Digital Broadcast Demodulator LSI Conforms to the ISDB-T and ISDB-S Standards

CXD2807GG
CXD2808GG

Sony is now adding two new demodulator LSI products to its digital broadcast demodulator LSI lineup.
These are the CXD2808GG, which supports the ISDB-T terrestrial digital broadcast standard and the CXD2807GG, which in addition to terrestrial digital broadcast also supports the ISDB-S satellite digital broadcast standard.
Due to the adoption of a new fabrication process, these devices do not require any external memory and achieve both lower power and reduced mounting areas in end products.

- **No external memory required**
- **Low power**
  CXD2807GG: 600 mW*1
  CXD2808GG: 200 mW
- **Built-in high-speed acquisition synchronization circuit (fast channel switching)**
- **Excellent multipath demodulation characteristics**

Terrestrial Digital Broadcast (ISDB-T) Demodulator Block (CXD2807GG and CXD2808GG)

These devices include OFDM demodulator, error correction, and TMCC decoding functions.
Although a large amount of memory is required for the demodulator, these devices are fabricated in an embedded-DRAM CMOS process and integrate a high-capacity memory block on the same chip. This achieves both a reduction in circuit board mounting area and lower power. Furthermore, by reducing the core operating voltage to 1.2 V, the CXD2808GG achieves the low power consumption of about 200 mW.

V O I C E

Since the A/D converter accuracy is directly linked to demodulator performance, we put a lot of effort into methods for providing clock signals to the A/D converter. With this product as the turning point, our goals are now to achieve even lower power consumption and to expand the product lineup.

The CXD2807GG and CXD2808GG provide the following features.

- Built-in OFDM demodulator, error correction, and TMCC decoding functions
- Both excellent static demodulation characteristics and excellent multipath demodulation characteristics even for echoes outside the guard interval.
- Built-in same channel/adjacent channel interference rejection function
- Built-in A/D converter that supports both single and differential inputs
- ISDB-T modes: Supports mode 2 and mode 3
- Guard interval lengths: 1/4, 1/8, and 1/16 (supported in mode 3)

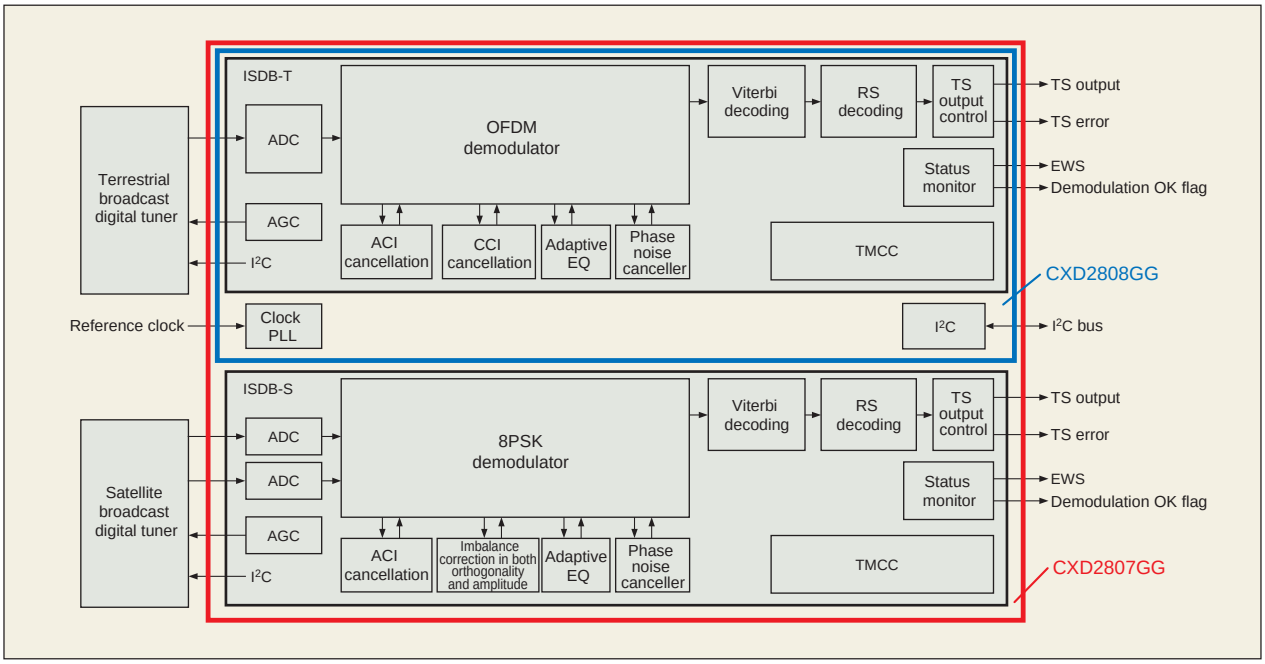
Satellite Digital Broadcast (ISDB-S) Demodulator Block (CXD2807GG)

The CXD2807GG additionally provides ISDB-S demodulator functions and is a single-chip multi-format demodulator LSI that conforms to the ISDB-T and ISDB-S standards.
This LSI can respond to a variety of needs for tuners with terrestrial and satellite broadcast capabilities.
The CXD2807GG provides the following features.

