

Portable CD Player Signal-Processing IC with On-Chip Anti-Shock Memory Controller

CXD3029R

Sony develops optimal ICs for portable CD players, the product that forms the core of the CD player business. At the same time as achieving an actual results in market, Sony has continued to contribute to the evolution of the CD player from a functional standpoint.

The newly-developed CXD3029R IC achieves long playback times due to its low power consumption and provides an anti-shock function that uses anti-shock memory.

Sony is committed to continuing to develop ICs for portable CD player ICs that represent further evolutionary steps in portable CD player growth.

- Implements all the digital signal processing required during playback in a single chip.
- Supports CAV playback
- Provides a wide capture range playback mode
- Supports variable pitch playback
- Flexible servo control using microcomputer software
- Built-in anti-shock memory controller
- Built-in D/A converters

The CXD3029R is a digital signal processing IC for CD players that features an on-chip anti-shock memory controller that supports either 4 or 16 Mbits of memory. The CXD3029R provides the following digital signal processing functions: digital servo signal processing (DSSP block), anti-shock memory controller, digital filters, D/A converter, and analog low-pass filters. These functions are implemented using a digital signal processor (DSP), and have the features listed below.

■ DSSP Block

- Flexible servo control using microcomputer software
- Servo error signal offset canceling function
- Servo loop auto gain control function
- EF balance and focus bias adjustment functions

- Surf jump function
- Tracking filter: 6 stages
- Focus filter: 5 stages

■ Anti-Shock Memory Controller Block

- Supports either 4 or 16 Mbits of external DRAM.
- Data linking on the time axis
- ADPCM compression (uncompressed, 4, 6, or 8 bits)

■ Digital Filters and D/A Converter Block

- Built-in digital dynamic bass boost and treble boost filters
- Independently selectable turnover frequencies
- Built-in digital dynamics (compressor) increases audio level by +5 dB in quiet passages.
- 8x-oversampling digital filters
- The post-boost digital signal can be output
- The serial data format can be switched between 16, 18, and 20-bit formats. (MSB first)
- 2048-step digital attenuation
- Soft muting
- Digital deemphasis
- High cut filter

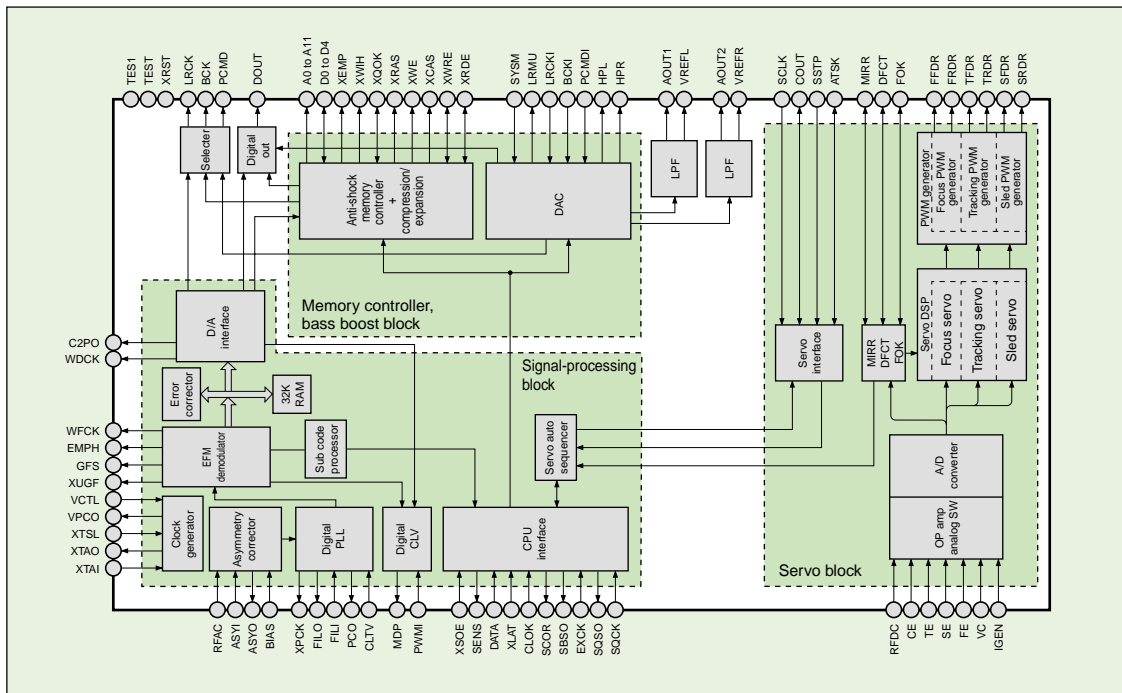
■ DSP Block

- Supports CAV playback at 0.5x to 4x speeds.
- Provides a wide capture range playback mode
- Supports variable pitch playback.
- EFM demodulation
- Powerful error correction function (C1: double, C2: quadruple)
- Built-in servo auto sequencer

