PRODUCT INFORMATION

Vol.97

MP3 Decoder IC Developed

Lowest power consumption for a device of this class

LC82310/82310G

Overview

Due to the explosive growth of the internet, new net-related businesses are being started at a phenomenal rate. Of these new businesses, businesses concerned with the distribution and sale of music content are seen as one of the types likely to succeed. These businesses depend on audio compression technology, and MP3* is the first audio compression technology targeting music distribution to gain wide acceptance.

Sanyo has now applied the low-power IC know-how gained through their extensive experience developing low-voltage logic and other technologies for MD ICs to the development of an MP3 decoder. Sanyo is now announcing the LC82310 MP3 decoder IC, a device that achieves the lowest power of any product of its type.

Unlike the high-speed processing used by the DSP cores in our competitors' MP3 decoder products, the LC82310 uses a unique Sanyo-developed hard-wired decoder circuit to allow the internal operating frequency to be reduced to 4 MHz. This allows the LC82310 to achieve the low power consumption of 25 mW, less than one-half that of competing products.

The low power featured by the LC82310 will allow portable MP3 audio equipment, whose popularity has just begun to grow, to achieve significantly longer battery life. It will also allow MP3 functionality to be added easily to a wide range of portable equipment, such as cellular telephones and PDAs, in which the addition of MP3 was previously thought to be unreasonable due to battery life limitations. One example of this is the planned adoption of this chip in the "Keitai de Music" music distribution system used by PHS and cellular telephones in Japan.

While this newly-developed product is fabricated in a 0.35 μm CMOS process, Sanyo expects to be able to reduce the power consumption even further by shifting production to processes with a smaller feature size.

*: MP3 is an abbreviation that refers to the MPEG 1 audio standard (ISO/IEC 11172-3) layer 3, which is a digital audio data compression technology. MP3 can compress CD quality audio data (in which about one hour of music (a single CD) requires 600 MB) by a factor of 10. This means that a 64 MB flash memory media can hold one CD's worth of audio data.

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Features

- Ultralow power consumption (25 mW), a level that was previously seen as extremely difficult for ICs that include DSP functionality to achieve.
- Supports all bit rates, including variable bit rate.
- Miniature package: FLGA-64 (LC82310G)
- Supports a wide range of sampling rates
  - — MPEG1 (32, 44.1, and 48 kHz)
  - — MPEG2 (16, 22.05, and 24 kHz)

Specifications and Functions

- Built-in $\Delta\sum$ D/A converter
- Allows the use of an external D/A converter

  The format of the PCM output to the D/A converter can be selected.
- Digital volume and tone control circuits
- Digital bass boost and audio leakage prevention circuits (These are only available when the built-in D/A converter is used.)
- Soft muting on CRC error
- Ancillary data read function
- Sleep mode
- External oscillator frequency: 16.9344 MHz (44.1 kHz $\times$ 384)

  The required clock frequencies for sampling rates other than 44.1 kHz are generated internally by a PLL circuit.
- Supply voltage
  - — Internal power supply: 1.7 V (typical) (Can support a minimum supply voltage as low as 1.5 V.)
  - — Analog power supply: 2.4 V (typical)
  - — I/O pin power supply: 2.2 to 3.6 V
  - — Xtal pin power supply: 2.4 V (typical)
  - — PLL pin power supply: 2.4 V (typical)
  - — Supports both two-power supply (1.7 and 2.4 V) and three-power supply (1.7, 2.4, and 3.3 V) structures.
- Packages: SQFP-64 and FLGA-64

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Sample Availability

The LC82310 and LC82310G will be available in sample quantities in May 2000 and in production quantities in September 2000.

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