



ANADIGICS®
Your GaAs IC Source

Data Sheet

ADC20014

950-1450 MHz DBS Tuner IC for Digital Applications

Preliminary

Rev 6

FEATURES	FUNCTIONAL BLOCK DIAGRAM
■ On Chip, Low Phase Noise Oscillator ■ Monolithic BS tuner IC ■ 6 dB Noise Figure ■ 9 dB Conversion Gain ■ Single +5V Supply ■ Small Size ■ Low Cost ■ High Reliability ■ Surface Mount Package	

The ANADIGICS DBS (Direct Broadcast Satellite) Tuner IC is intended for use in high volume, low cost manufacturing of compact DBS tuners for digital satellite receivers and integrated satellite ready TV/VTR receivers.

The ADC20014 Tuner IC provides DBS tuner manufacturers the ability to produce, in high volumes, tuners with low component count, minimal tuning, small size, high reliability and exceptional price-performance ratios.

The ADC20014 offers a high degree of functionality in a very small and user friendly configuration.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN.	MAX.	UNITS
V_{DD}/V_{IF}	0	+7	V
V_{LO}	- 5	+0.5	V
V_{OSC}	- 5	+ 5	V
V_{RF}	- 10	+ 0.5	V
Case Temperature	- 55	+ 85	°C
Storage Temperature	- 55	+ 100	°C
Input Power RF		+ 10	dBm
Input Power LO		+ 17	dBm

ADC20014,,1

8/17/94

ANADIGICS, INC. • 35 Technology Drive • Warren, New Jersey 07059 • (908) 668-5000 • Fax: (908) 668-5132

