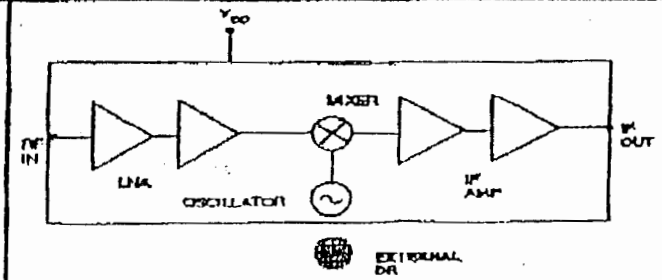
ANADIGICS
Your GaAs IC Source

AKD2820AX
Ku-Band DBS MMIC Downconverter
ADVANCED PRODUCT INFORMATION
REV a

FEATURES

- Integrated Monolithic Downconverter
- Surface Mount Package,Mirror Version
- 6 dB Noise Figure
- 34 dB Conversion Gain
- Single + 6 Volt Supply
- Small Size
- Low Cost
- High Reliability

FUNCTIONAL BLOCK DIAGRAM



PATENT PENDING

The ANADIGICS Ku-Band MMIC Downconverter is a low-cost, high volume GaAs MMIC which is suitable for use in Ku-Band DBS systems.
The AKD2820A offers a high degree of functionality in a very small and user friendly configuration. The MMIC provides LNB manufacturers the ability to produce in high volume LNBs with low component count, high reliability, and exceptional price performance ratios.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN	MAX	UNITS
V_{DD}	0	+ 8	V
V_{LO}	- 5	+ 1.0	V
V_{RF}	-10	+10	V
V_{IF}	0	+ 8	V
Case Temperature	- 55	+ 85	°C
Storage Temperature	- 55	+100	°C
Soldering Temperature		+250 *	°C
Soldering Time		15	Sec.
Input Power RF		+10	dBm
Input Power LO		+17	dBm

OPERATING RANGES

PARAMETER	MIN	NOMINAL	MAX	UNITS
Frequency				
RF	10.7		11.8	GHz
IF	950		2150	MHz
LO	9		12	GHz
Power Supply				
V_{DD}	+ 5	+ 6	+ 7	V
V_{LO}		- 2.0, 0		V
Case Temperature	- 55	+ 25	+ 85	°C
Input RF Power	- 80	- 50	- 30	dBm
Input Impedance		50		Ω
Output Impedance		75		Ω

* The device may be held at a Temperature of 230°C for 3 minutes.

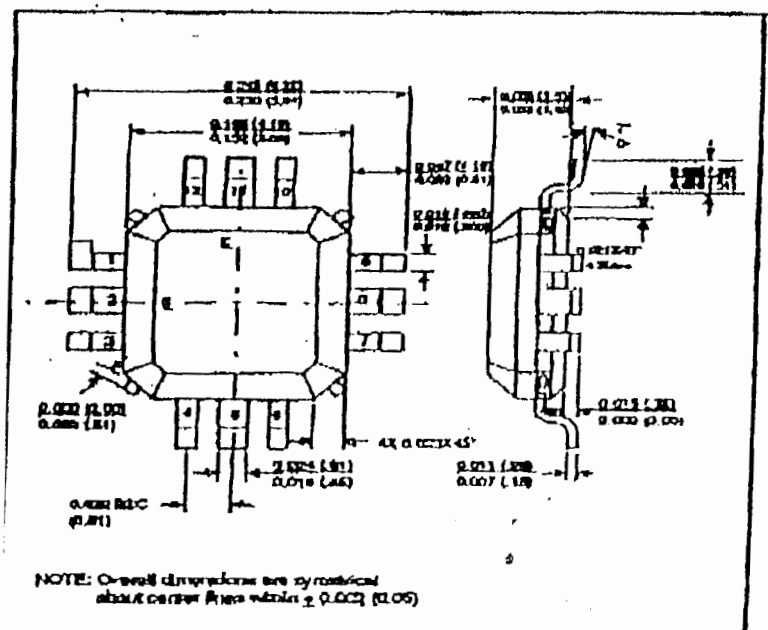
ELECTRICAL SPECIFICATIONS

(Packaged unit T_A = 25°C, V_{DD} = +6V) LO Port Terminated in 50Ω.[4]

