

Features (Continued)

Analog RGB Inputs

- Triple high speed 10-bit ADCs with clamping and programmable gain amplifier
- SOG and H/VSYNC support for YPbPr or RGB input
- Built-in line locked PLL with sync separator
- Supports input resolution up to 1080p

Digital Inputs Support

- Supports both BT.656 and 601 video formats
- Supports YCbCr/RGB 24-bit input (bidirectional) up to 1080p resolution
- Single channel LVDS input up to 720p resolution
- Supports RGB 565 + BT.656 at the same time

TFT Panel Support

- Built-in programmable timing controller
- Supports 3, 4, 6 or 8 bits per pixel up to 16.8 million colors with built-in dithering engine
- Supports digital panels (TTL) or single channel LVDS panels up to WXGA (1366x768) resolution, 85MHz
- Supports serial (8-bit) RGB panel

Font Based On-Screen Display

- Eight window font OSD with bordering/shadow
- 10kB programmable font RAM and 512 display RAM
- 1/2/3/4 bits/pixels
- Supports variable width (12/16), height (2~32)

SPI Flash Based On-Screen Display

- 9 bitmap based OSD windows in 2 layers through SPI with alpha blending between layers
- Supports 4/6/8 bits/pixels
- Supports RLE decompression for two windows

Image Processing

- High quality scaler with both up/down and panorama/water-glass scaling support
- Built-in 2D deinterlacing function
- Programmable brightness, contrast, saturation, hue and sharpness
- Programmable color transient improvement control
- Supports programmable cropping of input video and graphics
- Independent RGB gain and offset controls
- DTV hue adjustment
- Programmable 8-bit gamma correction for each color
- Black/white stretch

Clock Generation

- Spread spectrum profile based on triangular modulation with center spread
- Programmable modulation frequency and spread width

Timing Controller (TCON)

- Supports programmable interface signals for control
- Column (source) driver/row (gate) driver

MCU

- Industry standard 8052 based
- Code fetch from external SPI flash memory
- 256B code cache
- 2k XDATA memory
- Supports power save mode with 32k internal clock
- ISP (In System Programming) through I²C
- Supports 24-bit addressing

BT.656 Output

- Independent ITU-R 656 compatible YCbCr (4:2:2) output format
- Supports progressive ITU-R 656 output format for both interlaced and progressive inputs
- ITU-R 656 output generated from decoder, ARGB, DRGB and post scaling path

Touch Screen Controller

- Built-in 4-wire resistive touch screen
- 12-bit ADC
- 4-channel auxiliary input

Miscellaneous

- Supports Fast mode I²C interface up to 400kHz
- Short diagnostics
 - Short-to-battery
 - Short-to-ground
- Up to 4 PWMs
- GPIOs
- 1.8V/3.3V internal operation
- 1.8V I/O support
- Power-down mode
- Single 27MHz crystal
- 128 Ld LQFP with exposed thermal pad and 172 ball TFBGA package
- TW8836AT-LB2-GE is [AEC-Q100](#) qualified

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