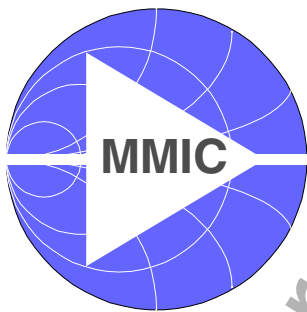


BGA430

Broad Band High Gain LNA



Wireless
Silicon Discretes



Never stop thinking.

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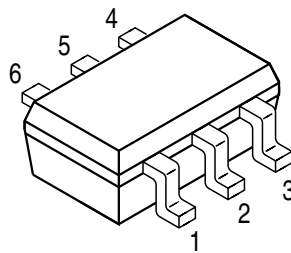
Warnings

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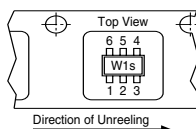
Features

- 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



VPS05604

Tape loading orientation

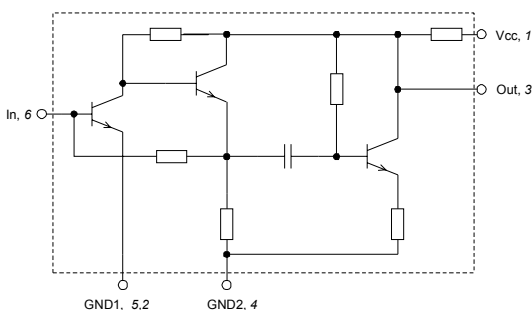


Marking on SOT-363 package
(for example W1s)
corresponds to pin 1 of device

Position in tape: pin 1
opposite of feed hole side

Direction of Unreeling →

EHA07193



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, $T_S < tbd^{\circ}C^{1)}$	P_{tot}	165	mW
Junction temperature	T_J	150	$^{\circ}C$
Ambient temperature range	T_A	-65 ... +150	$^{\circ}C$
Storage temperature range	T_{STG}	-65 ... +150	$^{\circ}C$
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

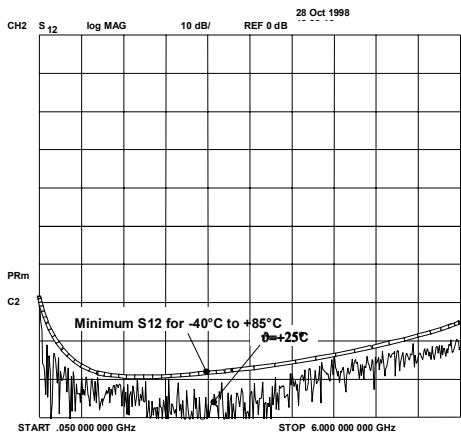
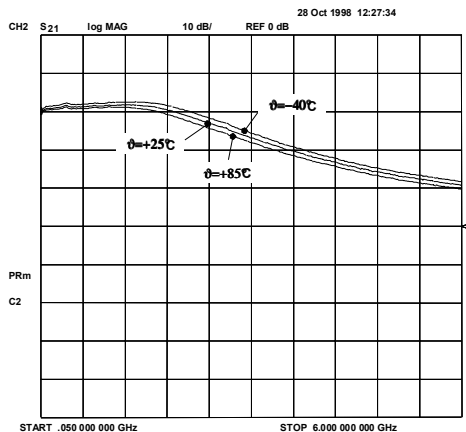
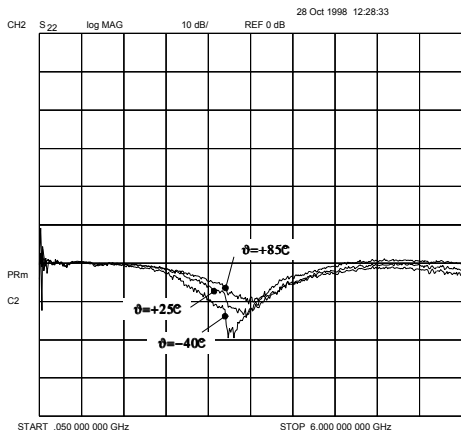
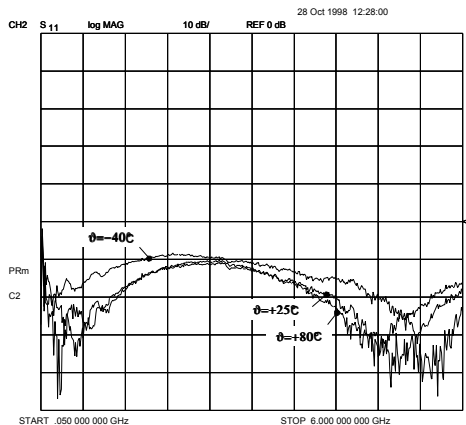
Electrical Characteristics at $T_A=25^{\circ}C$ (measured in test circuit specified in fig. 1)