Conversion Gain[1]	35		41	dB
SSB Noise Figure[1]		6	9	dB
Gain Flatness[1]		± 1.5	± 2	dB
Gain Ripple over any 27 MHz band		< 0.2	0.6	dB
LO - RF Leakage[5]		- 27	- 23	dBm
LO - IF Leakage[5]		- 5	0	dBm
LO Phase Noise[2]				
10 KHz Offset		- 83	- 80	dBc/Hz
100 KHz Offset		- 105	- 100	dBc/Hz
Temperature Stability of f O[3]		± 1.5		MHz
Image Rejection	0	6		dB
Output power @ 1dB Gain Compression(75 Ω)	+ 2	+ 5		dBm
Output Third Order IP (75Ω)	+ 12	+ 15		dBm
Power Supply Current I_{DD}[6]			120	mA
Spurious Output any Band			- 60	dBm

NOTES:

1. As measured in ANADIGICS test set-up with F_{LO} = 9.75 GHz
2. Using an appropriate dielectric resonator, spacer & cavity.
3. Variation of LO frequency with temperature is largely a function of the dielectric resonator and its coupling.
4. LO port must be terminated with a DC coupled resistor.
5. Includes coupling through the test fixture.



NOTE: Overall dimensions are symmetrical about center lines within ± 0.002 (0.05)

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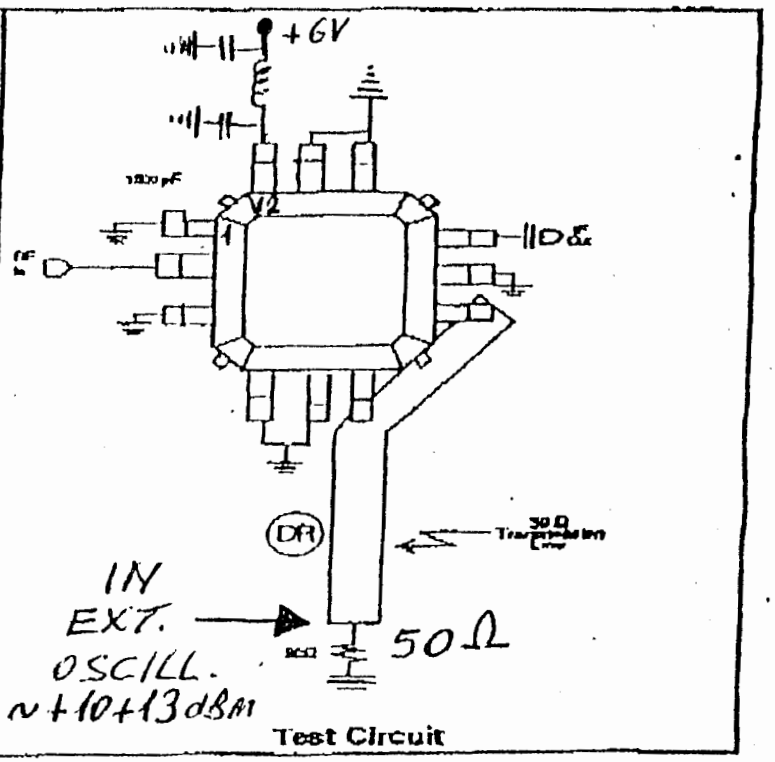

Test Circuit

Dimensions shown inches (millimeters)

PIN	FUNCTION
1	GROUND
2	RF INPUT
3	GROUND
4	GROUND
5	GROUND
6	LO
7	LO
8	GROUND
9	IF OUTPUT
10	GROUND
11	GROUND
12	V_{DD}