0814577 0000306 398

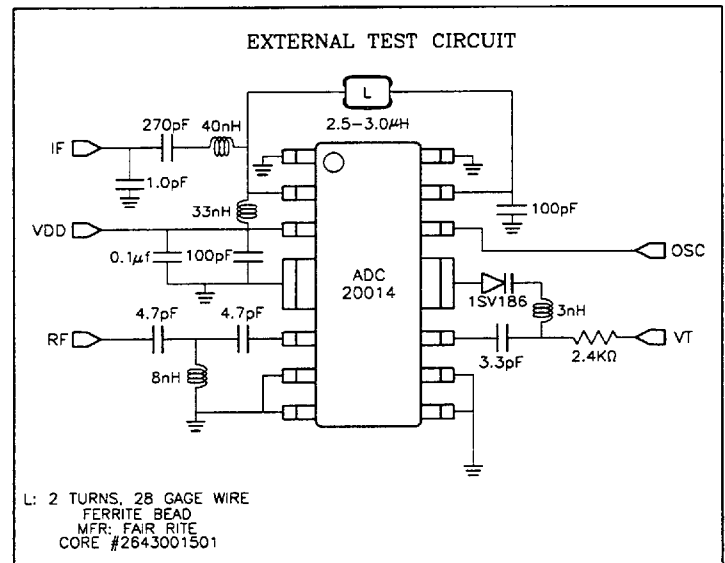
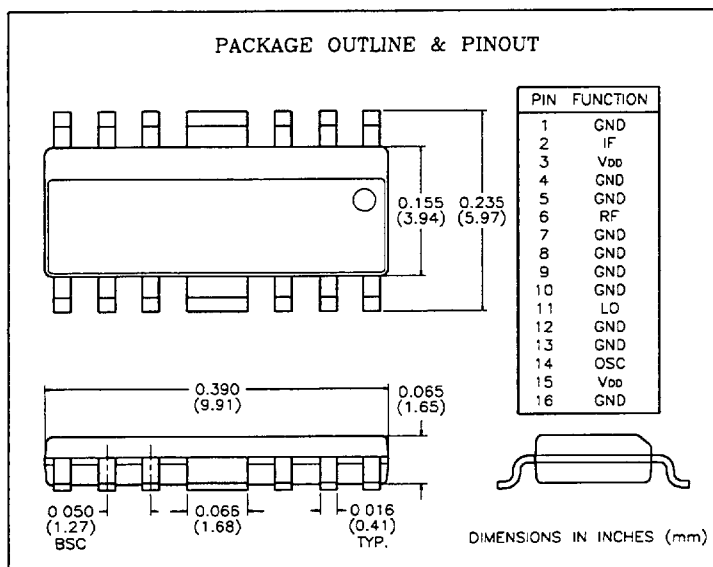
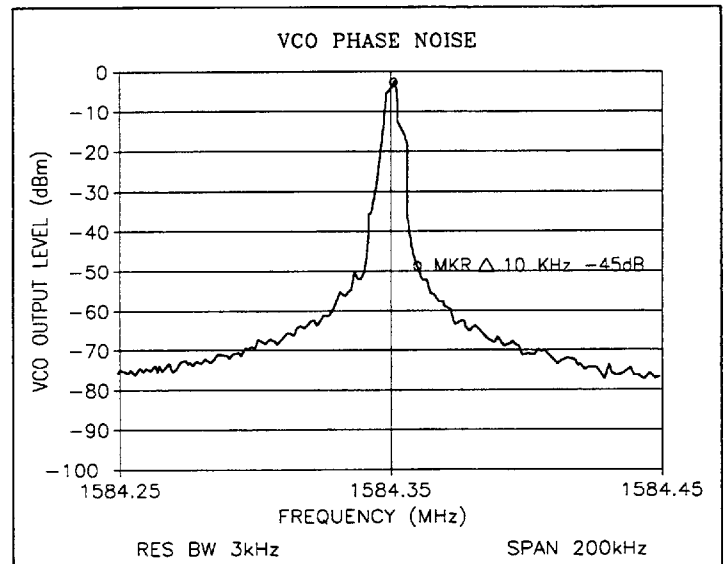
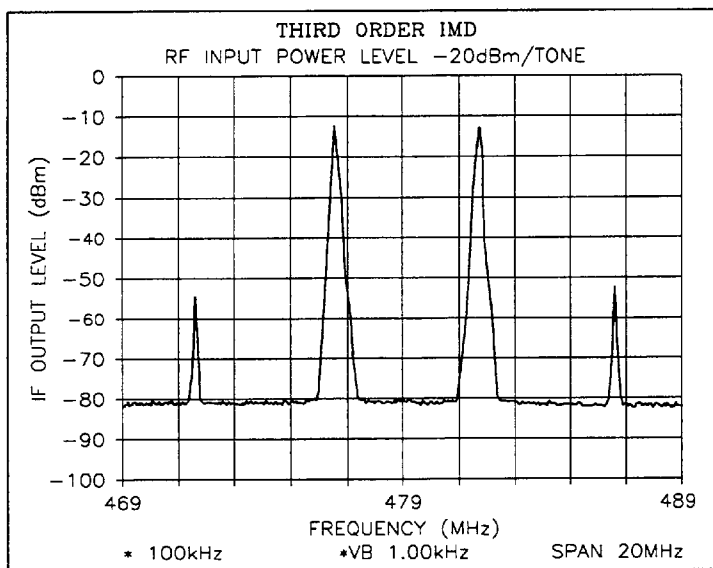
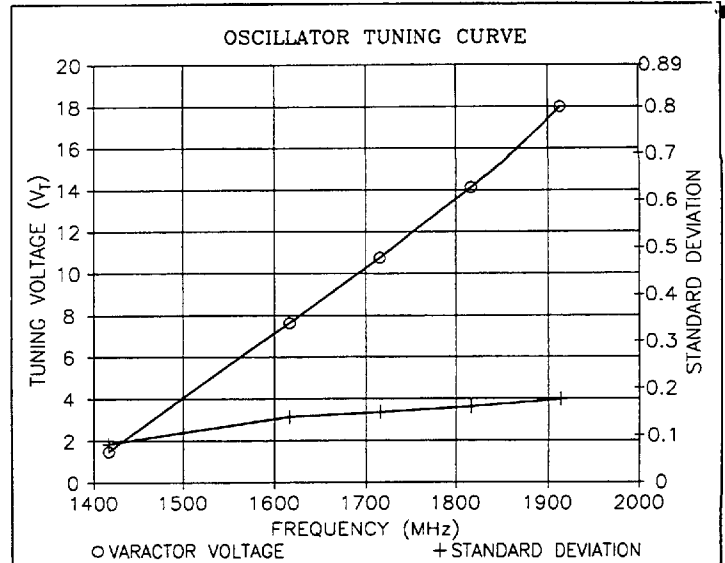
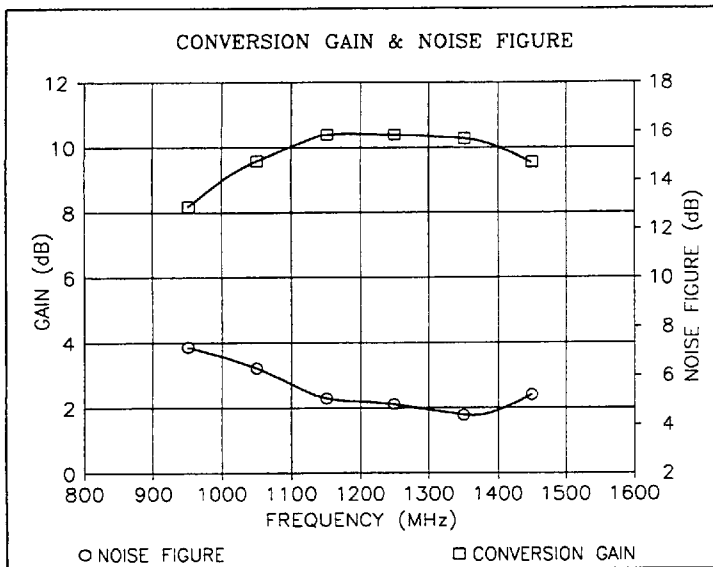
ELECTRICAL SPECIFICATIONS