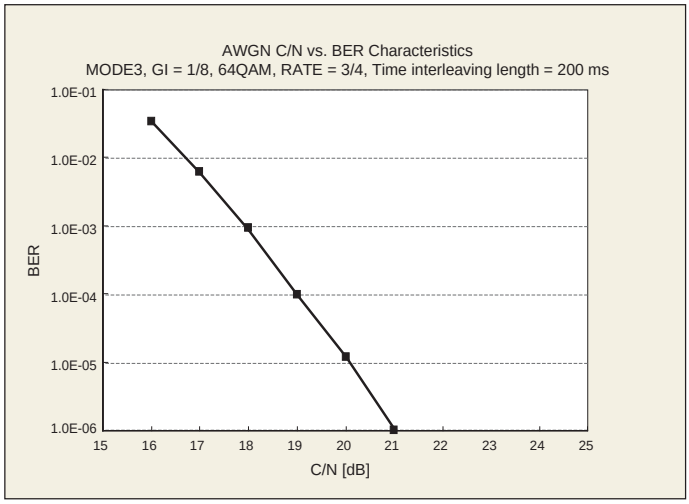
- Built-in 8PSK demodulator, error correction, and TMCC decoding functions
- Excellent phase noise cancellation and multipath equalization performance
- Wide frequency acquisition range AFC circuit (±12 MHz, typical)
- Built-in adjacent channel interference rejection function
- Zero-IF input
- Built-in A/D converter that supports both single and differential inputs
- Includes a circuit that corrects imbalances in both IQ orthogonality and amplitude.

Expansion of Sony's Digital Broadcast Demodulator LSI Lineup

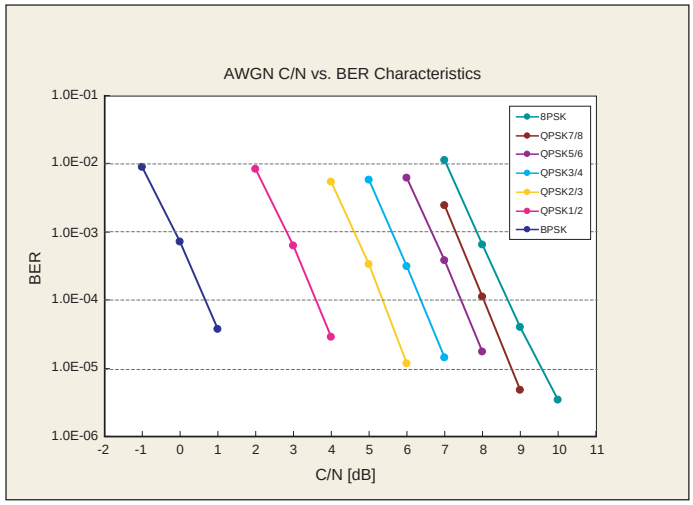
Sony has previously developed an MOPLL IC (CXA3725ER) for terrestrial digital and analog broadcast reception tuners and a Zero-IF IC (CXA3685ER) for broadcast and communication satellite reception tuners. (See CX-NEWS, Vol. 44.)
A variety of digital broadcast tuners can be implemented by combining these ICs.



■ **Figure 1 Block Diagram**



■ **Figure 2 ISDB-T (Terrestrial Digital) Characteristics**



■ **Figure 3 ISDB-S (Satellite Digital) Characteristics**

■ Table 1 Main Specifications

Product	CXD2807GG	CXD2808GG
Supported broadcast formats	ISDB-T + ISDB-S	ISDB-T
Supply voltage	1.2 V, 2.5 V, 3.3 V	1.2 V, 2.5 V, 3.3 V
Power consumption	600 mW*1	200 mW
Operating temperature range	–20 to +85˚C	–20 to +85˚C
Package	13 mm × 13 mm 225-pin BGA	9 mm × 9 mm 100-pin BGA

*1: When terrestrial and satellite digital broadcasts are received at the same time.