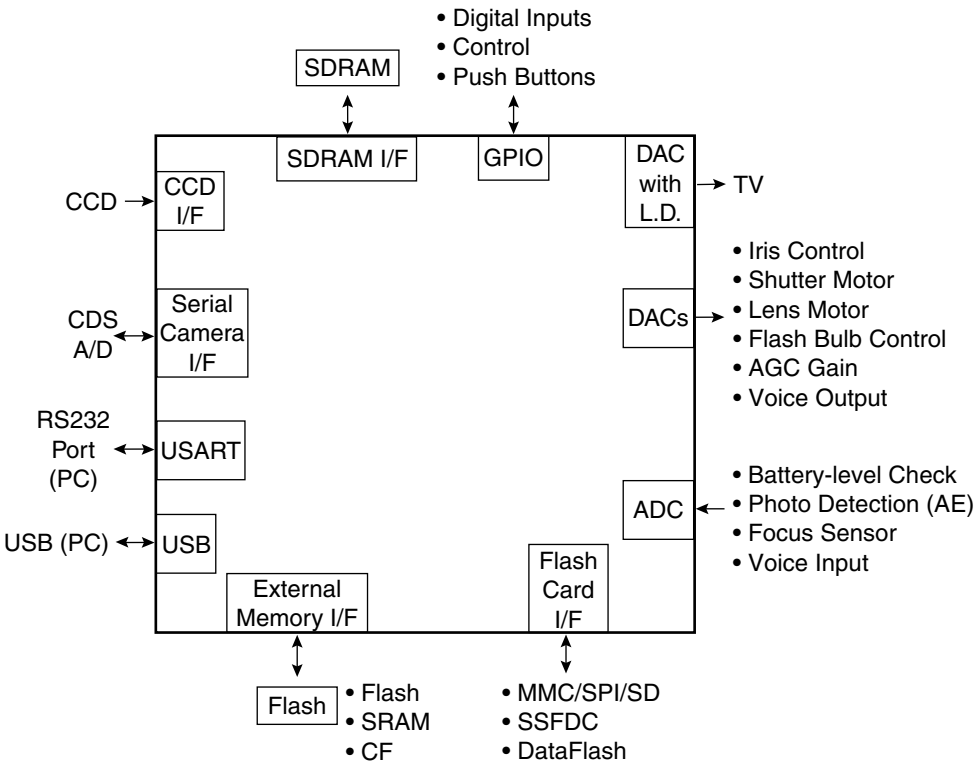
Features

- **DSP Functions for CCD/CMOS Image Processing**
- **Video Encoder Including Line Driver for NTSC/PAL TV Signal**
- **Baseline JPEG Compression/Decompression**
- **SDRAM Interface**
- **Support for all Flash Card Interfaces (Atmel DataFlash®, MMC, SD, SSFDC, CompactFlash)**
- **USB and USART Interfaces for PC Camera Applications**
- **32 Pins for General-purpose I/O**
- **Five External Interrupts, Timer Clock Input and Wakeup Pin**
- **DACs for Camera Control Functions and Audio Output**
- **ADC Channels for Monitoring Camera Analog Inputs, Audio Input and Switch Input, Like Window Comparator**
- **Serial Interface for Controlling Camera Components**
- **Hardware Up to 2M Bytes Program Space**
- **Support for RTOS**
- **All Low-level Software, Application Samples are Provided**
- **Built-in Outputs Include a CVBS Output with a Line Driver, YC16-bit Digital Output, RGB 565 Digital Output, Digital Composite Output**
- **Compatible with Various Types of Display Devices**
- **SDRAM Support from 16M Bits to 256M Bits**
- **Direct Interface to Epson LCDs**
- **280-pin FlexBGA Package**
- **1.8-volt Core and 3.3V I/O Operation**

Figure 1. Typical DSC Application Using AT76C111



High-Performance Digital Camera Processor

AT76C111

Summary

Rev. 2334AS–IMAGE–08/02

Note: This is a summary document. A complete document is available under NDA. For more information, please contact your local Atmel sales office.

Description

The AT76C111 is a highly-integrated solution for digital cameras. It combines a number of functions that are required in digital cameras.

- Image data acquisition and capturing from either CCD or CMOS imagers
- Image display
- Image processing and image storing
- Overall camera management
- Control of general-purpose I/O functions
- Data communication
- Control of user functions
- On-screen Display

It also provides a large number of interfaces that allow camera manufacturers to directly access a variety of devices that may be present in a digital camera.

- Communication with PCs
- Communication with Flash cards
- Serial communication ports for controlling other devices in the camera

The design is based on an ARM® microprocessor that controls the entire chip. A number of hardware resources, controlled by ARM, perform digital camera functions such as image DSP processing, JPEG coding/decoding, DMA access to SDRAM and Video encoding. All these computational-intensive functions are implemented in hardware which can be programmed according to user specifications, thus allowing ARM to be free for other user-defined functions.

Capabilities

- Supports up to 16 megapixel CCDs/CMOS (10 - 30 MHz CCDs)
- CCD colors are limited to the Bayer arrangements of the RGB primary colors
- Interfaces to 16 - 256-Mbit SDRAM, one or two pieces
- 30 frames/sec Video Display mode (NTSC)
- 15 frames/sec Capture mode (VGA resolution)
- Up to 1.5M bytes/sec read/write from/to Flash cards
- 2M Bytes external Flash ROM for program space
- 2M Bytes external SRAM for program/working space (optional)
- Full-speed USB interface (mass storage and image class)
- 60 - 100 mA current
- 1 - 5 mA in Standby mode
- 50 µA current in Sleep mode

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