



GV7605 Avia™ Receiver

Key Features

- Serial digital video receiver for standard and high definition component video:
 - ♦ SD 525i and 625i
 - ♦ HD 720p 24, 25, 30, 50 and 60
 - ♦ HD 1080i 50, 60
 - ♦ HD 1080p 24, 25, 30, 50 and 60
- Supports 8-bit or 10-bit component digital video:
 - ♦ RGB or YCbCr 4:4:4 sampled
 - ♦ YCbCr 4:2:2 or 4:2:0 sampled
- Long reach cable performance when combined with the GV8601 cable equalizer
 - ♦ 140m typical HD performance over high quality 75Ω coaxial cable
- Serial digital loop-through output
- Integrated audio de-embedder for the extraction of up to 8 channels of 48kHz digital audio
- Supports IEC 13818-1 compliant transport streams over the Asynchronous Serial Interface (ASI)
- Automatic selection between SD/HD component video and ASI input data
- Ancillary (ANC) data detection and extraction
- User selectable processing features, including:
 - ♦ Timing Reference Signal (TRS) error detection and correction
 - ♦ ANC data checksum error detection and correction
 - ♦ Programmable ANC data detection
 - ♦ Line number and CRC error detection and correction
 - ♦ Illegal video code word re-mapping
- 4-wire Gennum Serial Peripheral Interface (GSPI) for external host command and control
- JTAG test interface
- 1.2V core and 3.3V analog voltage power supplies
- 1.8V or 3.3V selectable digital I/O power supply

- Small footprint 100-BGA (11mm x 11mm)
- Low power operation, typically 405mW
- Pb-free and RoHS compliant

Applications

- Digital Video Recorders (DVR)
- Video servers
- Video mixers and switchers
- Image capture devices
- Video framegrabbers
- Camcorders
- Video monitors & displays

Description

The GV7605 is a serial digital video receiver for standard and high definition component video, operating at 270Mb/s, 1.485Gb/s and 2.97Gb/s data rates. When combined with the GV8601 cable equalizer, the GV7605 is capable of receiving digital video over 75Ω coaxial cable. This provides a complete receive solution for the transmission of both interlaced and progressive component digital video, up to 1920 x 1080, in coaxial cable-based video systems.

Using the GV7605 with the complete Avia receiver reference design, it is possible to implement an all-digital, bi-directional multimedia interface over coax. This interface allows both DC power and a bi-directional, half-duplex, auxiliary data interface, up to 1Mb/s, to be carried over the same single, robust and cost effective coaxial cable as the high-speed serial digital video. The GV7605 also provides a re-timed serial digital output for video loop-through applications.

The GV7605 includes a broad range of user-selectable processing features, such as Timing Reference Signal (TRS) error detection and extraction, illegal code word re-mapping, and ancillary data packet extraction. The content of ancillary data packets, embedded by a Avia transmitter, can be extracted and retrieved via the host

interface. Device configuration and status reporting is accomplished via the Genum Serial Peripheral Interface (GSPi). Alternatively, many processing features and operational modes can be configured directly through external pin settings.

The device can output both 8-bit and 10-bit video data, for RGB or YCbCr 4:4:4, and YCbCr 4:2:2 or 4:2:0. A configurable 20-bit wide parallel digital video output bus is provided, with associated pixel clock and timing signal outputs. The GV7605 supports ITU-R BT.656 SD formats, and HD formats conforming to ITU-R BT.709 and BT.1120-6 for 1125-line formats, and SMPTE 296M for 750-line formats. The device may also be configured to output CEA-861 timing.

The GV7605 audio de-embedding function allows the up to 8 channels of serial digital audio within the ancillary data space of the video data stream to be extracted. The audio output signal formats supported by the device include AES/EBU for professional applications, S/PDIF, and I²S. 16-bit, 20-bit and 24-bit audio formats are supported at

48kHz synchronous-to-video for SD video formats and 48kHz synchronous or asynchronous for HD formats. Additional audio processing features include: individual channel extraction, audio group selection, group replacement, channel swapping and audio channel status extraction.

The GV7605 supports an Asynchronous Serial Interface (ASI) 270Mb/s input, carrying compressed audio and video transport streams, conforming to IEC 13818-1. Transport stream data is output from the device at a synchronous 27MHz clock rate. The device will automatically deserialize and 8b/10b decode the data.

Packaged in a space saving 100-BGA, the GV7605 is ideal for designs where high-density component placement is required. Typically requiring only 405mW power, the device can be used as a high bandwidth alternative to analog composite or component video interfaces, providing a high quality, all-digital, long reach video receive solution.

