

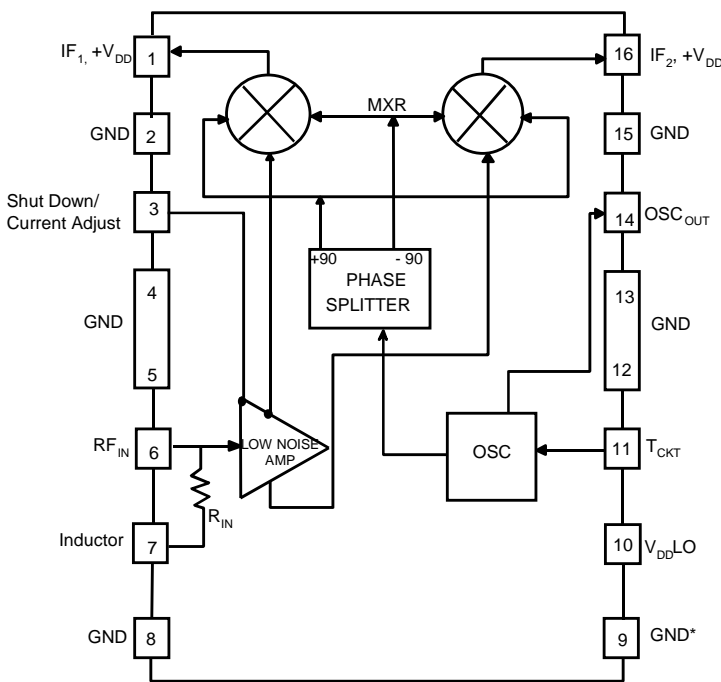
**FEATURES**

- Integrated Monolithic Upconverter
- Compatible with all digital and analog modulation types
- 5 Volt Operation
- Low Power Consumption
- Low Noise Figure
- High Conversion Gain
- Low Distortion
- Excellent Oscillator Purity and Phase Noise
- Remote Shutdown Feature
- Small Size
- Low Cost
- High Reliability



**S3C**  
**16 Pin SOIC Package**

**FUNCTIONAL BLOCK DIAGRAM**



\* Varactor return. Do not connect to common ground

**DESCRIPTION**

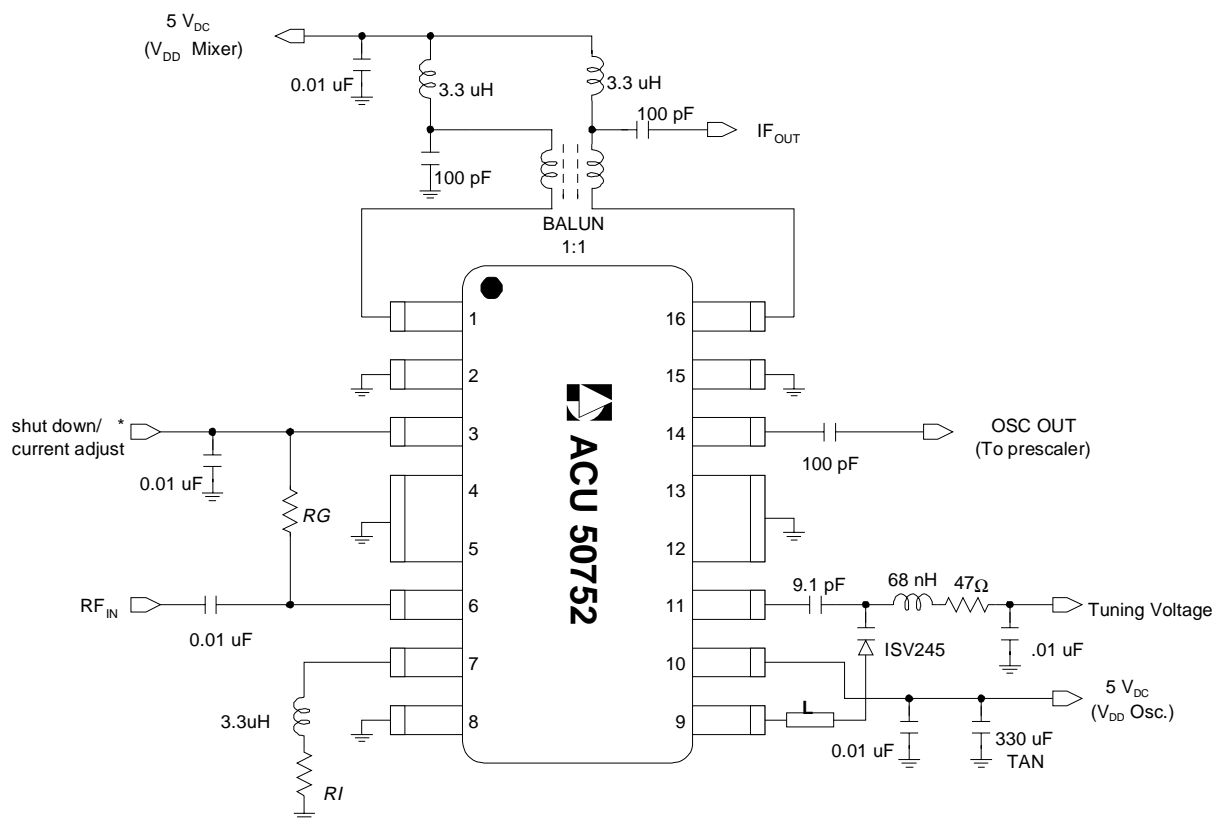
The ACU50752 is a Monolithic GaAs IC designed to perform the upconverter functions in a double conversion tuner: gain block, local oscillator and balanced mixer. The specifications meet the requirements of CATV, TV and Cable Modem applications. Supplied in a 16-lead SOIC package and requiring only a single polarity 5 V supply (or 3.5 V, with slightly reduced performance), the IC is well suited in situations where small size, low cost, low auxiliary parts count and a no-compromise performance is important. It provides tuner manufacturers the opportunity to reduce cost by lowering the component count and decreasing the amount of labor-intensive production alignment steps, while significantly improving performance and reliability.

