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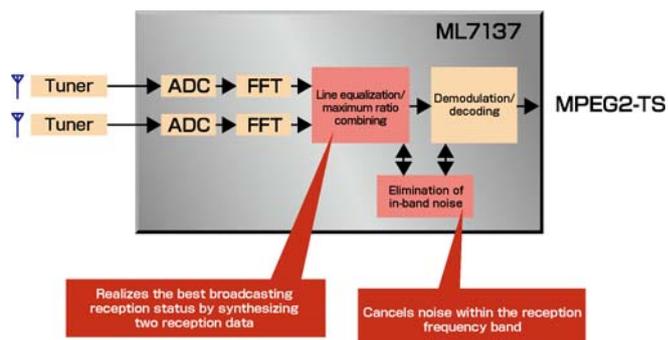
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OKI Semiconductor starts high volume production of a 2 diversity reception compliant LSI “ML7137” for digital terrestrial broadcasting
- Realization of high-sensitivity, high-quality picture and low power consumption-

OKI Semiconductor has developed an OFDM (*3) demodulation/error correction LSI “ML7137” for full segment/one segment (*2) reception of digital terrestrial broadcasting based on ISDB-T standard, compliant with 2 diversity reception (*1), a method optimum for in-car/portable digital broadcasting receivers. This LSI is compliant with ISDB-T standard for digital terrestrial broadcasting, where OFDM demodulation and decoding circuits for 2 diversity reception are integrated on one chip, with an in-band noise elimination function that serves not only the purpose of improving outdoor reception performance, but also of facilitating countermeasures against spurious symptoms generated when developing an assembled product. Furthermore, we have realized this degree of mobile reception performance with lowest power consumption in the industry, in a small package. Sample shipment of this product is already underway, and product launch is scheduled to take place in December 2011, starting from 100,000 units/month.



Recently, in addition to home TV sets, there has been an increase in the production of in-car systems such as car navigation systems and mobile devices such as mobile phones that support digital terrestrial broadcasting, since more and more people are watching TV not only at home, but also while on the move. As these in-car systems and mobile devices receive broadcasting while moving, it becomes quite difficult to maintain steady reception due to the fluctuating propagation environment. Therefore, diversity reception system has been adopted for receiving full-segment broadcasting while on the move, where reception would be enhanced through the use of multiple antennas, leading to better reception. As for 4 diversity reception, although it had been adopted for in-car systems, it was

hardly possible to apply it to mobile devices such as PND (portable navigation device) or portable TV, due to its high power consumption and difficulty in downsizing the device considering its heat dissipation design.

Focusing on such situations, OKI Semiconductor has developed an OFDM demodulation and error correction LSI for digital terrestrial broadcasting "ML7137," a 2 diversity reception system with lower power consumption and smaller size. Its power consumption is 130mW, lowest in the industry, and by adopting an 8mm x 8mm TFBGA package, we have succeeded in both decreasing power consumption and downsizing. Also, in order to help deal with spurious symptoms which become a problem when developing a product, we have included a function for eliminating in-band spurious, aiming at the improvement of the development environment.

OKI Semiconductor will further work on the development of a 4 diversity demodulation/decoding LSI in order to achieve high-sensitivity, and will keep providing high-quality in-car TV viewing systems with low power consumption. We will also work to enable reception of digital terrestrial broadcasting from overseas.

[Features]

High sensitivity

This LSI employs signal processing method suitable for mobile reception, by adopting diversity reception system where signals are received by two antennas, and are synthesized effectively. As a result, we became able to expand the reception area and improve mobile reception performance.

Low power consumption

We achieved power consumption of 130mW when performing 2 diversity reception, the lowest in the industry. This condition of low power consumption can be maintained without being affected by changes in incoming signal strength. As a result, environmental friendliness of the product will be enhanced, facilitating heat dissipation measures, a necessity for realizing downsizing of a product, at the same time.

Addition of in-band spurious elimination function

Due to the function added in order to cancel spurious generated by the substrate or nearby parts and noise produced in the propagation environment, it has become easier to counter spurious symptoms that had been an obstacle in developing an assembled product.

Small package

By adopting an 8mm x 8mm TFBGA package, this LSI contributes to reducing mounting space.

[Fields of application]

- Car navigation system
- Portable navigation device (PND)
- Car tuner box
- In-car TV
- Portable TV

[Sales plan]

- Product name : ML7137

- Sample shipment : Currently being supplied
- Sample price : 2000 yen excluding tax
- Product launch : December 2011
- Evaluation board shipment : Currently being supplied

[Overview/features]

- Compliant with full segment/one segment reception based on ARIB(*4) STD-B31 standard
- Compliant with 2 diversity full segment/one segment reception
- OFDM demodulation/decoding function
 - 64QAM, 16QAM, QPSK demodulation
 - FEC de-interleaving, error correction
- External interface
 - Low-IF signal reception (built-in A/D converter)
 - AGC control output (analog output through D/A converter)
 - I2C-bus slave control for host controller
 - I2C-bus connection function to the tuner
 - TS serial output
 - GPIO/PWM output (individually selectable)
 - The main clock is compatible with 32MHz oscillation input from external source or 32MHz crystal oscillator input
 - Interrupt signal output
- In-band noise elimination function
- Power consumption
 - When receiving 2 diversity full segment broadcasting: 130mW
- Power-supply voltage

Analog	2.7V to 3.47V	(Typ. 2.85V)
Digital I/O	1.5V to 3.47V	(Typ. 2.5V)
Core voltage	1.1V to 1.3V	(Typ. 1.2V)
- Operating temperature range -40°C to +85°C
- Package TFBGA 84pin (8mm x 8mm Pitch 0.65mm)
Lead free RoHS compliant

[Glossary]

*1: Diversity reception

System that uses multiple antennas to receive a single broadcasting. There are various methods to diversity reception system such as switching method and synthesis method; synthesis method is employed for this product, since it maximizes the degree of improvement in reception quality.

*2: Full segment/one segment based on ISDB-T standard

ISDB-T standard is a digital terrestrial broadcasting system employed in countries such as Japan and those in Central and South America.

Each channel is divided into 13 segments according to this standard, various services being provided by grouping multiple segments. "Full segment" refers to the state where all 13 segments are grouped together; "One segment" refers to one of the segments often serving for mobile terminal uses, allocated for broadcasting called "1seg" in Japan.

*3: OFDM (Orthogonal Frequency-Division Multiplexing)

This is one of the digital modulation methods. It is widely used as it multiplexes the frequencies

utilizing their orthogonality, its frequency usage efficiency being extraordinarily high without being much affected by noises in the propagation channel.

*4: ARIB

The Association of Radio Industries and Businesses. Its activities include setting of standards for the purpose of practical realization and popularization of radio utilization in the fields of communication and broadcasting in Japan.

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