# ACU50752S3C

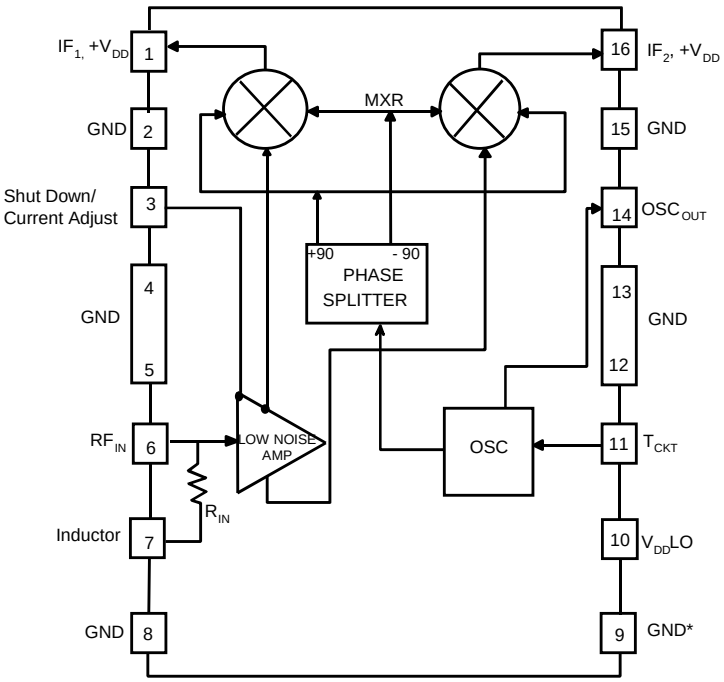
**CATV/TV/Cable Modem Upconverter MMIC**
**Advanced Product Information**
**Rev. 0**

## 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

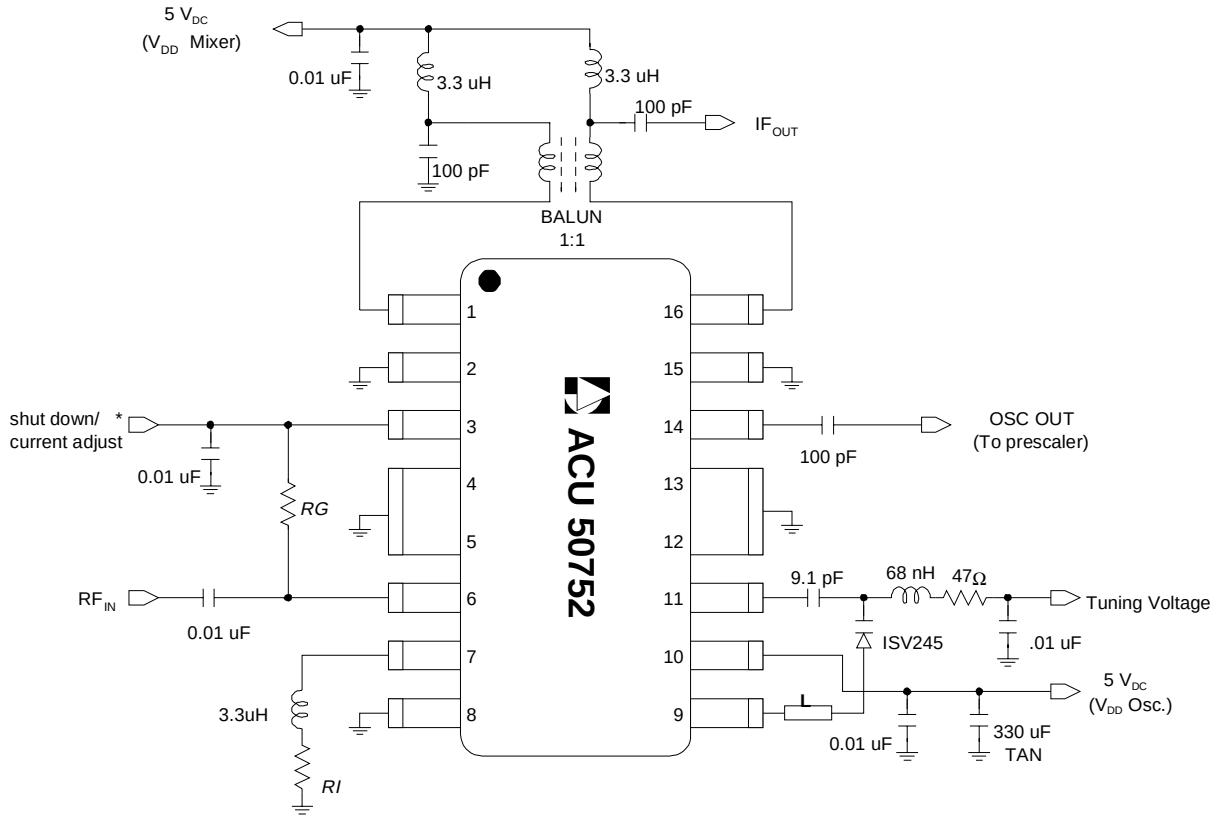
The ACU50752 is a Monolithic GaAs IC designed to perform the upconverter functions in a double conversion tuner: gain block, local oscillator and balanced mixer. The specifications meet the requirements of CATV, TV and Cable Modem applications. Supplied in a 16-lead SOIC package and requiring only a 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 | |
|---|---|---|
| $V_{DD}/V_{IF}/V_{OSC}$ (Pins 1,10,14,& 16) | 9 | $V_{DC}$ |
| $V_{RF}/V_{TUNE}$ (Pins 6 & 11)* | 0 | $V_{DC}$ |
| 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<br>RF<br>IF<br>LO | <br>50<br>900<br>950 | | <br>860<br>1200<br>2060 | <br><br><br>MHz |
| $V_{TUNE}$ | 1.5 | | 27 | Volts |
| $V_{DDIF}$ | 4.75 | 5 | 5.25 | Volts |
| $V_{DDLO}$ | 4.75 | 5 | 5.25 | Volts |
| $I_{DDIF}$ | | 58 | 80 | mA |
| $I_{DDLO}$ | | 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 |