**ABSOLUTE MAXIMUM RATINGS**

PARAMETER	ABSOLUTE MAXIMUM	
V <sub>DD</sub> /V <sub>IF</sub> /V <sub>OSC</sub> (Pins 1,10,14,& 16)	9	V <sub>DC</sub>
V <sub>RF</sub> /V <sub>TUNE</sub> (Pins 6 & 11)*	0	V <sub>DC</sub>
RF Input Voltage	+60	dBmV
Storage Temperature	- 55 to +200	°C
Soldering Temperature	260	°C
Soldering Time	5	Sec.
Operating Case Temperature	- 40 to + 85	°C

OPERATING RANGES

PARAMETER	MIN.	TYPICAL	MAX.	UNITS
Frequency				
RF	50		860	MHz
IF	900		1200	
LO	950		2060	
$V_{TUNE}$	1.5		27	Volts
$V_{DDIF}$	4.75	5	5.25	Volts
$V_{DDL0}$	4.75	5	5.25	Volts
$I_{DDIF}$		58	80	mA
$I_{DDL0}$		60	80	mA



NOTES:

- L = Printed inductor
- RG = Gain control/impedance match resistor (240Ω for 8 dB gain)
- RI = Current adjust resistor (2.7Ω for 60 mA mixer current)
- \* = Apply -2V DC for shutdown, 0 < VDC < 0.3 for 60 mA mixer current