(Packaged unit, TA =25 °C, VDD = +5V)

PARAMETER	MIN.	TYP.	MAX.	UNITS
Frequency				MHz
RF	950		1450	MHz
LO ¹	1430		1930	MHz
IF		480		
Conversion Gain ⁶	6	9		dB
SSB Noise ⁶		6	9	dB
Third Order IMD ⁴ (-20 dBm Tones, 5 MHz Apart)		- 40	-35	dBc
Second Order IMD (-20 dBm Input Level)		- 25	-20	dBc
LO Leakage ²				
RF Port [*]		-35	-27	dBm
IF Port [*]		0	3	dBm
LO Output Level for PLL ^{3*}	- 9.5	-4		dBm
Tuning Voltage ¹ (VT) [*]	1		20	Volts
VCO Phase Noise ^{5*}				
10 KHz Offset		-80	-73	dBc/Hz
100 KHz Offset		-105	-95	dBc/Hz
Input Impedance ⁷				
Output Impedance ⁷				
Power Supply Current (+5V)		60	85	mA

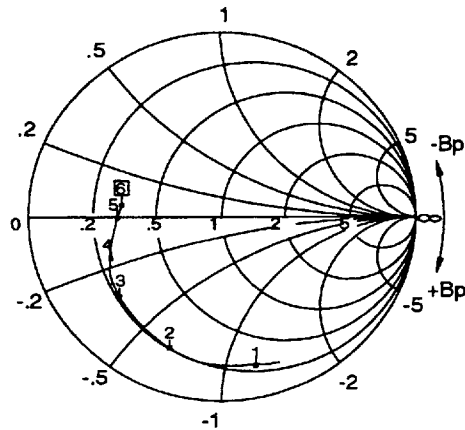
NOTES

1. Measured in ANADIGICS test fixture with Toshiba 1SV186 off-chip-varactor.
 2. Includes external coupling through test fixture.
 3. Oscillator output for external PLL.
 4. Measured at 1450 MHz.
 5. Measured using PLL (LBW =1KHz, Reference = 1.25 MHz, Step Size = 10 MHz).
 6. Measured in ANADIGICS test set-up.
 7. See Smith Charts
- *. Not Measured



