

L64733/34 Tuner-Receiver Chip Set

Integra® 2000 Solution for Set-Top Box Manufacturers

Overview

The L64733/34 chip set, a component of the Integra set-top box platform, is a next-generation tuner and channel receiver that provides a highly integrated, high-performance solution for digital satellite broadcast TV. The chip set provides essential tuning and demodulation functions for the set-top platform, enabling a spectrum of applications, ranging from receive-only digital video broadcast to high-speed Internet access, IP telephony, Video-on-Demand and wireless communications. It enables manufacturers to compete in the marketplace by cost-effectively leveraging new digital forms of information and entertainment in the set-top box platform



The L64733/34 supports a wide range of worldwide DBS applications.

Motherboard or Module Implementation

Combining LSI Logic's market-proven channel technology with an advanced tuner IC in a small, compact design, the chip forms a complete 'L band to bits' system, eliminating the need for tuner cans or additional synthesizer chips. As a result, the two-chip solution can be implemented directly on the motherboard or on a module smaller than the size of a credit card. Manufacturers can develop cost-effective solutions for add-on PC cards or multiple digital TV front-ends.



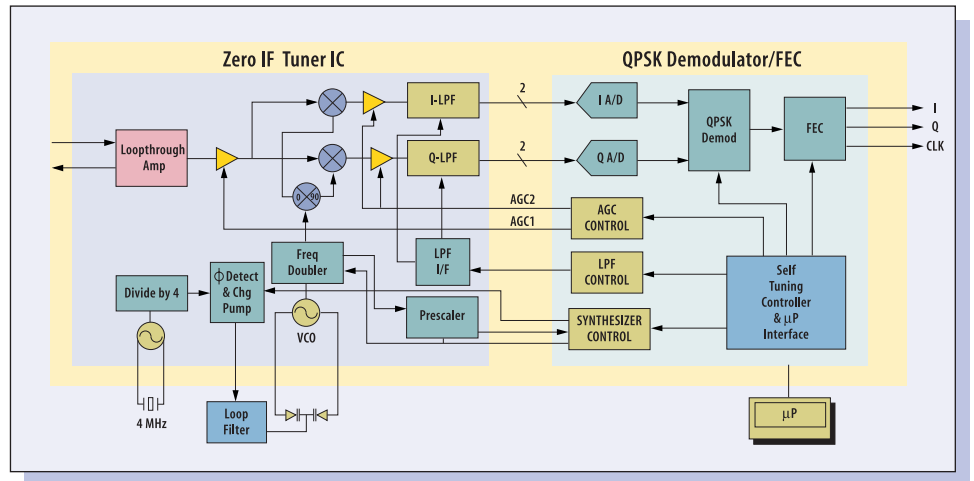
LSI Logic's Two-Chip QPSK Tuner/Demodulator

The L64733/34 chip set packs the functionality of multiple components, including the synthesizer, into two compact, highly integrated devices. The solution ensures maximum flexibility, reliability and performance, while reducing costs and delivering world standards compliance.

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Features

- DVB-S and DSS compliant
- 1-45 MBaud solution
- Handles -20 dbm to -70 dbm input range
- Two-chip complete receiver function reduces component count
- Internal baseband variable filters replace discrete-fixed filters
- Microcontroller enables fast acquisition and false-lock detection
- LSI Logic also offers a worldwide support organization, with offices located throughout the world and backed by corporate product-line and design engineers, to ensure customer success with the company's set-top box products



Tuner IC/QPSK Demod Block Diagram

Design and Implementation Flexibility

Designed for maximum integration, flexibility and reliability, the L64733/34 can be implemented as a standalone direct conversion satellite demodulation solution for set-top boxes. Or the chip set can be combined with LSI Logic's SC2000, the other component of the Integra 2000 platform, for a complete three-chip satellite set-top box solution.

Technical Description

The two chips contain all the functions necessary for satellite QPSK demodulation. The chip set consists of the L64733 zero IF tuner IC, which performs the RF down conversion, and the L64734, which is the QPSK demodulator. The zero IF tuner uses two AGC controls, one in the RF amplifier, the other in the baseband amplifier. The entire range of DBS inputs is covered by this control.

The synthesizer function is split between the two devices, with the high-frequency VCO and prescaler residing on the tuner IC. The QPSK chip contains the remaining frequency dividers and tuning control circuitry. A proprietary frequency doubler in the tuner IC enables use of a lower-frequency tank circuit, simplifying board design. Accurate quadrature demodulation is performed, and the baseband I and Q signals are amplified and filtered by adjustable 7-pole Butterworth filters. Automatic DC offset and phase error adjustment are performed by the Tuner IC.

The L64734 generates the control signals for the L64733 synthesizer using an on-chip microcontroller to manage the tuning function along with other acquisition and tracking functions. The L64734 also controls the low-pass baseband filters and generates the control voltages for automatic gain control on the L64733.

The chip set delivers key technical advantages over previous or three-chip set implementations:

- Offers a proprietary frequency doubler, used in the synthesizer, that minimizes board layout effort
- Eliminates external IF or baseband filters for lower parts count and higher reliability
- Operates from 1-45 Mbaud for worldwide DBS capability

Complete Solution for Fast Time-to-Market

To accelerate development of set-top box solutions, the L64733/34 is available with a Developer's Kit, allowing manufacturers to select the option best suited to their target market and application requirements. The Kit provides the hardware and software components to shorten development cycles and to ensure fast time-to-market.



The L64733/34 Evaluation Platform provides full development capabilities.

Benefits

- Offers international standards compliance, enabling manufacturers to design one product for multiple markets and applications
- Supports a range of applications, from one-way digital broadcast delivery to higher functionality applications, providing a migration path to future capabilities and applications
- Offers multiple evaluation platforms for system and software evaluation, enabling manufacturers to develop fast time-to-market solutions

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Complete Solution for Fast Time-to-Market (continued)

The Developer's Kit consists of a complete evaluation board with a PC interface and MPEG-2 transport output. Software to enable system testing and code optimization is

included, along with a manual which provides test and evaluation information and a PC board layout. Complete microcode for the L64734's microcontroller is included, and developers have the option of customizing the microcode for their applications.

Components of LSI Logic L64733/34 Developer's Kit

Evaluation board with PC interface and MPEG-2 transport output
Complete documentation
Software, including microcode
Board layout
Schematics
Gerber Files
Bill of Materials

Direct Conversion Satellite Developer's Kit from NDS

NDS, a leading international expert in MPEG-2 satellite systems and a system-design consultant to LSI Logic on the L64733/34 chip set development, has created a Developer's Kit targeted to set-top box and PC card manufacturers. It allows designers to implement a high-performance QPSK demodulation NIM in a small credit card-sized module.

LSI Logic Integra Set-top Development Platform

For designers developing a set-top box solution using the the L64733/34 chip set, LSI Logic also offers the Integra Set-top Development Platform. It provides the complete development environment, including complementary devices, such as the single-chip SC2000 Source Decoder. It permits designers to implement complete set-top box solutions, ranging from graphics-rich satellite broadcast receiver boxes to advanced entertainment systems supporting web browsing, video gaming or high-speed Internet access.

As an Integra component, the L64733/34 features all the advantages of this next-generation platform:

- Evolutionary product strategy, ensuring a seamless and cost-effective migration path to the future
- Software compatibility with legacy and new chip sets
- Support for open, international industry standards

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