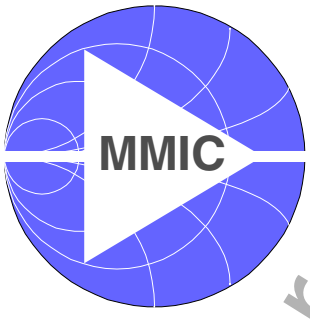
BGA430

Broad Band High Gain LNA



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Never stop thinking.

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BGA430
Preliminary data sheet
Revision History: **2001-04-24** Preliminary

Previous Version: Oct. 2000

Page	Subjects (major changes since last revision)

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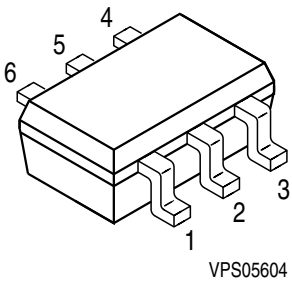
Preliminary

Broad Band High Gain LNA

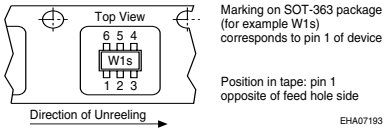
BGA430

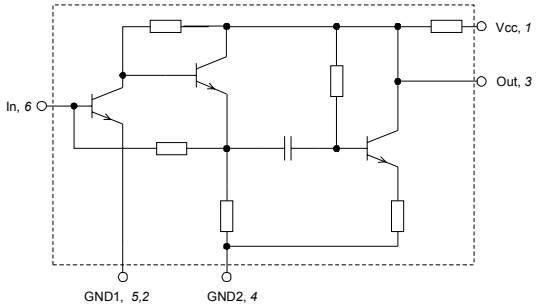
Features

- High gain, $|S_{21}|^2$ = 28.3 dB at 2 GHz
- $F_{50\Omega}$ = 2.4 dB
- Small SOT363 package
- Matched to 50Ω
- Isolation > 40dB
- Typical supply voltage: 5V
- SIEGET®-25 technology



Tape loading orientation





ESD: Electrostatic discharge sensitive device, observe handling precaution!

Type	Package	Marking	Chip
BGA430	SOT363	PHs	T0509

Preliminary

Maximum Ratings

Parameter	Symbol	Value	Unit
Device voltage	V_{CC}	6.5	V
Device current	I_D	35	mA
Current into Pin In	I_B	tbd	mA
Total power dissipation, T_S < tbd°C[1)]	P_{tot}	165	mW
Junction temperature	T_j	150	°C
Ambient temperature range	T_A	-65 ... +150	°C
Storage temperature range	T_{STG}	-65 ... +150	°C
Thermal resistance: junction-soldering point	$R_{th\ JS}$	tbd	K/W

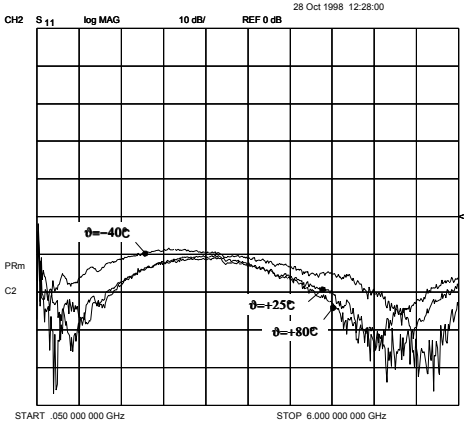
Notes:
All Voltages refer to GND-Node.
[1)] T_S is measured on the emitter lead at the soldering point to the PCB

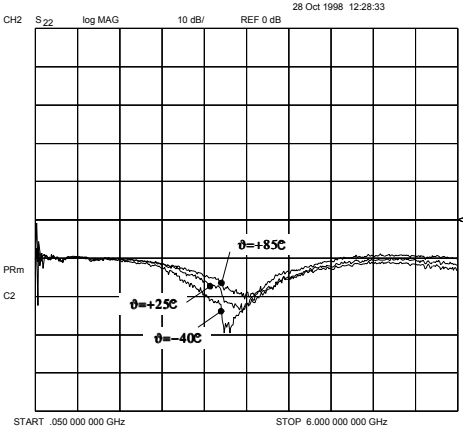
Electrical Characteristics at T_A=25°C (measured in test circuit specified in fig. 1)
V_{CC}=5V, unless otherwise specified

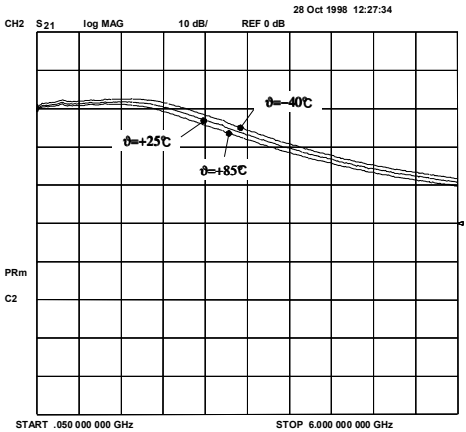
Parameter		Symbol	min.	typ.	max.	Unit
Insertion power gain	f=0.9GHz f=2.15GHz	$\|S_{21}\|^2$		31 27.5		dB
Noise figure (Z_S=50Ω)	f=0.9GHz f=2.15GHz	NF		2.3 2.4		dB
Output power at 1dB gain compression Z_L=50Ω	f=0.9GHz f=2.15GHz	P_{-1dB}		 2 2.4		dBm
Output third order intercept point $Z_{S/L}$=50Ω	f=0.9GHz f=2.15GHz	OIP_3		 15 14		dBm
Input return loss	f=0.9GHz f=2.15GHz	RL_{In}		>10 >10		
Output return loss	f=0.9GHz f=2.15GHz	RL_{Out}		>10 >10		
Device current		I_D		21.8		mA