$V_{CC}=5V$, 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 ($Z_S=50\Omega$)	f=0.9GHz f=2.15GHz	NF		2.3 2.4		dB
Output power at 1dB gain compression $Z_L=50\Omega$	f=0.9GHz f=2.15GHz	P_{-1dB}		2 2.4		dBm
Output third order intercept point $Z_{S/L}=50\Omega$	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

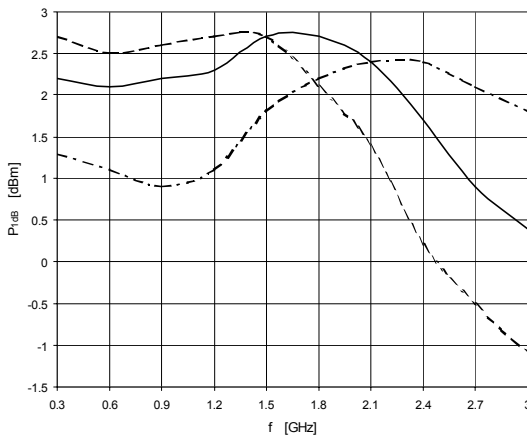
Measurements I: S_{11} - S_{22} - S_{12} - S_{21} vs. Frequency and Temperature ($V_{CC}=5V$)



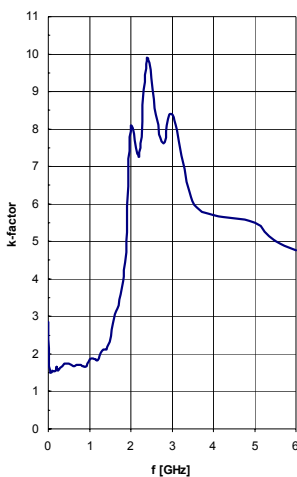
Preliminary

Measurements II:

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



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



Preliminary

Typical Application

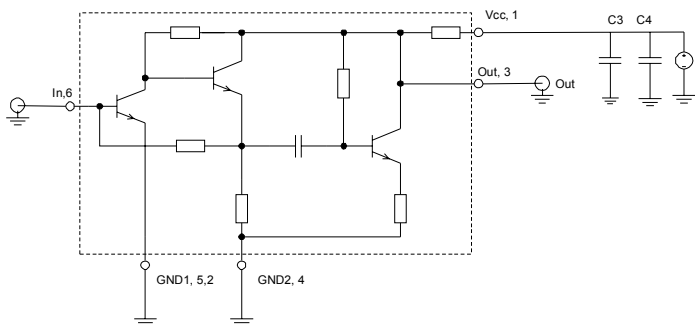
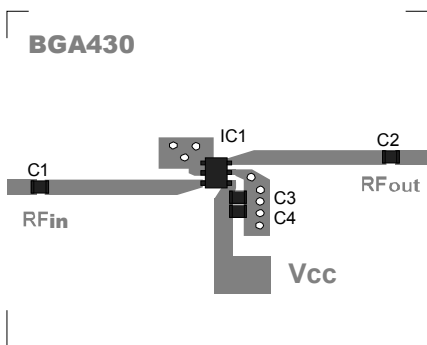


Fig. 1: Typical application circuit

Notes:

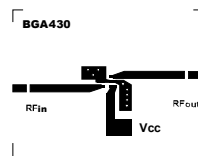
Due to the high gain of the BGA430 RF blocking at the supply pin (V_{CC}) has to be done very carefully. Abroad band low impedance RF path to GND has to be provided at V_{CC} . If no appropriate RF blocking is used, RF can couple via the internal power lines to the input and the circuit may oscillate.

PCB - Layouts for the application circuit



Part list:

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

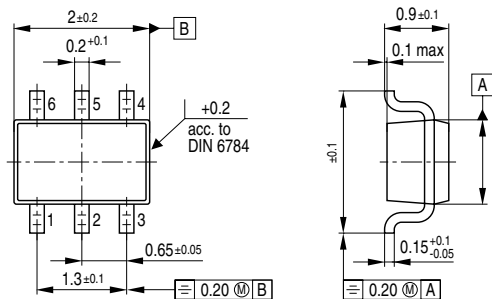


PCB data: glass fiber epoxy board (double sided), 0.5mm, $\epsilon_r=4.8$

Preliminary

Preliminary

Package Outline



GPS05604