

FEATURES

- Single display LCD TV controller with PC & multimedia display functions
- Input supports up to SXGA & 1080P
- Panel supports up to SXGA(1280x1024)/WXGA+(1440x900)
- Multi-Standard TV decoder with 2-D comb filter
- Multi-Standard TV sound demodulator and decoder
- Triple-ADC for TV and RGB/YpbPr
- Integrated DVI/HDCP/HDMI compliant receiver
- High-quality scaling engine
- 3-D video de-interlacer and video noise reduction for SDTV input
- 2-D video de-interlacer and video noise reduction for HDTV input
- MStarACE-3 picture/color processing engine
- Embedded On-screen display controller (OSD) engine
- Built-in MCU supports PWM & GPIO
- Built-in 8/10-bit dual-link LVDS transmitter
- 5 Volt tolerant inputs
- Low EMI and power saving features
- 208-pin PQFP
- n **NTSC/PAL/SECAM Video Decoder**
 - Supports NTSC, NTSC-4.43, PAL (B,D,G,H,M,N,I,Nc), and SECAM
 - Automatic TV standard detection
 - Adaptive 2-D comb filter for NTSC/PAL
 - 8 configurable CVBS & Y/C S-video inputs
 - Supports Teletext level-1.5, WSS, VPS, Closed-caption, and V-chip
 - Macrovision detection
 - CVBS video output
 - n **Multi-Standard TV Sound Decoder**
 - Supports BTSC/NICAM/A2/EIA-J demodulation and decoding
 - FM stereo & SAP demodulation
 - L/Rx4 and SIF audio input
 - L/R loudspeaker and line output
 - Supports sub-woofer output
 - Built-in audio output DAC's
 - Audio processing for loudspeaker channel, including volume, balance, mute, tone, EQ, and virtual stereo/surround
 - n **Digital Audio Interface**
 - I²S digital audio output
 - S/PDIF digital audio output
 - Programmable delay for audio/video synchronization
 - n **Analog RGB Compliant Input Ports**
 - Two analog ports support up to 150MHz
 - Supports PC RGB input up to SXGA@75Hz
 - Fast blanking and function selection switch support full SCART functions
 - Supports HDTV RGB/YPbPr/YCbCr up to 1080P
 - Supports Composite Sync and SOG (Sync-on-Green) separator
 - Automatic color calibration
 - n **DVI/HDCP/HDMI Compliant Input Port**
 - Operates up to 150 MHz (up to SXGA @75Hz)
 - Single link on-chip DVI 1.0 compliant receiver
 - High-bandwidth Digital Content Protection (HDCP) 1.1 compliant receiver
 - High Definition Multimedia Interface (HDMI) 1.2 compliant receiver
 - Long-cable tolerant robust receiving
 - Support HDTV up to 1080P
 - n **Auto-Configuration/Auto-Detection**
 - Auto input signal format and mode detection
 - Auto-tuning function including phasing, positioning, offset, gain, and jitter detection
 - Sync Detection for H/V Sync
 - n **High-Performance Scaling Engine**
 - Fully Programmable shrink/zoom capabilities
 - Nonlinear video scaling supports various modes including Panorama
 - Supports keystone correction for projectors
 - n **Video Processing & Conversion**
 - 3-D motion adaptive video de-interlacer for SDTV
 - 2-D video de-interlacer for HDTV
 - Edge-oriented adaptive algorithm for smooth low-angle edges
 - Automatic 3:2 pull-down & 2:2 pull-down detection and recovery
 - MStar 3rd Generation Advanced Color Engine

(MStarACE-3) automatic picture enhancement gives:

- Brilliant and fresh color
- Intensified contrast and details
- Vivid skin tone
- Sharp edge
- Enhanced depth of field perception
- Accurate and independent color control
- sRGB compliance allows end-user to experience the same colors as viewed on CRTs and other displays
- Programmable 12-bit RGB gamma CLUT
- 3-D video noise reduction for SDTV and 2-D video noise reduction for HDTV
- Frame rate conversion

n On-Screen OSD Controller

- 16/256 color palette
- 256/512 1-bit/pixel font
- 128/256 4-bit/pixel font
- Supports texture function
- Supports 4K attribute/code
- Horizontal and vertical stretch of OSD menus
- Pattern generator for production test
- Supports OSD MUX and alpha blending capability
- Supports blinking and scrolling for closed caption applications

n LVDS/TTL Panel Interface

- Supports 8/10-bit dual link LVDS up to SXGA(1280x1024)/WXGA+(1440x900)
- Supports 8-bit single TTL panel
- Supports 2 data output formats: Thine & TI data mappings
- Compatible with TIA/EIA
- With 6/8 bits options
- Reduced swing for LVDS for low EMI
- Supports flexible spread spectrum frequency with 360Hz~11.8MHz and up to 25% modulation

n Integrated Micro Controller

- Embedded 8032 micro controller
- Configurable PWM's and GPIO's
- Low-speed ADC inputs for system control
- SPI bus for external flash
- Supports external MCU option controlled through 4-wire double-data-rate direct MCU bus or 8-bit direct MCU bus

n External Connection/Component

- Step-down PWM power control
- All system clocks synthesized from a single external clock

GENERAL DESCRIPTION

The MST9E19A is a high performance and fully integrated IC for multi-function LCD monitor/TV with resolutions up to SXGA(1280x1024)/WXGA+(1440x900). It is configured with an integrated triple-ADC/PLL, an integrated DVI/HDCP/HDMI receiver, a multi-standard TV video and audio decoder, a video de-interlacer, a scaling engine, the MStarACE-3 color engine, an on-screen display controller, an 8-bit MCU, and a built-in output panel interface. To further reduce system costs, the MST9E19A also integrates intelligent power management control capability for green-mode requirements and spread-spectrum support for EMI management.

PIN DIAGRAM (MST9E19A)