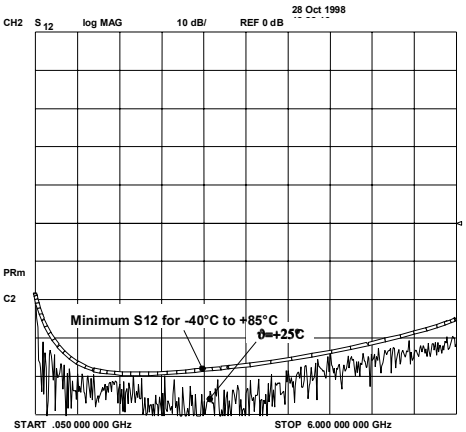
Preliminary

Measurements I: S_{11}-S_{22}-S_{12}-S_{21} vs. Frequency and Temperature (V_{CC}=5V)



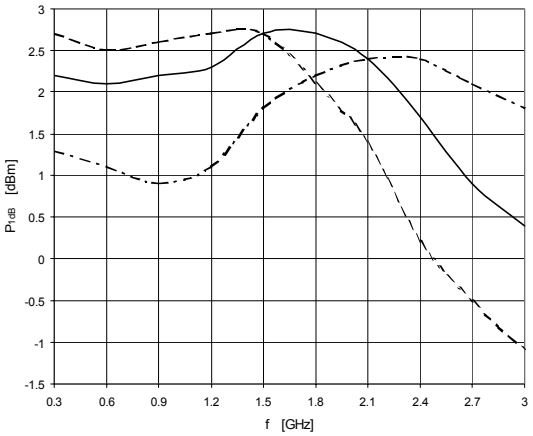




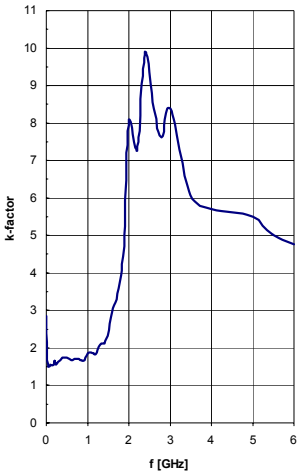


Measurements II:

1dB Compression Point P_{1dB} (Output) vs. Frequency and Temperature (V_{CC}=5V)



Measurement III: k-Factor vs. Frequency (V_{CC}=5V)



Typical Application

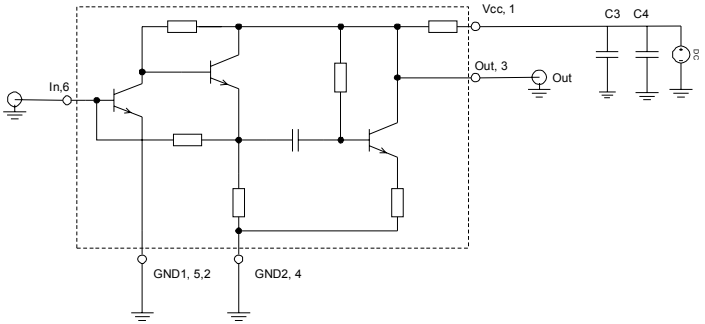
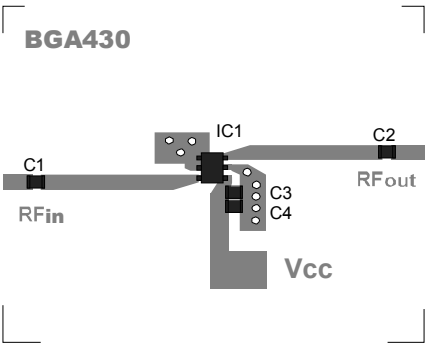


Fig. 1: Typical application circuit

Notes:

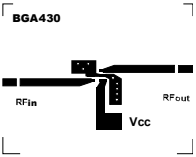
Due to the high gain of the BGA430 RF blocking at the supply pin (V_{CC}) has to be done very carefully. Abroad band low impedance RF path to GND has to be provided at V_{CC}. If no appropriate RF blocking is used, RF can couple via the internal power lines to the input and the circuit may oscillate.

PCB - Layouts for the application circuit



Part list:

C1, C2	coupling capacitors (not used for measurements)
C3	100pF
C4	100pF
IC1	BGA430



PCB data: glass fiber epoxy board (double sided), 0.5mm, ε_r=4.8

Preliminary

Preliminary

Package Outline