



**THE DATASHEET OF  
SI2144-A20-GM**



### Description

The Si2144 is the industry's most advanced digital Set-Top Box (STB) tuner supporting all worldwide cable and terrestrial TV standards for digital TV reception. Like the previous generations of Silicon Labs' digital TV tuners, the Si2144 maintains very high linearity and low phase noise to deliver superior picture quality compared to competing silicon tuners.

Available in an industry-leading 3x3 mm QFN package, the Si2144 delivers the lowest-cost, most design-friendly and area-efficient digital STB solution available today. A fully-integrated RF front-end eliminates the need for an external balun, LNAs, SAW filters, and inductive power supply filtering. Also included is a fully-integrated loop-through function with a zero-power mode switch (ZPS) for additional board area and BOM savings. An on-chip 1.8 V LDO enables single-supply operation, while a dual-supply option offers additional system flexibility. The Si2144's excellent immunity to LTE interference and harmonic rejection mixer with outstanding immunity to Wi-Fi interference eliminate the need for external filtering.

For advanced digital broadcast standards with high-order constellations, such as DVB-T2 and DVB-C2, the Si2144's superior integrated phase noise delivers industry-leading reception performance.

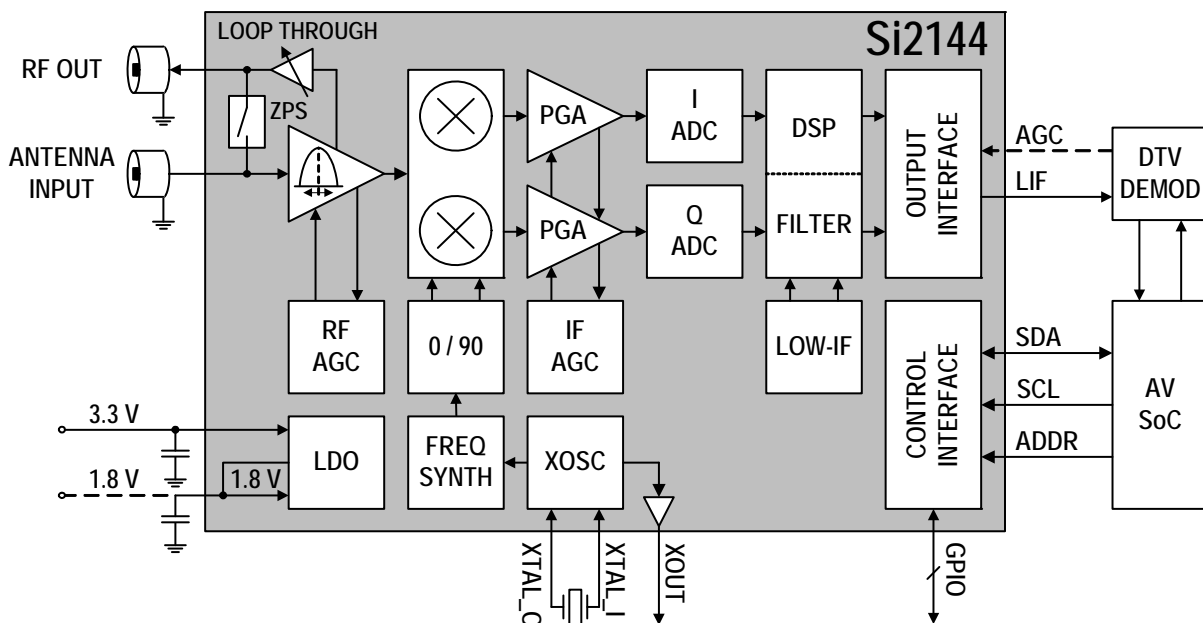
The Si2144 delivers a higher number of received stations compared to other silicon tuners. Incorporating worldwide field experience from prior generations of digital tuners in mass production, the Si2144 delivers the highest tolerance to real-world reception conditions.

### Features

- Worldwide digital STB tuner
  - ATSC/QAM, DVB-T2/T/C2/C, ISDB-T/C, DTMB
  - 1.7 MHz, 6 MHz, 7 MHz, 8 MHz, and 10 MHz channel bandwidths
- Conforms to NorDig, DTG, and ARIB
- Lowest BOM for a silicon digital Set Top Box tuner
  - No balun, SAW filters, or wire-wound inductors
  - Integrated loop-through with zero-power mode
  - Integrated LNAs and complete tracking filters
- Best-in-class real-world reception
  - Industry-leading phase noise performance
  - High immunity to Wi-Fi and LTE interference
- Low power consumption
  - 3.3 V and 1.8 V power supplies
  - Integrated 1.8 V LDO for 3.3 V single-supply operation
- Single Low-IF (LIF) output to SoC and/or demodulator
- Standard CMOS process technology
- Smallest footprint for a silicon digital TV tuner
  - 3x3 mm, RoHS-compliant 24-pin QFN

