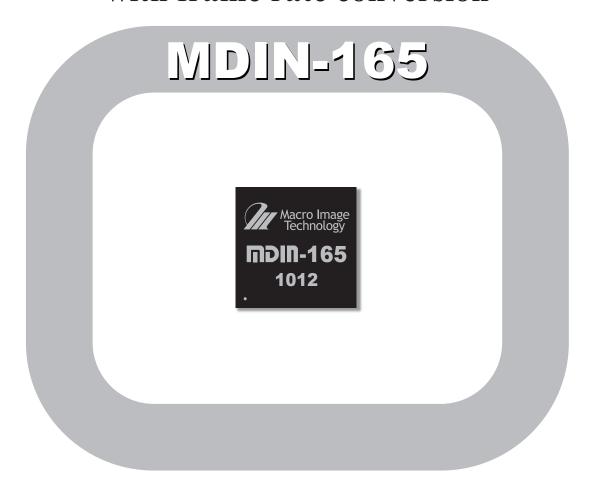
CVBS Video Encoder for SD/HD video input with frame rate conversion



- MDIN-165 is a highly integrated single chip for converting any video input to CVBS video output with format conversion, anti-aliasing filter, anti-flickering filter and video enhancement.
- MDIN-165 converts any video input to CVBS video output including non-standard video input.
- MDIN-165 provides two digital input ports. It performs format conversion and frame rate conversion to produce CVBS video output with excellent signal quality preservation.
- MDIN-165's format converting and video enhancement capability are suitable for digital display applications such as
 camera sensor application, digital video recorder(DVR) and other video systems.

The Macro Image Technology's proprietary iMARV technology makes MDIN-165 the highest quality video encoder.



Main Features

- Two digital video input ports for 8-bit precision any interlaced or progressive video with supporting non-standard input
- Video Encoder(NTSC/PAL) for any video input to CVBS output
- Horizontal anti-aliasing filter for high resolution video input
- Frame rate conversion for any video input with embedded frame buffer memory
- User programmable anti-flickering filter
- Independent horizontal and vertical scaling
- 3D noise reduction(3D NR) filter with cross-color suppression(CCS) for interlaced video input

- Horizontal peaking filter and color enhancement processing for crisper picture quality
- Programmable brightness, contrast, hue, saturation control with adaptive contrast enhancement
- 1 layer OSD with 16 colors and 4 sprites(bitmap and character mode)
- Cost and size effective embedded frame buffer memory
- Serial I²C bus interface
- ◆ 100-pin FBGA packages(8mm x 8mm)

Specifications

Video Input

Digital video input with 8-bit precision

Video format: RGB/YCbCr 4:4:4 or YCbCr 4:2:2

Y/C type: Multiplexed(BT.656) or separated(BT.601) Sync type: Separated or embedded(BT.656/BT.1120) Digital input: 24-bit(4:4:4) or 8/10/16/20-bit(4:2:2)

Supports non-standard video

Maximum horizontal size: 1920

Maximum vertial size: 1024(progressive), 1080(interlaced)

Maximum pixel rate: 135 MHz

Video Output

CVBS or Y/C(S-Video) supports NTSC and PAL

3D Noise Reduction and Cross Color Suppression

High quality 3-D noise reduction with motion detection for interlaced video inputs Cross-color suppression for 2-D comb-filtered input

Format Conversion

Independent horizontal and vertical scaling with anti-aliasing interpolation filter Format conversion from one format to another format with an arbitrary scaling ratio Scaling ratio : $x1/15 \sim unlimited$

Programmable size & position zoom in/out

Frame Rate Conversion

Input video frame rate range from 3Hz to 250Hz Utilizes embedded memory as frame buffer

Signal Enhancement

High order programmable horizontal peaking filter

Filter for color component enhancement

LTI and CTI for edge enhancement

Programmable gain control & coring

Adaptive contrast enhancement

Dithering down to 5 bits

Display Functions

Brightness, contrast, hue, saturation control Programmable display size and position

Horizontal and vertical mirroring

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Bitmap and character mode OSD

One layer with 4 sprites

16-color with 32-level alpha blending

Up to 32x63 font size, and 1-bpp or 4-bpp font color

32-row x 16-col or 16-row x 32-col character map

Bitmap copy and run-length decoding

Frame Buffer Memory

Embedded frame buffer memory

Communication Interface

2-wire serial interface-I²C

Miscellaneous

Auto detection of input video/sync

Support composite sync and non-standard sync signal

Lock-to-input sync mode or free-run mode

Programmable output sync signal generation

Built-in test pattern generation logic

Electrical and Mechanical Characteristics

1.2V & 3.3V supply voltage

3.3V I/O signal interface

Power consumption : Under 0.45Watt

100-pin FBGA package(8mm x 8mm/0.75mm pitch)