.) output
- AC or DC input coupling
- AC or DC output coupling
- Low group delay variation
- Low jitter
- Low 2nV/√Hz input referred noise
- Dual +5V and –5V power supplies
- 1.7W power consumption

BLOCK DIAGRAM



ELECTRICAL SPECIFICATIONS

Parameter	Conditions/Note	Min	Typical	Max	Unit
Operating Temperature		-40		85	°C
Bandwidth	-3dB		4		GHz
Gain Variation	DC to 1GHz	-0.1		+0.1	dB
	DC to 2GHz	-0.2		+0.2	dB
	DC to 3GHz	-0.4		+0.4	dB
Small Signal Gain	Differential		12		dB
	Single-ended		6		dB
Total Harmonic Distortion	Up to 3GHz, 1.2Vp-p differential (600mVp-p single-ended) output			0.5	%
Input Common-mode			0		V
Output Common-mode		-0.2	0	+0.2	V
Input Impedance	Differential		100		Ω
	Single-ended		50		Ω
Output Impedance	Differential		100		Ω
	Single-ended		50		Ω
Input Return Loss	Up to 3GHz		15		dB
Output Return Loss	Up to 3GHz		13		dB
Input Referred Noise	Up to 4GHz		2		nV/√Hz
Common Mode Rejection			20		dB

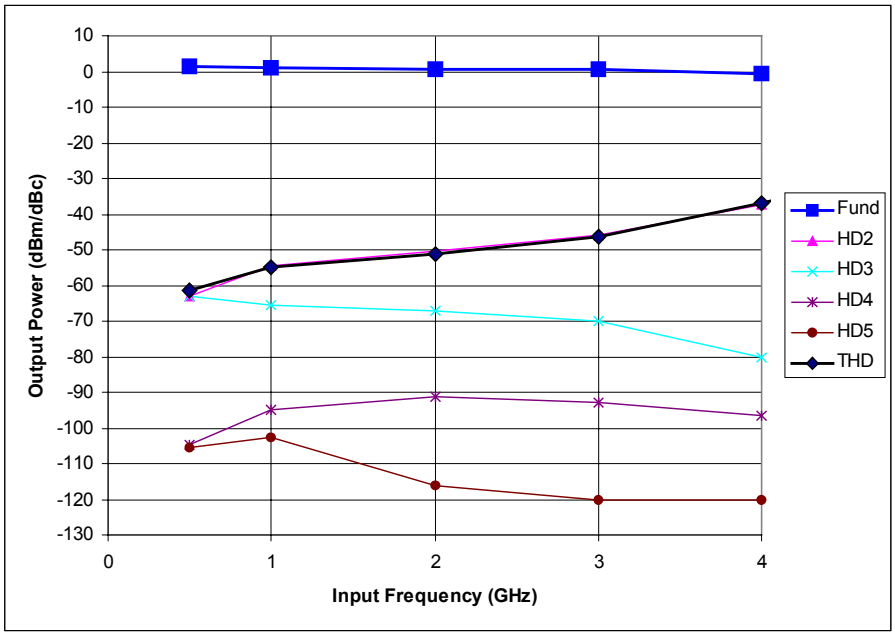
ELECTRICAL SPECIFICATIONS (CONTINUED)

Parameter	Conditions/Note	Min	Typical	Max	Unit
POWER SUPPLY					
Positive Supply Voltage	Vcc	4.75	5	5.25	V
Vcc Current	Icc		150		mA
Negative Supply Voltage	Vee	-5.25	-5	-4.75	V
Vee Current	Iee		180		mA
Power Dissipation			1.7		W
Warm Up Time			10		s

PERFORMANCE

Distortion vs Frequency

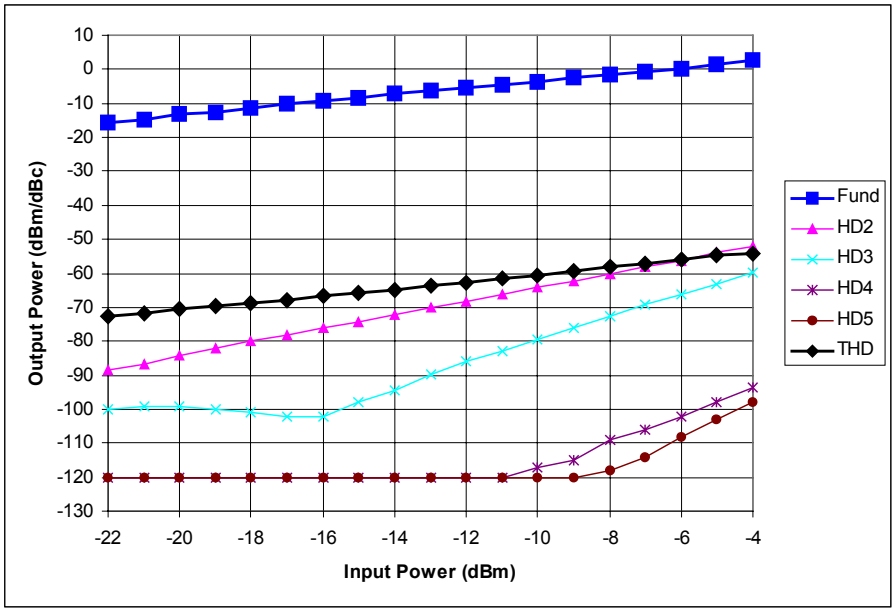
Input: Single-ended –6dBm to INP
Output: Single-ended from OUTP



