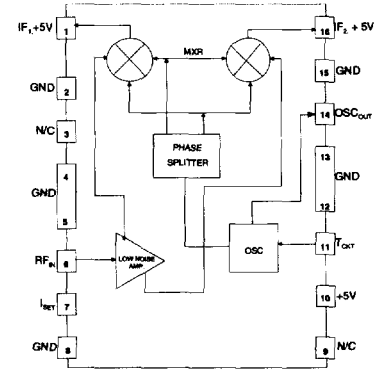
ACD0900

VHF/UHF CATV/TV Tuner Downconverter

Advanced Product Information
Rev 7

FEATURES	FUNCTIONAL BLOCK DIAGRAM
Integrated Monolithic Downconverter 8 dB Noise Figure 10 dB Conversion Gain High Linearity Small Size Low Cost High Reliability	

The ACD0900 MMIC is a high performance downconverter fabricated entirely in GaAs. It is designed for use as the 2nd conversion stage in double-conversion tuners and cable modems, downconverting 900 -1200 MHz RF inputs to a fixed IF of 35 - 150 MHz (depending on LO frequency).

The IC incorporates a low noise amplifier, high linearity double balanced mixer, phase splitter and oscillator in a SOIC 16 lead surface mount package. The high degree of functionality allows tuner manufactures to reduce size and cost by lowering the component count and decreasing the amount of production alignment steps, while significantly improving performance and reliability.

ABSOLUTE MAXIMUM RATINGS:

PARAMETER	MIN.	MAX.	UNITS
$V_{DD}/V_{IF}/V_{OSC}/V_{LO}$		9	Volts
V_{RF}/V_{TCKT}*		0	Volts
Storage Temperature	- 55	200	^{0}C
Soldering Temperature		260	^{0}C
Soldering Time		5	Sec.
RF Input Power		+ 10	dBm
LO Input Power		+ 17	dBm
Thermal Resistance		25	^{0}C/W

*V_{TCKT} : Maximum voltage that may be applied to pin 11 of the device without damaging the IC. DC blocking capacitor(1500pF) between pin11 and the external tuning circuit is mandatory.

OPERATING RANGES:

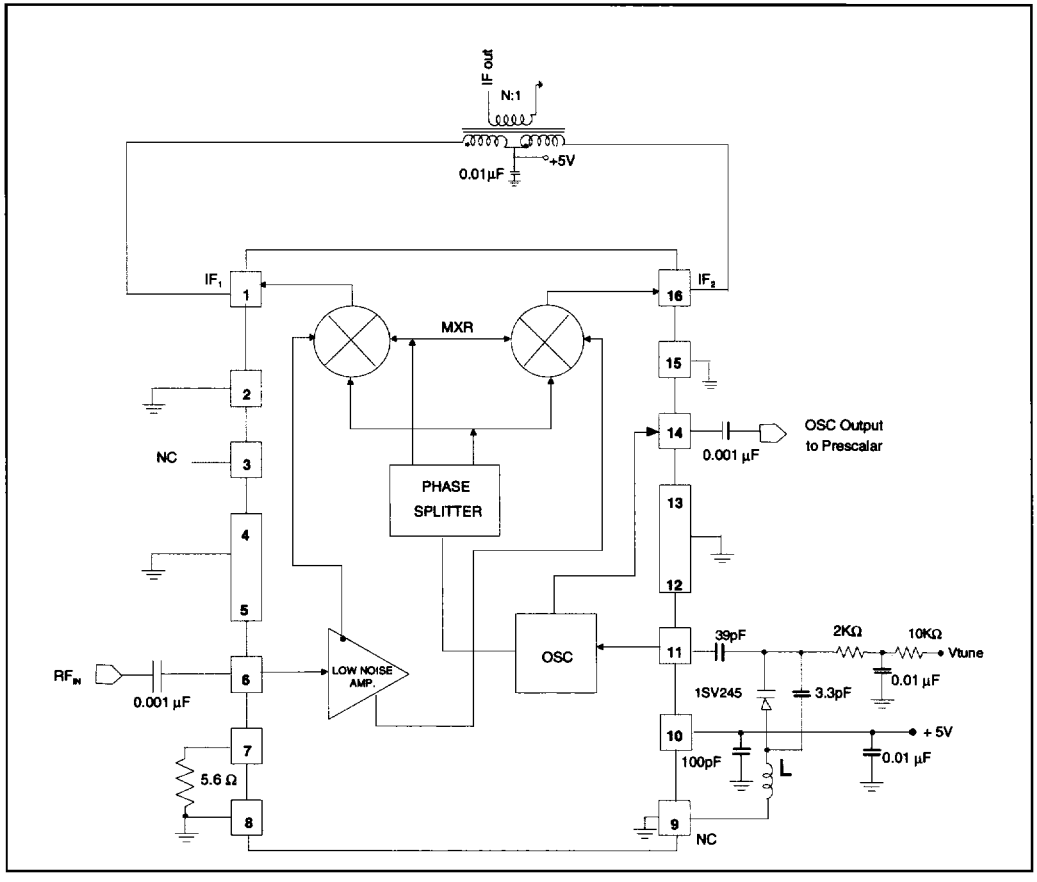
PARAMETERS	MIN	TYP	MAX	UNITS
Frequency				
RF	900		1200	
LO	855		1165	MHz
IF	35		150	
V_{DD}	4.75	5.0	5.25	Volts
I_{DD}			110	mA
Case Temperature	- 55		85	^{0}C