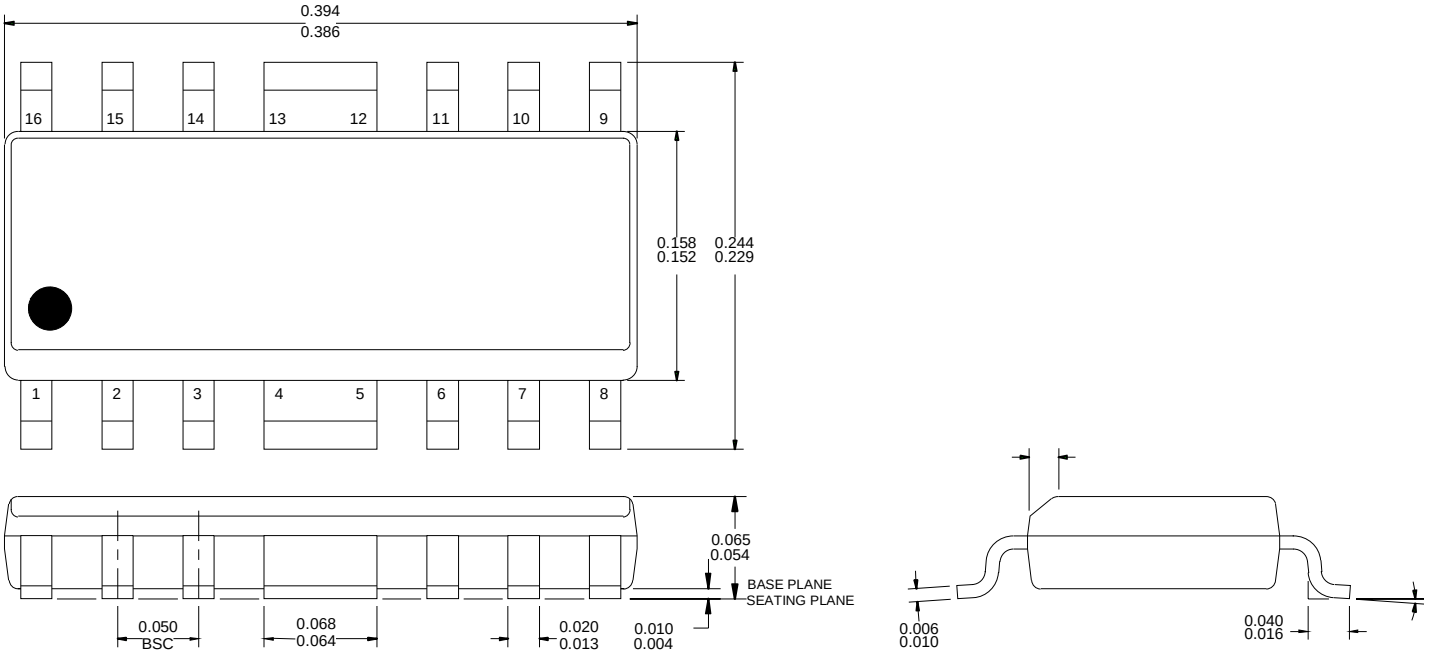
**ELECTRICAL SPECIFICATIONS**

(Packaged Unit, $T_A$ = 25°C, $V_{DDIF}$/V, $V_{DDLO}$ =+ 5V, RF = 50 to 860 MHz, IF = 1170 MHz)

| PARAMETER | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|
| Conversion Gain[1] | 5.0 | 8.0 | - | dB |
| Gain Flatness[1] | - | 1.0 | - | dB |
| SSB Noise Figure[1] | - | 6.5 | 8.0 | dB |
| CSO[2] | - | -60 | -57 | dBc |
| CTB[2] | - | -60 | -57 | dBc |
| Cross Modulation[3] | - | -62 | -60 | dBc |
| 2-Tone 2nd Order Input IP[4] | - | 40 | - | dBm |
| 2-Tone 3rd Order Input IP[4] | - | 18 | - | dBm |
| LO Phase Noise[5] | - | -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[1] | 1.0 | - | 22 | V |
| Shutdown Voltage(Pin 3) | - | -2 | - | V |
| $V_{DDIF}$ | 4.75 | 5.0 | 5.25 | V |
| $V_{DDLO}$ | 4.75 | 5.0 | 5.25 | V |
| $I_{DDIF}$ | | 58 | 80 | mA |
| $I_{DDLO}$ | | 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**





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