XS9950A: 1-Channel HD/SD Analog Video Decoder

XS9950A is a 1-channel analog composite video decoding chip that supports both HDcctv and CVBS protocols up to 1080P@30fps. XS9950A converts the received high-definition analog composite video signal through analog-to-digital conversion, video decoding, and 2D image processing into YUV format, which is then transmitted to the master chip via the MIPI CSI or BT656 interface, enabling real-time preview and recording.

XS9950A supports down-stream audio data transmission over coaxial cable from remote camera. It also supports bidirectional data communication with camera for remote camera control and firmware upgrades.

Features	
VI	● 1-channel analog composite video decoding ● Support 720P@25/30/50/60 and 1080P25/30 video format ● Support CVBS P/N video format ● Support manually extended video format ● Embedded Equalizer (EQ) amplifier for best extended reach performance ● High speed 10-bit Analog-to-Digital (ADC) for video signal sampling ● Programmable Anti-aliasing LPF ● Programmable clamp control ● Embedded Short-to-Battery and Short-to-Ground detection
Video Decoder	● Enhanced automatic format recognition for video signal identification ● Support AGC, ACC, White Peak ● Brightness, Saturation, Contrast and Hue adjustment ● Advanced sync processor for best signal performance ● Automatic frequency deviation compensation to accurate color demodulation ● Integrated programmable high quality filter for Y/C separation ● High-performance edge enhancement, supporting 15 levels of image sharpening adjustment
Audio	● Support coaxial audio decoding over video from remote camera ● Support 1-channel I2S for audio record
VO	● MIPI CSI-2 1.1 compliant transmitter up to 2Lane ■ Support YUV422/YUV420 date format ■ Up to 1.5Gbps/Lane ● ITU-R BT.656/BT.601 YUV422 output ■ Support programmable clock delay characteristics for different chip interconnection requirements ■ Support single edge data output (SEDO) and double edge data output (DEDO)

Features

Bidirectional Communication	● Programmable up-stream data sending over cable ● Programmable down-stream data decoding ● Support firmware upgrades for remote cameras

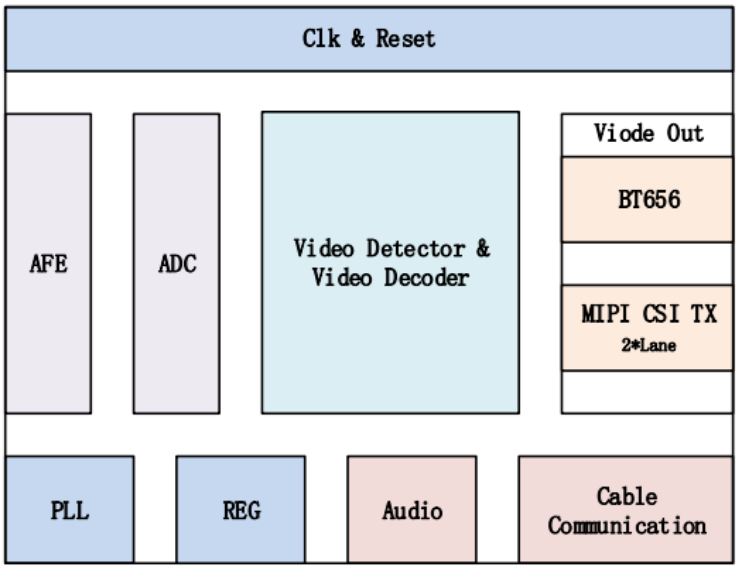
Peripherals

Video Interfaces	VI	● 1-channel analog video input
	VO	● MIPI CSI-2 2Lane ● 1-channel BT.656/BT.601
Audio Interfaces	I2S	● 1-channel for audio record (IO multiplexing)
PTZ		● 1-channel
Other Interfaces		● Interrupt interface for video loss ● I2C ● 27MHz crystal or clock input

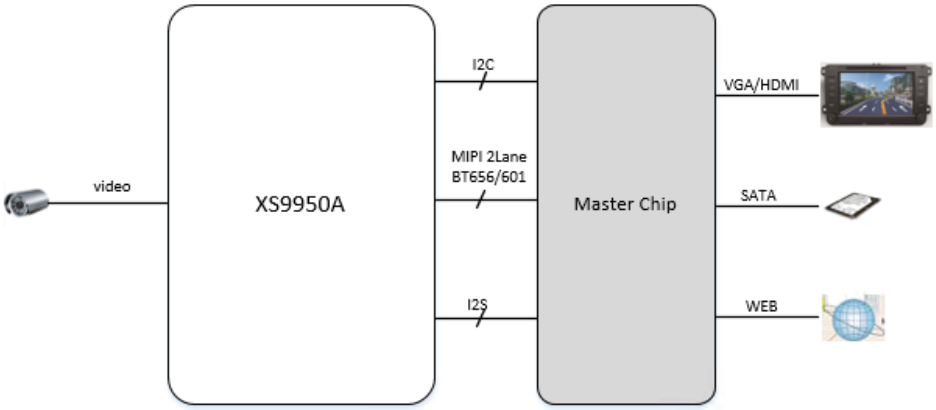
Physical Specs

Operating Voltage	● 1.1V core voltage ● 3.3V/1.8V I/O voltage ● 3.3V and 1.1V analog voltage
Package	● 5 mm × 5 mm QFN40

Block Diagram



Application Solution


video
XS9950A
I2C
MIPI 2Lane
BT656/601
I2S
Master Chip
VGA/HDMI
SATA
WEB