

Sony's Second 8-Bit 100-MHz Band A/D Converter

Reduced Power Consumption Achieved 8-bit 120-MSPS A/D converter

CXA3246Q

CXA3256R

Since the commercial release of the CXA3026Q/AQ A/D converter at the end of 1995, Sony has been actively engaged in the development of analog RGB interface ICs for LCD products, one result of which was the release of the CXA3106Q/AQ PLL circuit last summer.

As a result, Sony now holds a commanding market share in applications for LCD monitors and projectors. Now, to respond to market needs, Sony has developed and is releasing as commercial products the CXA3246Q (48-pin QFP) and the CXA3256R (48-pin LQFP) A/D converters that achieve even low power dissipation characteristics.

- Resolution: 8 bits ± 0.5 LSB (D.L.E./I.L.E.)
- Maximum conversion rate: 120 MSPS
- Single 5-V power supply (Operates on dual power supply for ECL inputs.)
- Low analog input capacitance: 10 pF
- Low power: 340 mW
- Digital input levels: ECL, PECL, and TTL
- Digital output levels: TTL
- Supports 1:2 demultiplexed output.
- Built-in clock divider circuit (1:2 division ratio) with reset function
- Pin compatible with the CXA3026Q (CXA3246Q)
- Power saving function (CXA3256R)
- Output voltage control function (CXA3256R)
- Surface mounting packages: 48-pin QFP and LQFP packages

While many companies have released pipelined A/D converters that aim at lower power operation, pipelined A/D converters are seen as suffering not only from variations in the analog input gains and offsets in the multi-stage analog amplifiers required by that technique but also from problems with their temperature and other characteristics when compared to flash A/D converters. Sony, while retaining the flash conversion technique, has succeeded in reducing the power consumption by one half as compared with earlier types by redesigning many of the circuits and adopting new fabrication process technologies.

■ Easy of Use Retained without Change

These products inherit the functionality of the well-received CXA3026Q without change. Figure 1 shows the block diagram and table 1 compares these ICs with an earlier product. These products support TTL and PECL level clock inputs and can operate from a single power supply. By including a built-in clock divider circuit (1:2 division ratio) for the clock signal and adopting a 1:2 demultiplexed output technique, these ICs provide an output data rate at 1/2 the clock rate, and thus make design of the logic in the stages that follow the A/D converter easier. Also, since the clock divider circuit can be reset, it is easy to control the phase of the divided clock signal. Since the outputs are at TTL levels, these ICs can be directly interfaced to CMOS logic. Figure 2 shows a sample application circuit that uses demultiplexed mode, and figure 3 shows the timing chart.

■ Pin Compatible with the CXA3026Q (CXA3246Q)

Since the CXA3246Q is pin compatible with the CXA3026Q, which is widely used in LCD monitors and other applications, it can replace the earlier product with almost no design changes in most cases.

■ Increased Functionality (CXA3256R)

Two new functions have been added for increased ease of use.

Power saving function: This function not only allows the whole chip to be set to a low-power mode, but also allows one side of the circuit to be set to low power mode if only the other side is being used.

Output voltage control function: This function allows the TTL output high-level voltage to be controlled so that the CXA3256R can be used when a 3-V system CMOS circuit will be used to receive the output data.

■ Surface mounting package

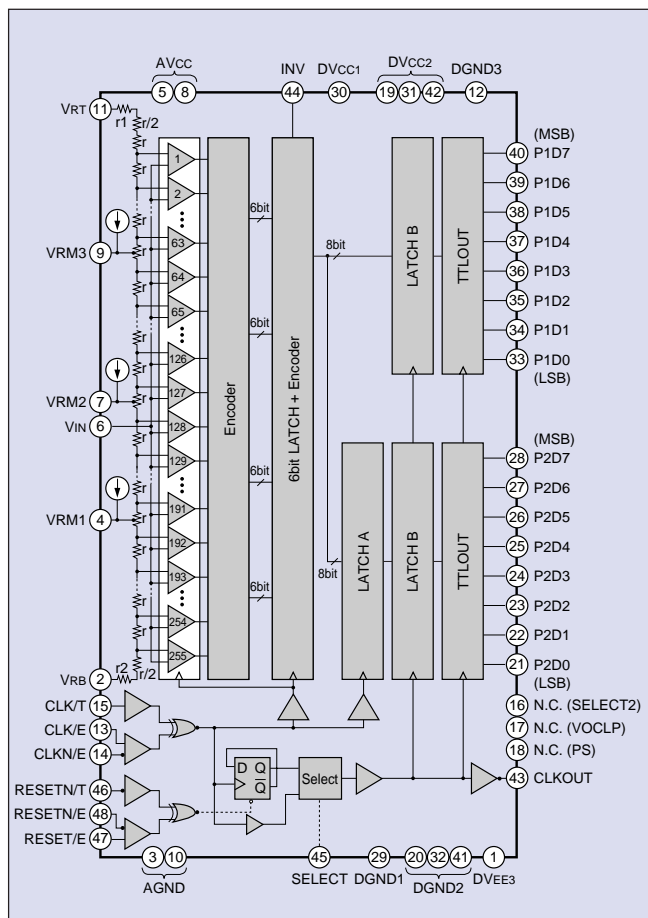
Due to the reduced circuit power consumption and the adoption of a newly designed package with a low thermal resistance, it is possible to provide these chips not only in a 48-pin QFP (CXA3246Q), but also in a 48-pin LQFP (CXA3256R), thus making these products even more convenient and easy to use in miniature consumer products.