Note: Spectrum analyzer noise floor is –120dBm.

Distortion vs Input Power

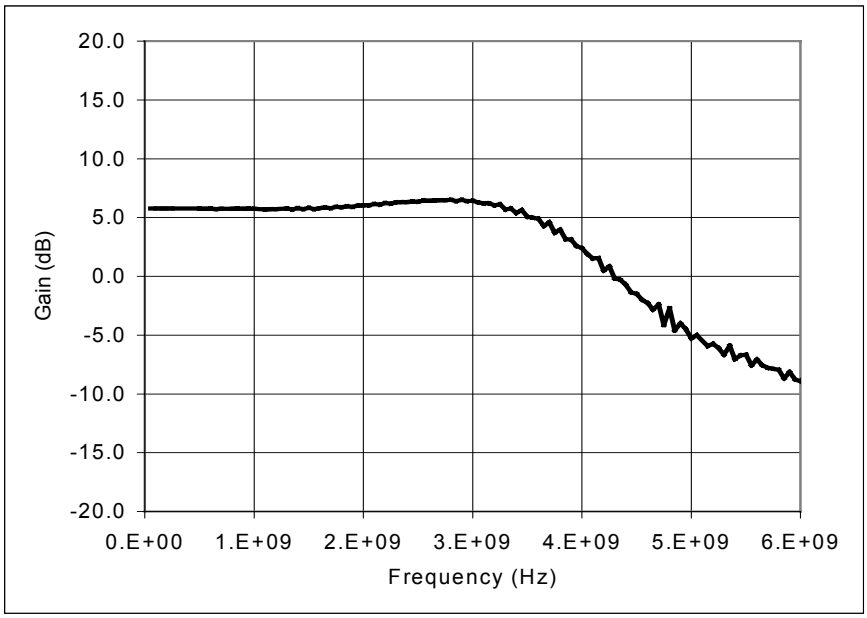
Input: Single-ended 1GHz to INP
Output: Single-ended from OUTP



Note: Spectrum analyzer noise floor is –120dBm.

