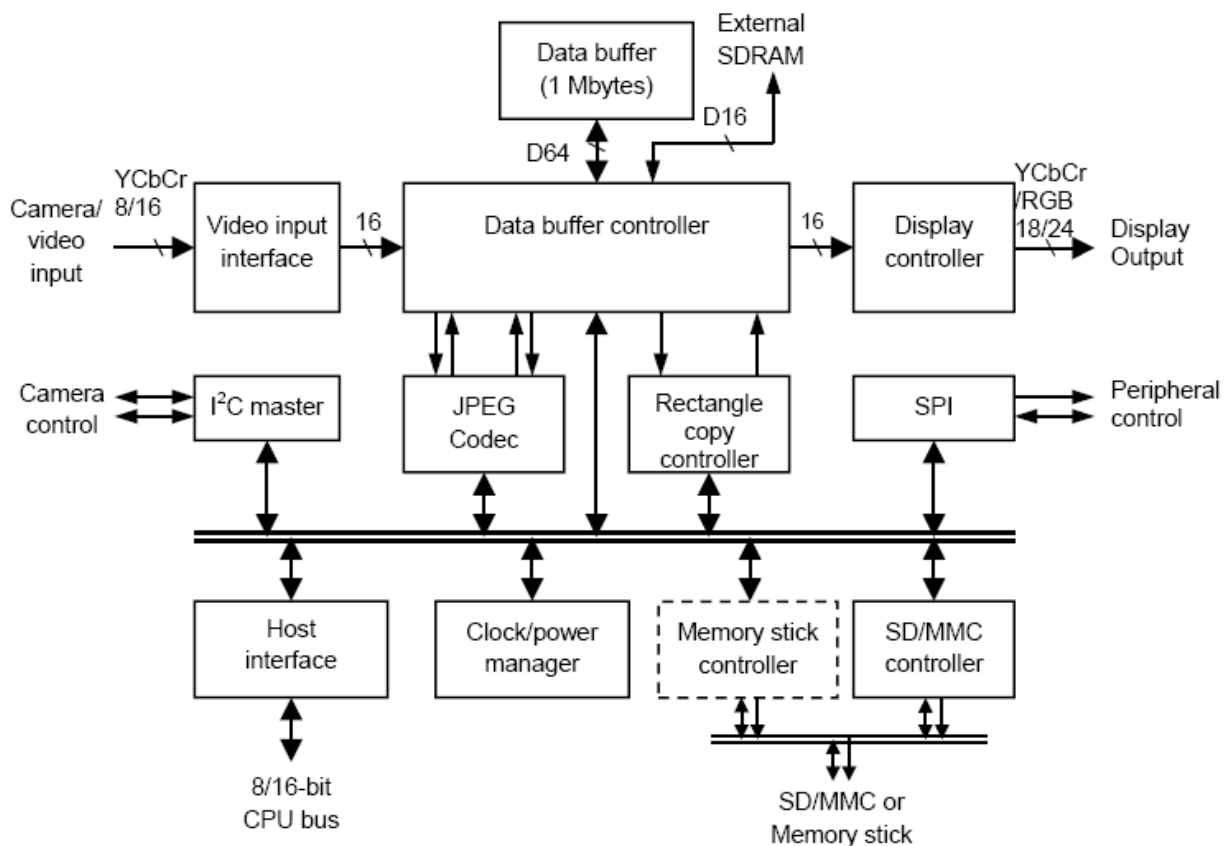


### Display Controller with Built-in Memory and JPEG

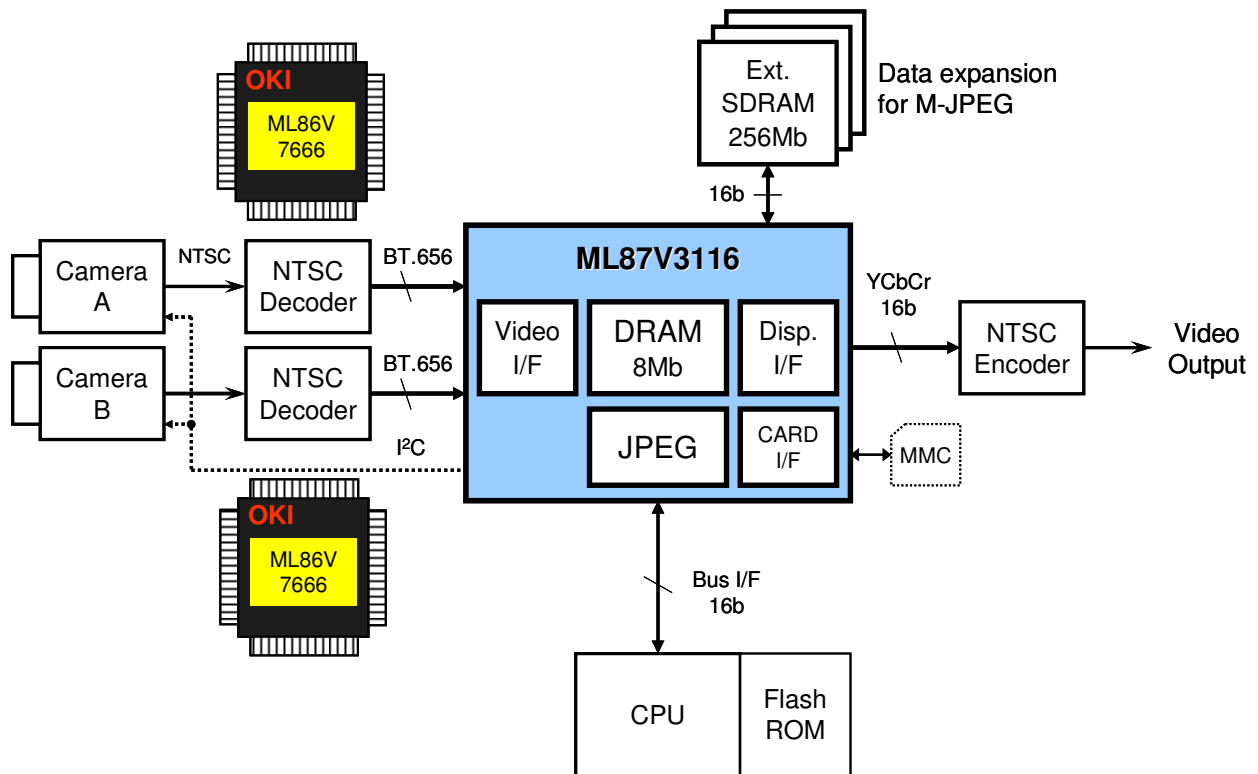
#### Description

The ML87V3116 is a multi-function image processor LSI for small imaging devices. Imaging functions, such as image input, temporary storage, processing and display output, are integrated into a single chip. The ML87V3116 has functions including camera or video input image capture, display control in LCD or TV format, compression and decompression of still pictures and moving pictures (Motion-JPEG) using a JPEG engine, and image copying with the size reduction and the rotation. DRAM is embedded inside the chip to improve the performance of memory access and realize simultaneous operations of multiple functions. Furthermore, by adding external memory, large-sized images can be processed and the moving pictures recording time can be extended.

#### Block Schematic Diagram



## Typical Application (simplified)



## Essential Features

- Camera imaging: Maximum 4 Mpixels, 30 fps at VGA resolution (350,000 pixels)
- Image compression/decompression: Base line JPEG and Motion-JPEG
- Display controller: Color TFT-LCD up to VGA, or TV format
- Rectangle copy: Magnification and reduction x1/2 to 1/32, rotation 0/90/180/270°
- Built-in memory: 8-Mbit SDRAM
- External memory (optional): SDRAM, 16/64/128/256/512 Mbits, x16 types, 0 to 3 memory
- Video input: YCbCr (4:2:2) 16-bit format x 1, or ITU-R BT.656 (8-bit) format x 2
- Display output: 18/24 bits, RGB/YCbCr, 65536 colors
- Operating frequency: Maximum 28 MHz (internal 56 MHz)
- Host interface: 8/16-bit bus (compatible with various microcontrollers)
- Peripheral control interface: I2C bus master, SPI master controller
- Memory card controller: SD card/MMC, or MEMORY STICK™ (only in serial mode)
- Power supply voltage: Core section 2.0 V  $\pm$ 0.15 V, I/O section 3.3 V  $\pm$ 0.3 V
- Standby current: 2 mA or less (target value when displaying partially on a small LCD)
- Package: 176-pin LQFP, 0.5 mm pitch, 24 mm (LQFP176-P-2424-0.50-BK)