V O I C E

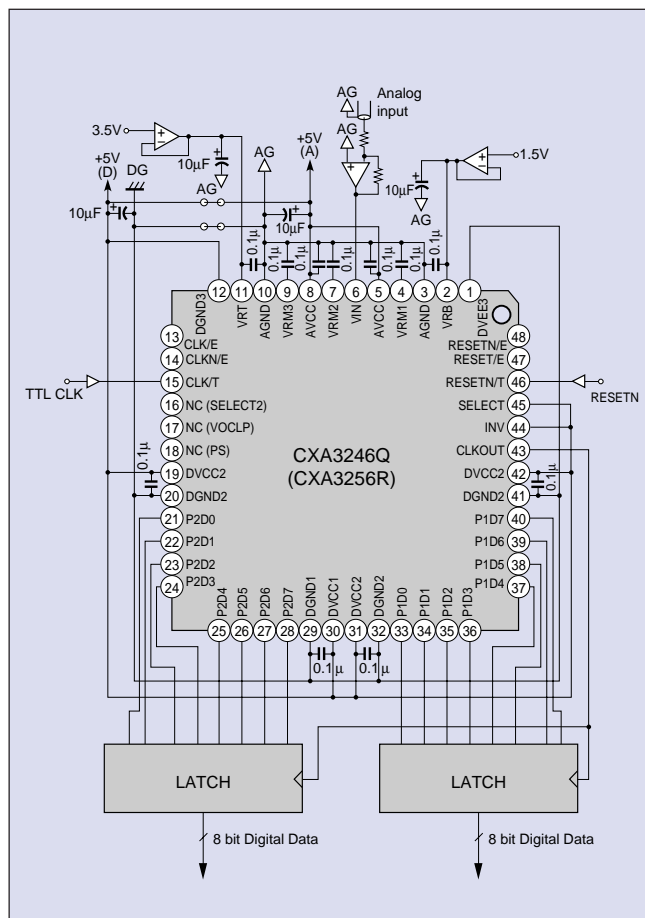
Sony adopts the flash technique as the starting point for its A/D converters. This technique is respected for its ease of use and reliability. Sony plans to continue to expand its lineup of A/D converter products to respond even further to market needs.



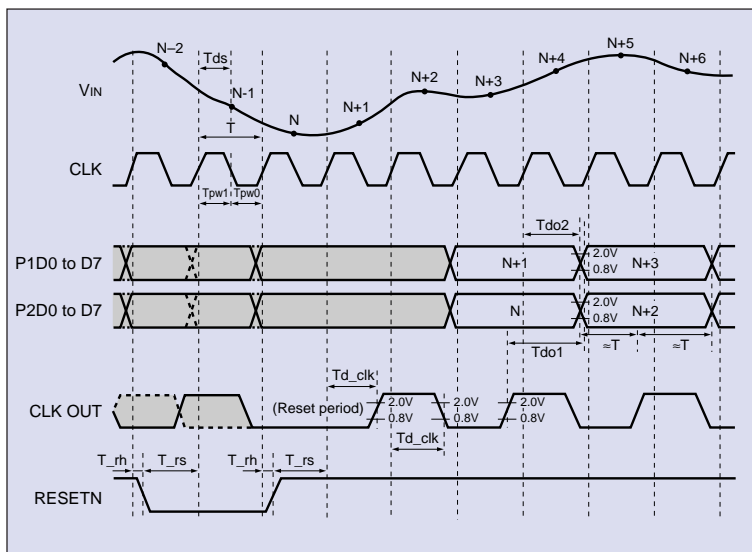
New
Products



■ Figure 1 CXA3246Q (CXA3256R) Block Diagram



■ Figure 2 Application Circuit Example Using Demultiplexed Output Mode (Single power supply operation)



■ Figure 3 Timing Chart for Demultiplexed Output Mode (SELECT-Vcc)

■ Table 1 Comparison with Earlier Products

| | CXA1396D | CXA3026Q | CXA3246Q/ CXA3256R |
|--------------------------|----------|--------------|-----------------------|
| Resolution | | 8 bits | |
| Maximum conversion rate | 125MSPS | 120MSPS | |
| Analog input range | -2 to 0V | 1.5 to 3.5V | |
| Analog input capacitance | 17pF | 21pF | → 10pF |
| Digital input levels | ECL | TTL/PECL/ECL | |
| Digital output levels | ECL | → TTL | |
| Demultiplexed output | None | Provided | |
| Error rate | 1E-9TPS | | |
| Supply voltage | -5.2V | +5V/±5V | |
| Power consumption | 870mW | 760mW | → 340mW |
| Package | 42DIP | → 48QFP | 48QFP/ 48LQFP |