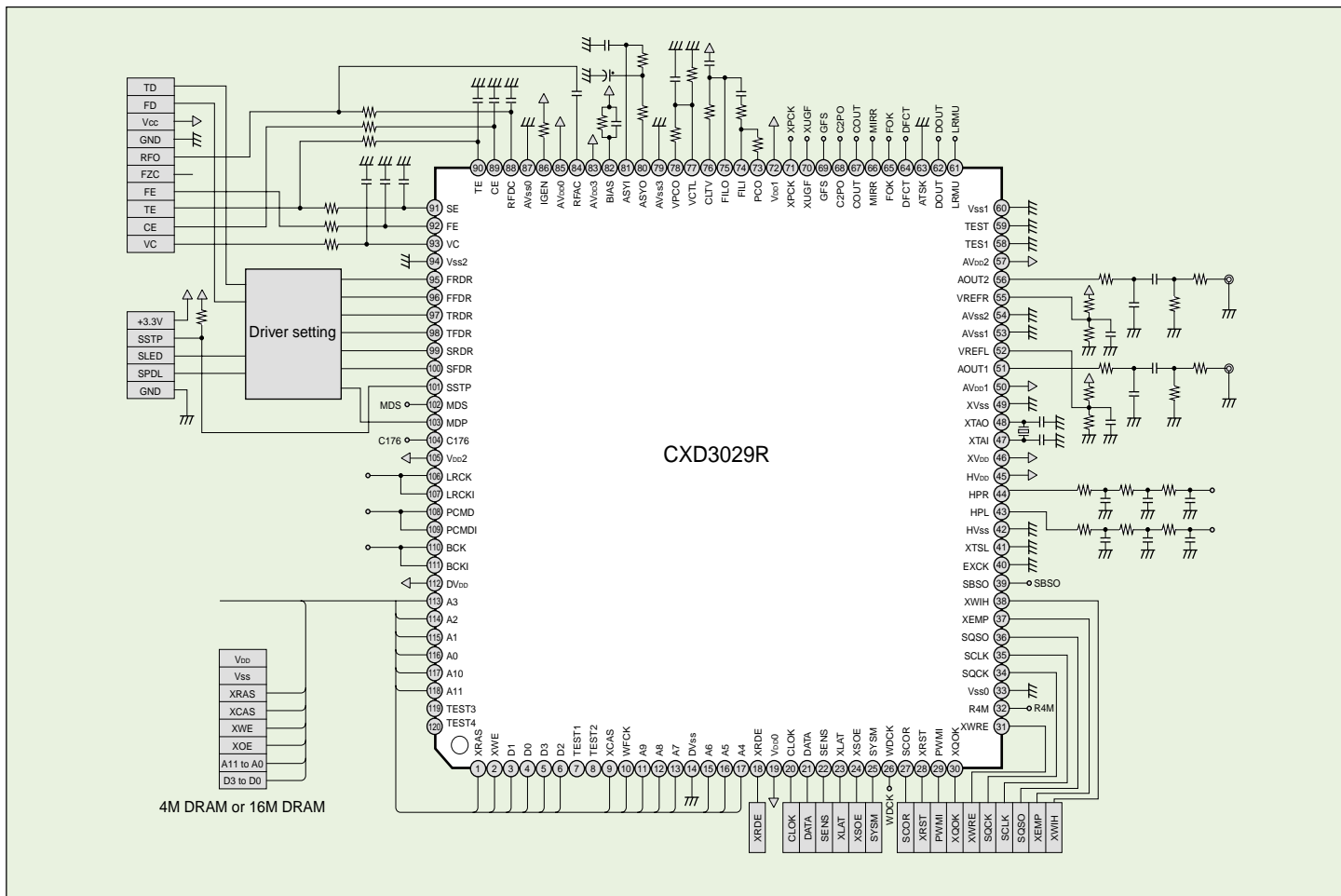
The CXD3029R provides all these functions in a single chip and is an optimal IC for minimizing PWB space, reducing power consumption, and supporting anti-shock designs, especially in portable CD player products.

V O I C E

The CXD3029R was developed as a new version of the CXD3027R. Since there are differences in the pin configuration and other items, be sure to review the data sheet and other documentation carefully. By the way, this was a difficult IC to design, and required incredible efforts. My hairline seemed to be receding even faster from the stress...



■ Figure 1 CXD3029R Block Diagram



■ Figure 2 CXD3029R Application Circuit