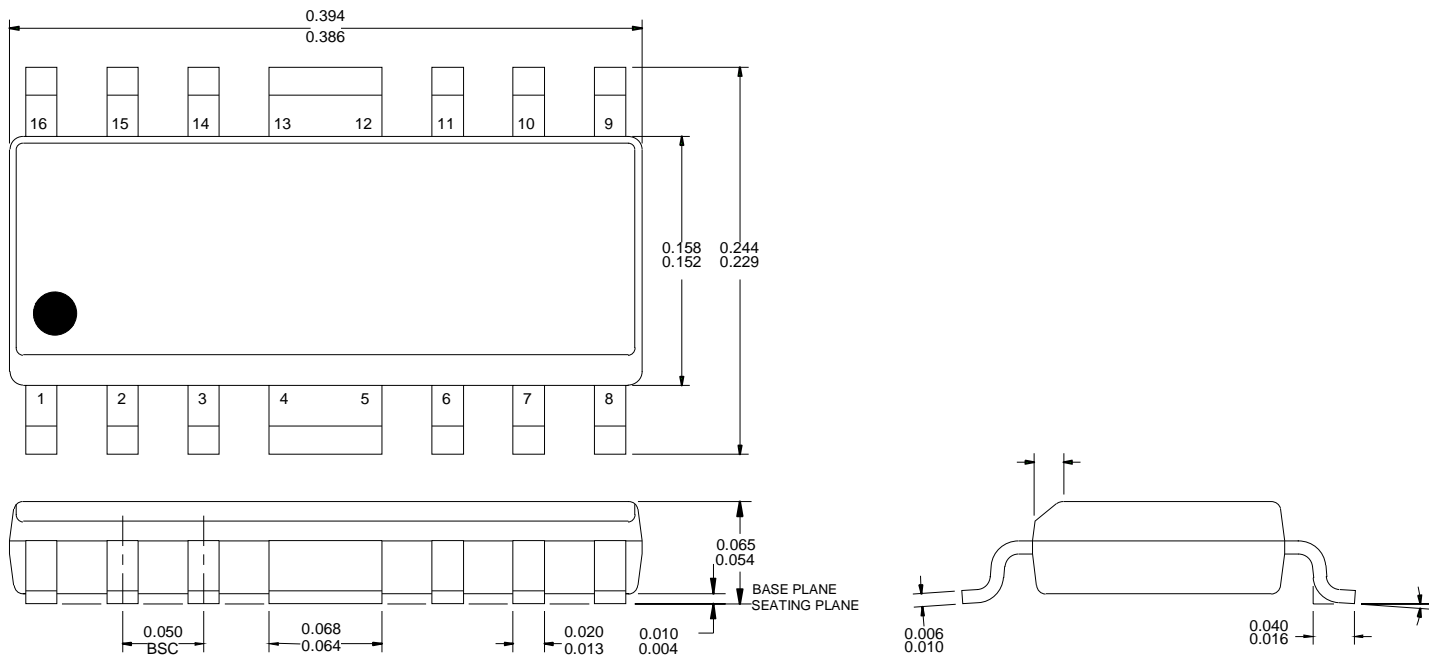
**ELECTRICAL SPECIFICATIONS**(Packaged Unit,  $T_A = 25^\circ\text{C}$ ,  $V_{\text{DDIF}}/V$ ,  $V_{\text{DDL0}} = +5\text{V}$ ,  $\text{RF} = 50$  to  $860\text{ MHz}$ ,  $\text{IF} = 1170\text{ MHz}$ )

PARAMETER	MIN.	TYP.	MAX.	UNIT
Conversion Gain <sup>1</sup>	5.0	8.0	-	dB
Gain Flatness <sup>1</sup>	-	1.0	-	dB
SSB Noise Figure <sup>1</sup>	-	6.5	8.0	dB
CSO <sup>2</sup>	-	-60	-57	dBc
CTB <sup>2</sup>	-	-60	-57	dBc
Cross Modulation <sup>3</sup>	-	-62	-60	dBc
2-Tone 2nd Order Input IP <sup>4</sup>	-	40	-	dBm
2-Tone 3rd Order Input IP <sup>4</sup>	-	18	-	dBm
LO Phase Noise <sup>5</sup>	-	-84	-81	dBc/Hz
LO Power to Prescaler	-10	-5	-	dBm
LO to RF Leakage	-	-22	-	dBm
LO to IF Leakage	-	-24	-	dBm
RF to IF Isolation	40	50	-	dB
Tuning Voltage <sup>1</sup>	1.0	-	22	V
Shutdown Voltage(Pin 3)	-	-2	-	V
$V_{\text{DDIF}}$	4.75	5.0	5.25	V
$V_{\text{DDL0}}$	4.75	5.0	5.25	V
$I_{\text{DDIF}}$		58	80	mA
$I_{\text{DDL0}}$		60	80	mA
Power Consumption		600	800	mW

## Notes:

1. As measured in ANADIGICS test fixture
2. 128 Channels @ + 7 dBmV
3. 128 Channels, 99 % Modulation @ 15 KHz
4. Two tones @ -15 dBm each
5. At 10 KHz offset

## PACKAGE OUTLINE



**ANADIGICS, Inc.**  
**35 Technology Drive**  
**Warren, New Jersey 07059**

Tel: (908) 668-5000 / Fax: (908) 668-5132

Email: [Mkg@anadigics.com](mailto:Mkg@anadigics.com)

[www.anadigics.com](http://www.anadigics.com)

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