

FCC ID: NW73016

Technical Description

The brief circuit description is listed as follows :

- U1 and associated circuit act as Video Imager Controller.
- T1 and associated circuit act as Crystal.



SE402 USB Video Image Controller

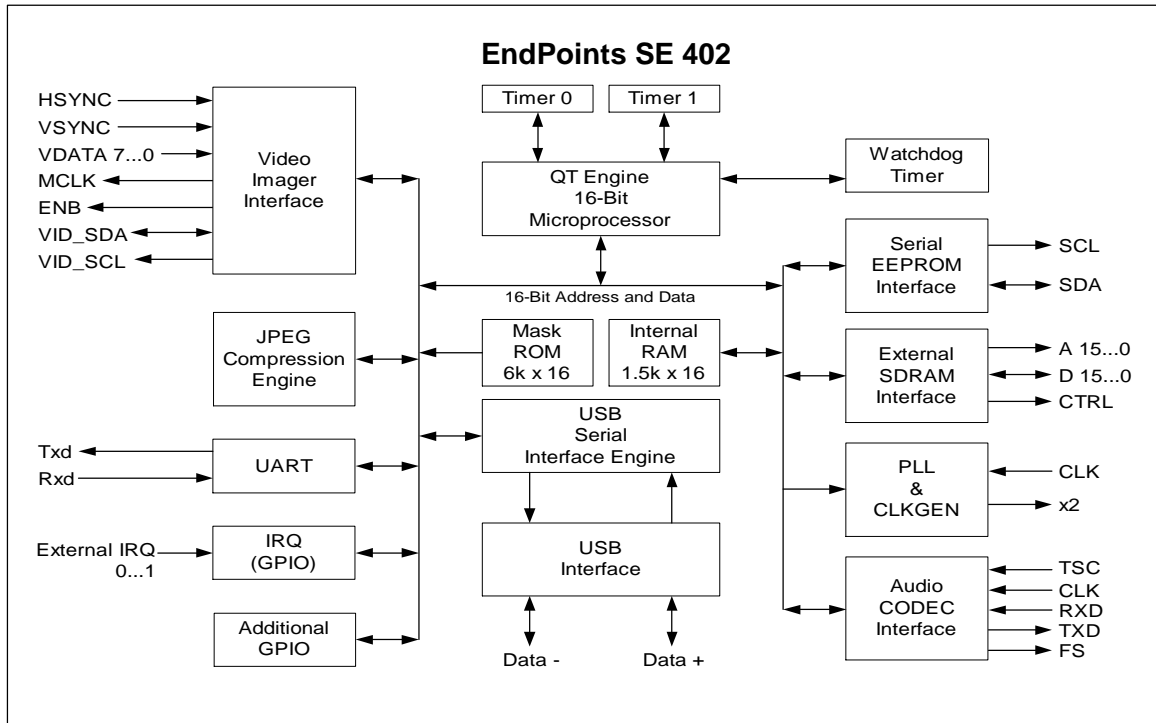
The SE402 USB Video Imager Controller is designed to form the core of a low-cost “PC camera,” “dual-mode camera” or “web camera.” It is a single chip solution to control the image sensor and move the image data to the Universal Serial Bus or to another EndPoints Transport Chip. With the addition of an audio codec, the SE402 can also support sound, enabling a variety of audio and video applications.

The SE402 consists of a central 16-bit processor, a JPEG compression engine, a video imager interface, masked ROM, a RAM buffer, a clock generator, and a flexible, extensible series of interfaces. The block diagram shows one example of the SE402 and its interfaces. Other variations can be implemented using external expansion ROM and the SE402’s General Purpose Input/Output (GPIO) facilities.

Features

- **Flexible Sensor Interface**
- **JPEG Compression Engine**
- **Built-in Auto Exposure & AWB**
- **USB 1.1 Interface with four EndPoints**
- **SPORT Audio Codec Interface**
- **Tight-coupling with other EndPoints Transport Chips**
- **Strobe Flash Interface**
- **Status LCD Interface**
- **External Battery-backable SDRAM Interface**
- **Internal Clock Generation**
- **R/W Serial EEPROM Interface**
- **MS Windows 95, 98 and 2000 drivers available**

Block Diagram



Video Imager Interface	Interfaces directly with a variety of CIF, VGA, SVGA, XGA and SXGA CMOS sensors for resolutions up to 1280 X 1024.
Video Compression Engine	Includes an ISO/IEC 10918-1 Standard JPEG compression engine with variable compression rates. For maximum flexibility the EndPoints JPEG engine can compress YUV 4:2:2, YUV 4:2:0 or raw Bayer Pattern RGB data.
16-bit QT Processor	The SE402 USB Video Imager Controller has a built-in 16-bit EndPoints QT processor with its basic operating firmware in internal 6K X 16 masked ROM. Functionality of the QT Processor can be extended using external EEPROM. Also, the QT processor can function in slave mode for tight-coupling with other EndPoints Transport Chips.
USB Subsystem	The SE402 USB Video Imager Controller contains a complete USB subsystem with a Serial Interface Engine (SIE) and built-in transceiver operating at full 12Mbits/sec data rate. The USB Subsystem meets the Universal Serial Bus (USB) specification v1.1. In addition to the default control endpoint, the SE402 supports three additional endpoints, which may be configured as Isochronous or Bulk/Interrupt.
PLL Clock Generator	An inexpensive 12 MHz external crystal may be used with the SE402 USB Video Imager Controller. The controller incorporates PLL circuitry to generate the internal 48MHz clock requirements of the device. Alternatively, an external 12 MHz clock signal may be used instead of the crystal.
Dual Mode Camera Support	For use in a "dual mode" camera, the SE402 USB Video Imager Controller includes a serial status LCD interface, Strobe Flash interface and USB/Battery power management interface.
Image Signal Processing (ISP) Support	The SE402 Video Imager Controller includes Automatic Exposure Control and Automatic White Balance support in its operating firmware. Optionally, the SE402 can be interfaced to an external Image Signal Processor.
UART Interface	Supports 1200 to 115.2K baud at TTL-levels.
General Purpose I/O	Up to 32 general purpose I/O signals are available. GPIO may be configured for special purpose functions such as the SPORT Synchronous Serial Interface for audio codec etc.
Serial EEPROM Support	The SE402 USB Video Imager Controller serial EEPROM interface is used to provide read and write access to external EEPROMs for field firmware upgrades. The interface is implemented using general-purpose I/O signals and can support a variety of serial EEPROM formats.
External SDRAM Interface	The SE402 interfaces with SDRAM devices from 16 Mbits to 256 Mbits without external "glue" logic, supporting a total array size up to 64 MBytes. This interface includes EndPoints proprietary slow refresh technology, which supports battery-backed SDRAM storage of photos etc.

Development Tools

C Compiler, Assembler and debugging tools are available to qualified customers.

About EndPoints

EndPoints is a semiconductor company specializing in the digital imaging, networking and connectivity markets.



EndPoints, Inc. 4 Preston Court Bedford, MA 01730
 Ph: 781-276-3900 Fax: 781-275-1758
www.endpoints.com email: info@endpoints.com