### Applications

- Digital tuner modules
- Digital cable and terrestrial STB
- Digital PVR, DVD and Blu-Ray disc recorder



### Selected Electrical Specifications

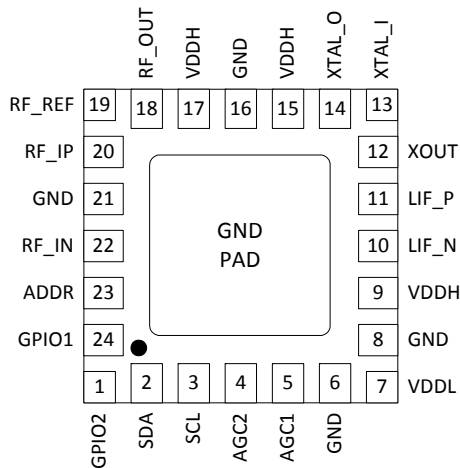
( $V_{DDH} = 3.3\text{ V}$ ,  $V_{DDL} = 1.8\text{ V}$ ,  $T_A = 25\text{ }^\circ\text{C}$ )

| Parameter  | Test Condition                     | Typ                          | Unit                  |
|--|------------------------------------|------------------------------|-----------------------|
| Supply voltage   |                                    | 1.8 and 3.3, or only 3.3     | V                     |
| Total Power Consumption  | External 1.8 V supply, LT disabled | 486                          | mW                    |
| RF Input Frequency Range   |                                    | 42 to 870                    | MHz                   |
| NF, cable mode   | VHF-L1 (42–106 MHz)                | 4.8                          | dB                    |
|  | VHF-L2 (107–247 MHz)               | 2.8                          | dB                    |
|  | VHF-H (248–470 MHz)                | 3.5                          | dB                    |
|  | UHF (471–870 MHz)                  | 4.8                          | dB                    |
| Input Return Loss*   | Cable mode                         | 8                            | dB                    |
| Composite Triple Beat  |                                    | -56                          | dBc                   |
| Composite Second Order   |                                    | -68                          | dBc                   |
| LO Phase Noise at 860 MHz  | 1 kHz   10 kHz   100 kHz   1 MHz   | -100   -100   -105   -132    | dBc/Hz                |
| LO Integrated Phase Noise at 860 MHz   | DSB: 125 Hz to 4 MHz               | 0.25<br>(-47)                | $^\circ$ rms<br>(dBc) |
| LIF Output Center Frequency  | Channel BW = 6 MHz   7 MHz   8 MHz | 4 to 7   4.5 to 6.5   5 to 6 | MHz                   |
| LIF Differential Output Voltage  | Programmable                       | 0.5 to 2.0                   | $V_{ppd}$             |
| <b>Loop-Through Output (China DVB-C Mode)</b>  |                                    |                              |                       |
| RF Frequency Range (LT only)   |                                    | 42 to 870                    | MHz                   |
| LT Output Return Loss (Active)   |                                    | 8                            | dB                    |
| LT Noise Figure (Active)   | Max gain                           | 7.1                          | dB                    |
| LT Gain  | Active mode                        | 2.9                          | dB                    |
|  | Zero-power mode                    | -2.2                         | dB                    |
| <b>*Note:</b> Includes all connector, PCB and front-end circuit losses at the F-connector input of the Si2144 EVB. |                                    |                              |                       |

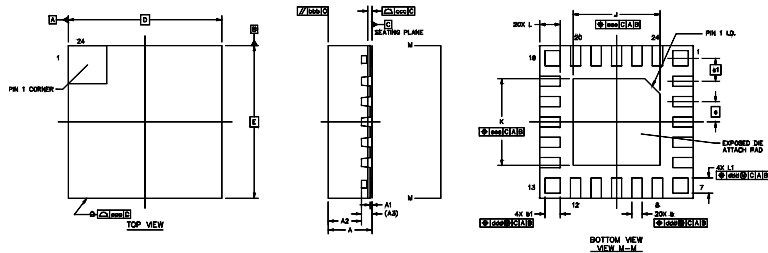
### Selection Guide

| Part # | Description   |
|--------|---|
| Si2144 | Worldwide digital Set Top Box tuner for ATSC/QAM, DVB-T2/T/C2/C, ISDB-T/C, DTMB |

### Pin Assignments





### 3x3 mm QFN-24 Package Information



| Dimension | Min      | Nom  | Max  | Unit |
|-----------|----------|------|------|------|
| A         | 0.80     | 0.85 | 0.90 | mm   |
| D, E      | 3.00 BSC |      |      | mm   |
| e         | 0.40 BSC |      |      | mm   |
| e1        | 0.45 BSC |      |      | mm   |
| J, K      | 1.60     | 1.70 | 1.80 | mm   |

## Looking for pricing, stock, or lifecycle information?

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