DATA SHEET

SAA8122
Digital Still Camera

Preliminary specification
Supersedes data of
File under Integrated Circuits, ICXX

1999 sep 01

Philips
Semiconductors

PHILIPS

FEATURES

- Support a wide range of CCD (VGA,SVGA,QGA,XGA,EQGA)
- Perform an advanced RGB to YUV conversion
- Support smart measurement unit to speed up the control loop (Focus, auto white balance,...)
- Support a wide range of LCD and TV format (NTSC and PAL) with text re-insertion features
- Support an embedded JPEG encoder/decoder unit.
- MIPS PR3001 CPU, running in a frequency range from 12 to 28 MHz.
- PRISC compatible PI-bus architecture, interrupt, power management, clock and reset architectures.
- Support a dedicated video bus and SDRAM memory for picture storage
- Support for ROM, DRAM,SRAM, flash and PC Card (Compact Flash and SSFDC).
- Integrated general purpose peripherals like a USB,FIR,UART, timers, an I^2C transceiver, ADC converters, RTC and IO ports.

EXTERNAL UNTERFACES

- a dedicated interface to IEEE 1394 devices (such as Philips' PDI 1394 chip-set)
- two UART (RS-232) data ports with DMA capabilities (≤ 187.5kbit/s) including hardware flow control RxD, TxD, RTS, CTS for modem support
- 32 general purpose, bidirectional I/O interface pins, the first 8 bits may also be used as interrupt inputs
- two PWM output (8 bit resolution)

CPU relqted features

- a 32-bit PR3001 core
- 1 KB (kilo byte) data cache and 4 KB instruction cache
- a programmable low-power mode, including wake-up on interrupt
- a memory management unit (TLB: translation lookaside buffer)
- two built in 24-bit general purpose timers and one 24-bit watchdog timer in coprocessor zero two built in 24-bit general purpose timers
- a real-time clock unit (active in sleep mode)
- an on-chip 8 KBytes SRAM for storing code which needs fast execution

GENERAL DESCRIPTION

The DSC SAA8122E/C1 is a high performance, low power, single-chip MIPS based microprocessor which is dedicated to image processing and compression.

The DSC SAA8122E/C1 is a highly complex integrated microprocessor system, consisting of one 32-bits RISC CPU (PR3001), a BCU, an interrupt controller and a power management controller, a ROM/DRAM/SRAM/FLASH/PC-card memory controller, a JPEG encoder/decoder, a Progammable Pulse Generator, a specific DSP for image processing, an SDRAM memory controller, a number of standard peripheral modules (like IO ports, timers, a real-time clock, UART, USB, FIR, and an I2C transceiver) and a Test Control Block module. The DSC is based on the PRISC (Philips RISC) architecture framework.

The objective of the DSC SAA8122E/C1 is twofold. In the first place, the SAA8122E/C1 is design to propose to the customer a one chip able to perform all treatments and connections required for a wide range of Digital Still Camera. In the second place, the SAA8122E/C1 is design around a RISC CPU for which the development environment is already available and validate to speed up the software development time.

Since one of the main objectives of the SAA8122E/C1 is addressing a wide range of CCD sensors, a DSP (with advanced embedded algorithm) for camera signal processing is integrated with an high level of programmability for pulses generation.
Another objective of the SAA8122E/C1 is to reach an high rate of picture compressed according to the JPEG standard. So a JPEG codec block is also integrated in the chip

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
SAA8122E/C1	BGA316	316 pin plastic BGA package	SOT531AA1

BLOCK DIAGRAM

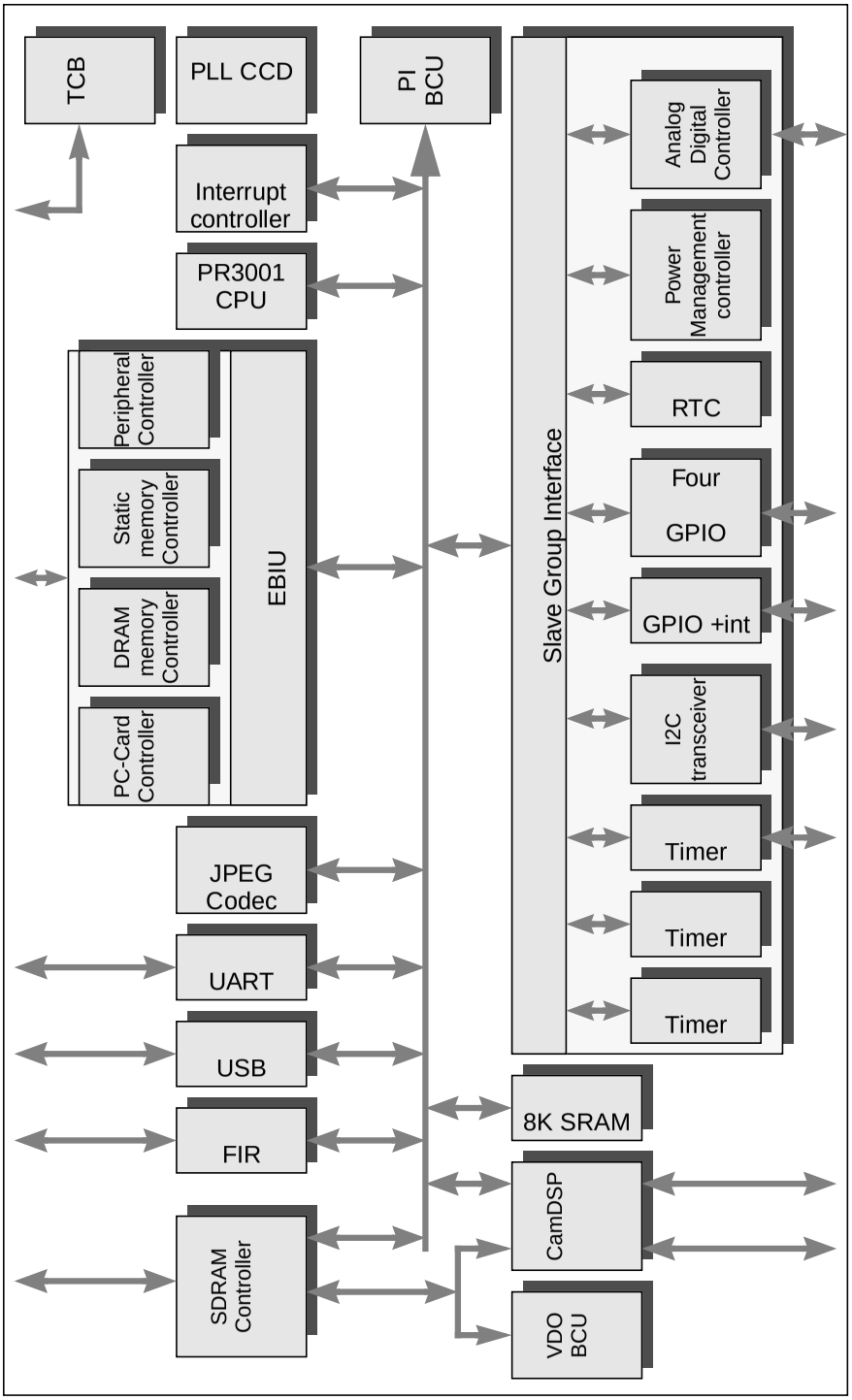

Fig.1 Block diagram

PACKAGE OUTLINE

SOLDERING

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.