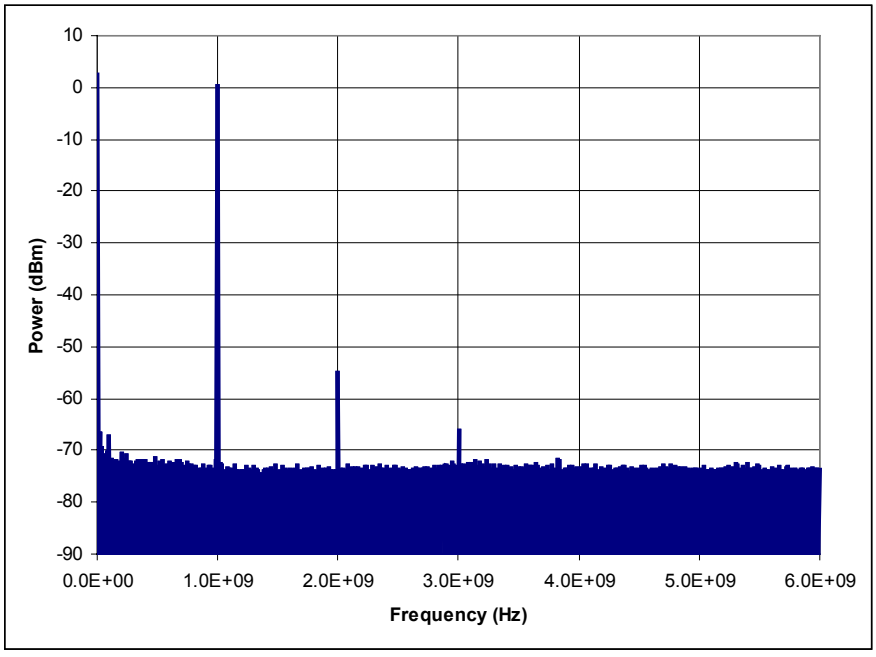
Small-Signal Frequency Response

Input: Single-ended to INP
Output: Single-ended from OUTP



Output Spectrum

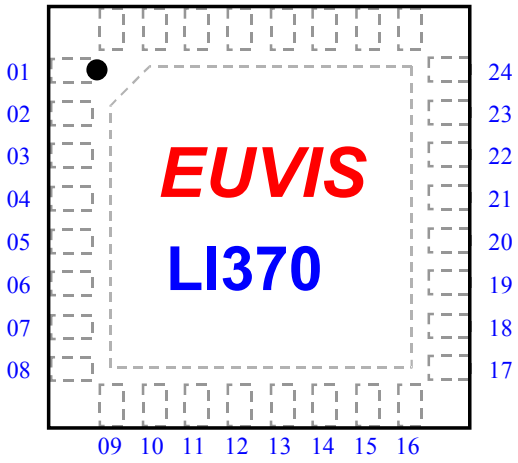
Input: Single-ended -6dBm at 1GHz to INP
Output: Single-ended from OUTP
THD: -55dB (0.2%)

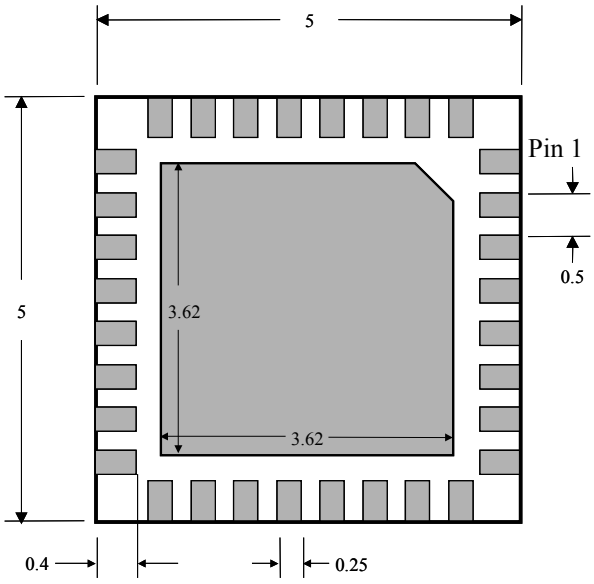


PACKAGE DIMENSIONS

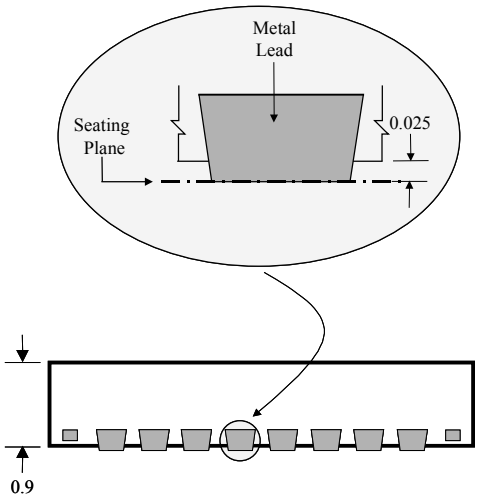
- Unit: mm
- Package Format: 32-pin QFN
- Package Size: 5 mm x 5 mm

Top View





Bottom View



Side View

PIN DESCRIPTION

Pin No.	Name	Function
1	**GND**	Ground
2	**GND**	Ground
3	**GND**	Ground
4	**VCC**	Positive Power Supply
5	**VEE**	Negative Power Supply
6	**GND**	Ground
7	**GND**	Ground
8	**GND**	Ground
9	**GND**	Ground
10	**NC**	No Connect
11	**GND**	Ground
12	**OUTP**	Positive Output
13	**OUTN**	Negative Output
14	**GND**	Ground
15	**NC**	No Connect
16	**GND**	Ground
17	**GND**	Ground
18	**GND**	Ground
19	**GND**	Ground
20	**VEE**	Negative Power Supply
21	**VCC**	Positive Power Supply
22	**GND**	Ground
23	**GND**	Ground
24	**GND**	Ground
25	**GND**	Ground
26	**NC**	No Connect
27	**GND**	Ground
28	**INN**	Negative Input
29	**INP**	Positive Input
30	**GND**	Ground
31	**NC**	No Connect
32	**GND**	Ground

ABSOLUTE MAXIMUM RATINGS

Vcc	0V to 6V
Vee	-6V to 0V
Inputs (INP/N)	-1V to 1V
Outputs (OUTP/N)	-1V to 1V
θ_{JA}	TBD
Maximum Junction Temperature	150°C
Operating Temperature Range	0°C to +70°C
Storage Temperature Range	-40°C to +125°C
LEAD TEMPERATURE RANGE (SOLDERING 60 SEC)	**TBD**

ORDERING INFORMATION

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