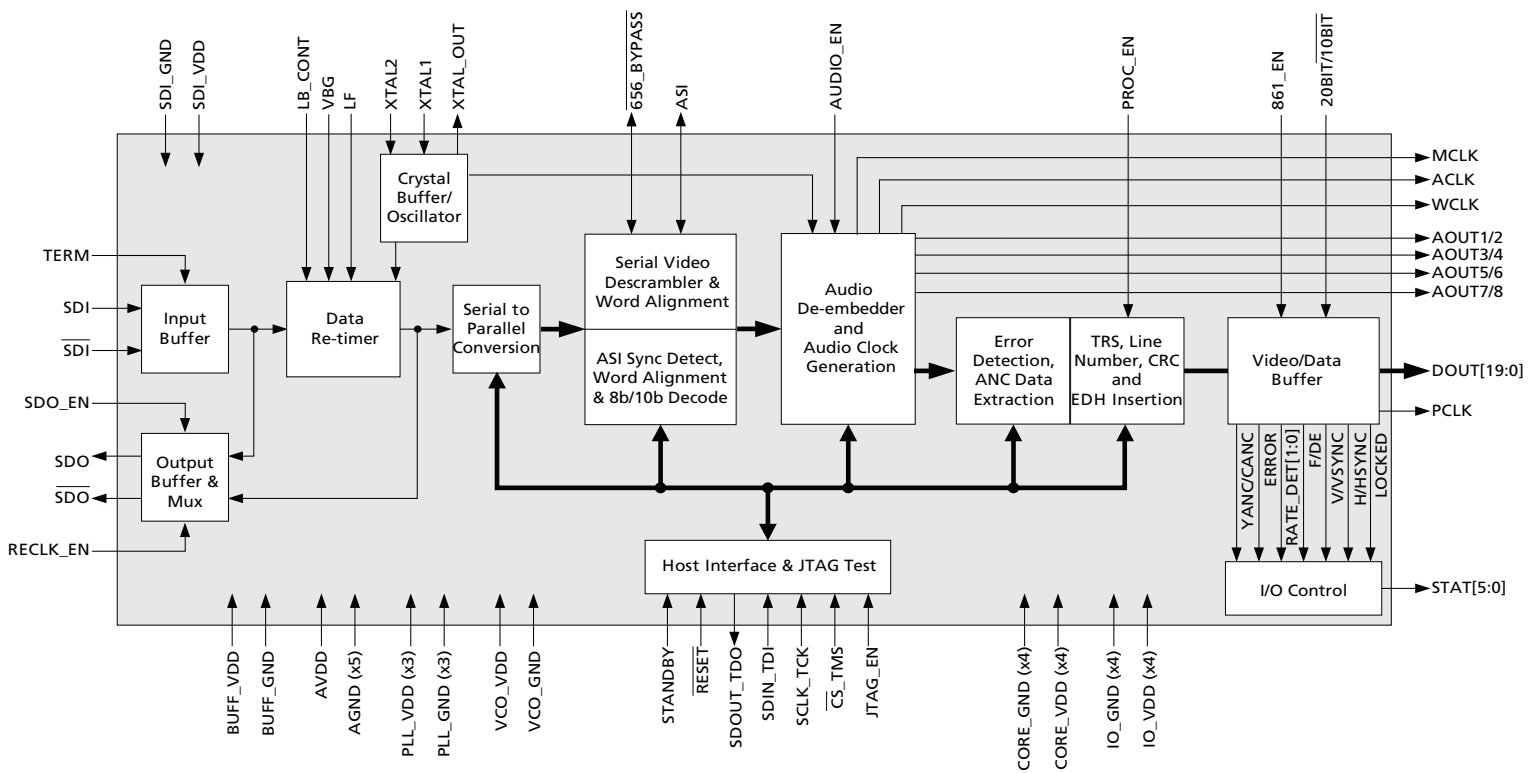


Figure A: GV7605 Functional Block Diagram

	1	2	3	4	5	6	7	8	9	10
A	VBG	LF	LB_ CONT	VCO_ VDD	STAT0	STAT1	IO_ VDD	PCLK	DOUT18	DOUT17
B	AVDD	PLL_ VDD	RSV	VCO_ GND	STAT2	STAT3	IO_ GND	DOUT19	DOUT16	DOUT15
C	SDI	AGND	PLL_ VDD	PLL_ VDD	STAT4	STAT5	$\overline{\text{RESET}}$	DOUT12	DOUT14	DOUT13
D	$\overline{\text{SDI}}$	AGND	AGND	PLL_ GND	CORE_ GND	CORE_ VDD	RSV	JTAG_ EN	IO_ GND	IO_ VDD
E	SDI_ VDD	SDI_ GND	AGND	PLL_ GND	CORE_ GND	CORE_ VDD	SDOUT_ TDO	SDIN_ TDI	DOUT10	DOUT11
F	TERM	RSV	AGND	PLL_ GND	CORE_ GND	CORE_ VDD	$\overline{\text{CS}}$ TMS	SCLK_ TCK	DOUT8	DOUT9
G	RSV	RSV	RECLK_ EN	RSV	CORE_ GND	CORE_ VDD	$\overline{\text{656}}$ BYPASS	ASI	IO_ GND	IO_ VDD
H	BUFF_ VDD	BUFF_ GND	AUDIO_ EN	WCLK	861_EN	XTAL_ OUT	$\overline{\text{20BIT/}}$ $\overline{\text{10BIT}}$	PROC_ EN	DOUT6	DOUT7
J	SDO	SDO_ EN	AOUT 1/2	ACLK	AOUT 5/6	XTAL2	IO_ GND	DOUT1	DOUT4	DOUT5
K	$\overline{\text{SDO}}$	STAND BY	AOUT 3/4	MCLK	AOUT 7/8	XTAL1	IO_ VDD	DOUT0	DOUT2	DOUT3

Figure B: GV7605 100-BGA Ball Placement

Aviia™ is Gennum's high bandwidth, all digital, long reach A/V interface for professional and industrial applications; providing high definition video, digital audio, bi-directional control and power over a single-wire robust and cost effective interface.

**DOCUMENT IDENTIFICATION
PRODUCT BRIEF**

The product is in a development phase and specifications are subject to change without notice. Gennum reserves the right to remove the product at any time. Listing the product does not constitute an offer for sale.

CAUTION

ELECTROSTATIC SENSITIVE DEVICES
DO NOT OPEN PACKAGES OR HANDLE EXCEPT AT A
STATIC-FREE WORKSTATION



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