

PRML Read Channel

Marvell's 88C4300 read channel is optimized for mainstream desktop and mobile storage systems, where low power consumption, improved Signal-to-Noise (SNR) and support for increased areal densities are important. A new advanced Digital Signal Processing (DSP) architecture and highly efficient data encoding method combine to achieve a 1dB improvement in SNR at high user bit densities, allowing more gigabytes to be stored per disk.

The Marvell 88C4300 family is a fully integrated Partial Response, Maximum Likelyhood (PRML) read channel, applying advanced, next-generation mixed-signal analog and digital architectures to low-cost 0.25 micron CMOS device technology. The results are low power consumption and high reliability in a cost effective solution.

The 88C4300 incorporates a third selectable noise-predictive Viterbi detector target into the industry-leading 88C4200 product architecture, optimized to ensure reliable data recovery in noisy environments under high user bit densities. An enhanced, highly efficient encoder/decoder increases precious disk space utilization while improving SNR. Integrated into the 88C4300 device is a fully synchronous digital servo detector and modulator that allows for more

efficient position control encoding to reduce servo overhead. Robust timing recovery features such as separate gain, timing loop and filter settings for data and servo means highly reliable operation in all varieties of customer applications.

The Marvell Advantage

The 88C4300 is the next logical step in applying Marvell's innovations in mixed-signal DSP techniques to state-of-the-art storage subsystems. Adding to Marvell's family of integrated read channels implemented in low-cost all-CMOS design, the 88C4300 is the ideal solution for desktop and mobile disk drive applications.

As with all Marvell read channel devices, the 88C4300 is accompanied by a complete set of hardware and software tools to assist drive engineers with optimizing read channel configuration features. Marvell's worldwide field applications engineers work closely with drive-maker manufacturing teams to deliver new products quickly.

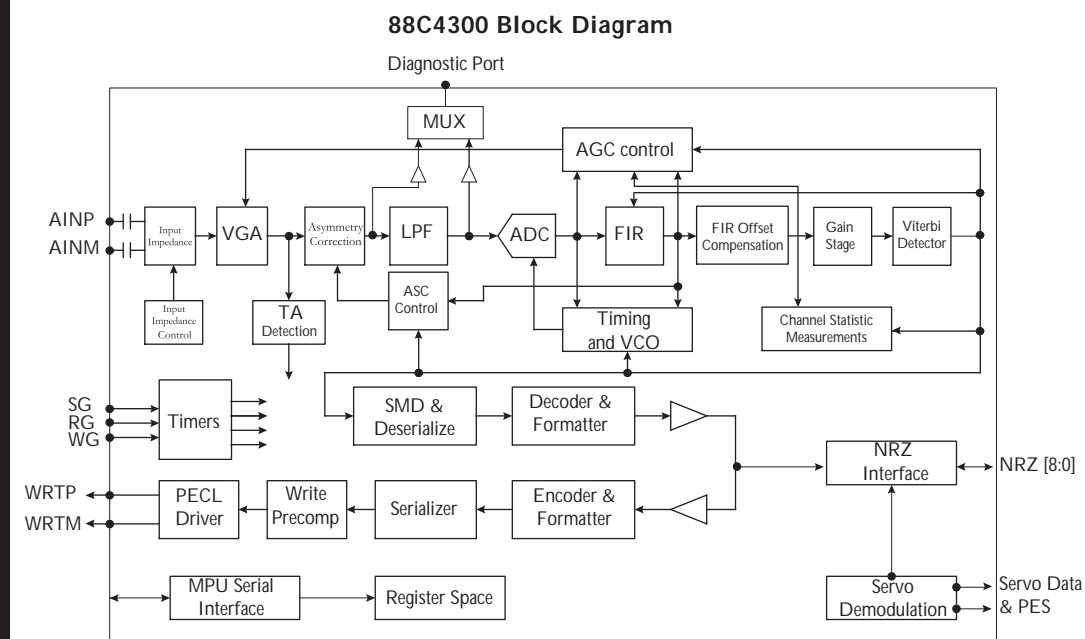
Marvell utilizes recognized world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost solutions.

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88C4300 | Disk Drive Read Channel



Features

General

- Data transfer rate:
88C4300: 100 to 500 Mbps
88C4320: 100 to 350 Mbps
- Fully pin- and register compatible with the 88C4200
- Enhanced encoder/decoder

- High-speed serial interface
- 0.25 micron CMOS technology
- 100-pin LQFP, 64-pin LQFP low power consumption package options

Power

- 3.3V supply with option of 2.5V internal regulator for digital blocks
- Register programmable power management for active, idle, and deep sleep modes

Data

- Three selectable Noise Predictive Viterbi targets
- 4-byte sync-mark detection
- Channel Statistics for equalization, error rate detection quality prediction

Servo

- Digital synchronous servo
- Up to 6-Burst demodulation output

Benefits

- Broad range of performance applications
- Drop-in replacement simplifies design and integration tasks
- Improved surface format efficiency and SNR

- Simplifies channel setup and control
- High-volume, cost effective semiconductor technology
- Flexibility for various disk drive applications.

- 3.3V only system design
- Efficient power consumption control

- Improved data detection error rates under real world noise conditions
- Robust data retrieval
- Easy channel initialization and features for S.M.A.R.T. drive compliance

- Lower servo system overhead
- For high Tracks-per-Inch applications