INPUT IMPEDANCE DATA (RF)

1. IMPEDANCE REFERENCE AT PIN 6
2. VCO ON $V_t = 3.20$ VOLTS
3. $V_{dd} = + 5$ VOLTS
4. USE EXTERNAL BIAS TEE FOR IF

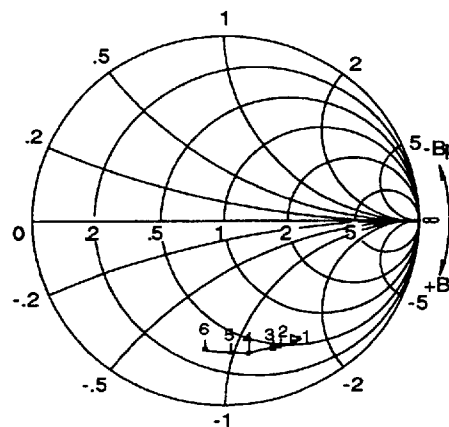


MEASURED IN 50 Ω SYSTEM

1	0.950 GHz
	8.40 Ω
	- 61.53 j Ω
2	1.250 GHz
	8.12 Ω
	-34.53 j Ω
3	1.550 GHz
	10.13 Ω
	- 19.90 j Ω
4	1.750 GHz
	12.75 Ω
	- 8.70 j Ω
5	1.900 GHz
	15.23 Ω
	- 3.03 j Ω
6	2.050 GHz
	16.33 Ω
	- 0.27 j Ω

OUTPUT IMPEDANCE DATA (IF)

1. IMPEDANCE REFERENCE AT PIN 2
2. VCO ON $V_t = 3.20$ VOLTS
3. $V_{dd} = + 5$ VOLTS
4. USE EXTERNAL BIAS TEE FOR IF

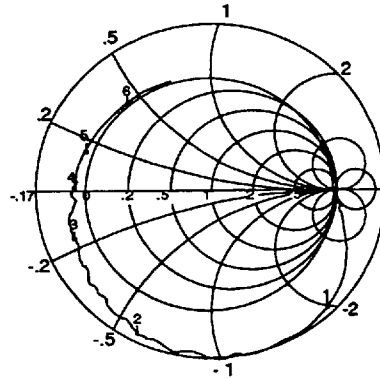


MEASURED IN 50 Ω SYSTEM

1	0.40 GHz
	26.8 Ω
	- 82.8 j Ω
2	0.48 GHz
	22.2 Ω
	- 70.0 j Ω
3	0.50 GHz
	21.4 Ω
	- 67.5 j Ω
4	0.60 GHz
	18.1 Ω
	- 56.2 j Ω
5	0.70 GHz
	15.9 Ω
	- 48.7 j Ω
6	0.80 GHz
	14 Ω
	- 41.2 j Ω

LO IMPEDANCE DATA

1. IMPEDANCE REFERENCE AT PIN 11
2. Vdd = +5 VOLTS



MEASURED IN 50 Ω SYSTEM

1	500.0 MHz	- 42.60 Ω	- 103.30 j Ω
2	1000.0 MHz	- 10.28 Ω	- 29.96 j Ω
3	1430.0 MHz	- 4.02 Ω	- 7.94 j Ω
4	1700.0 MHz	- 2.04 Ω	2.21 j Ω
5.	1922.0 MHz	- 1.37 Ω	9.32 j Ω
6.	2450.0 MHz	- 0.13 Ω	24.28 j Ω

MTF vs Tcase (ADC Series)