ELECTRICAL SPECIFICATIONS: (Packaged Units, T_A = +25^{0}C, V_{DD} = +5V)

PARAMETER	MIN.	TYP	MAX.	UNITS
Frequencies				
RF		1170		MHz
LO		1245		MHz
IF		75		MHz
Current		80		mA
Power Consumption @ 5.0V		400		mW
Phase Noise @ 10 KHz Offset		- 89	- 85.5	dBc/Hz
Noise Figure		8.0	9.5	dB
Gain (200Ω Load)[1]	7.8	9.5		dB
3rd Order IMD (200Ω Load)[2]		- 59	- 54	dBc
3rd Order Input IP (200Ω Load)[2]	+ 12			dBm
Cross Modulation @ 15 KHz, [2] 99% AM Modulation		- 56		dBc

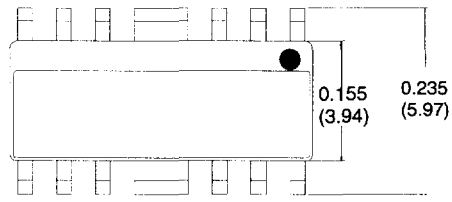
1.Combined output (IF_1 + IF_2) using a balun. NOTE: Gain at either port (uncombined), with unused port terminated in 50Ω, is 3 dB lower

2. Two tones @ - 15 dBm per tone



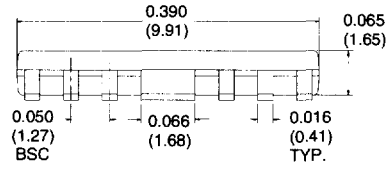
*Patent Pending

ACD0900
PACKAGE OUTLINE



PIN	Function
1	IF_1 +5 V
2	GND
3	NC
4	GND
5	GND
6	RFIN
7	ISET
8	GND
9	NC*
10	+ 5V
11	TCKT
12	GND
13	GND
14	OSC Out
15	GND
16	IF_2 +5V

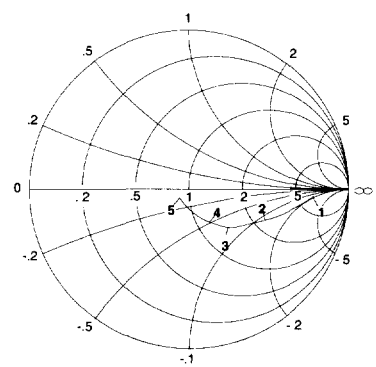
* Do not connect pin 9 to GND



Dimensions in inches (mm)

RF INPUT IMPEDANCE

START:50MHz
STOP: 2000MHz



1: 50 MHz
183.00Ω
- 21.75 jΩ

2: 250 MHz
135.48Ω
-58.21 jΩ

3: 750 MHz
75.92Ω
- 43.12 jΩ

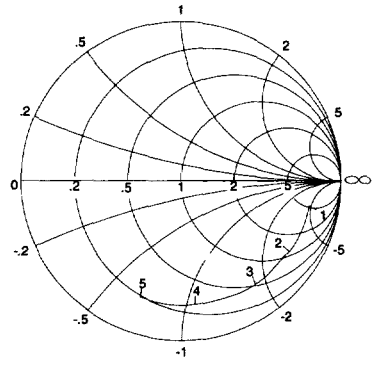
4: 1000 MHz
64.93Ω
- 32.29 jΩ

5 : 2000 MHz
43.79Ω
-4.71 jΩ

MEASURED IN 50Ω SYSTEM
IMPEDANCE REFERENCE PLANE AT PIN 6

IF OUTPUT IMPEDANCE

START: 50 MHz
STOP: 500 MHz



1: 50 MHz
251.64Ω
- 222.35 jΩ

2: 150 MHz
60.89Ω
-144.22 jΩ

3: 250 MHz
26.32Ω
- 89.16 jΩ

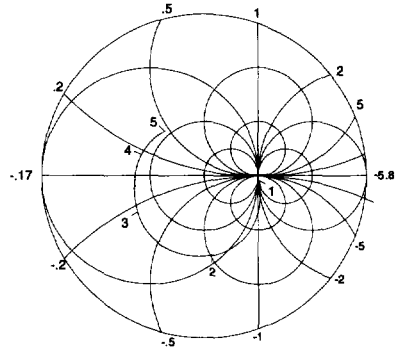
4: 400 MHz
13.24Ω
- 49.55 jΩ

5 : 500 MHz
10.08Ω
- 34.10 jΩ

MEASURED IN 50Ω SYSTEM
IMPEDANCE REFERENCE PLANE AT PIN 16

LO IMPEDANCE

START: 50 MHz
STOP: 2000 MHz



1: 50 MHz
259.67Ω
- 1200 jΩ

2: 612 MHz
- 20.97Ω
- 50.63 jΩ

3: 1000 MHz
- 9.28Ω
- 14.88 jΩ

4: 1500 MHz
- 5.36Ω
7.99 jΩ

5 : 2000 MHz
0.64Ω
27.12 jΩ

MEASURED IN 50Ω SYSTEM
IMPEDANCE REFERENCE PLANE AT PIN 11