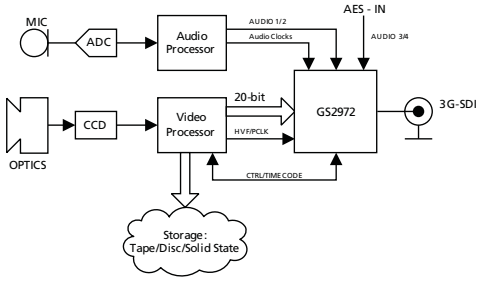
GS2972 3Gb/s, HD, SD SDI Transmitter

Key Features

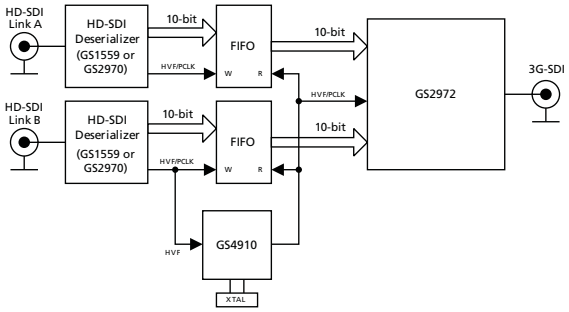
- Operation at 2.97Gb/s, 2.97/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s and 270Mb/s
- Supports SMPTE 425M (Level A and Level B), SMPTE 424M, SMPTE 292M, SMPTE 259M-C and DVB-ASI
- Integrated Cable Driver
- Integrated low noise VCO
- Integrated ClockCleaner™
- Integrated audio embedder for up to 8 channels of 48kHz audio
- Ancillary data insertion
- Optional conversion from SMPTE 425M Level A to Level B for 1080p 50/60 4:2:2 10-bit
- Parallel data bus selectable as either 20-bit or 10-bit
- SMPTE video processing including TRS calculation and insertion, line number calculation and insertion, line based CRC calculation and insertion, illegal code re-mapping, SMPTE 352M payload identifier generation and insertion
- GSPI Host Interface
- 1.2V digital core power supply, 1.2V and 3.3V analog power supplies, and selectable 1.8V or 3.3V I/O power supply
- -20°C to +85°C operating temperature range
- Low power operation (typically 405mW including Cable Driver)
- Small 11mm x 11mm 100-ball BGA package
- Pb-free and ROHS compliant

Applications

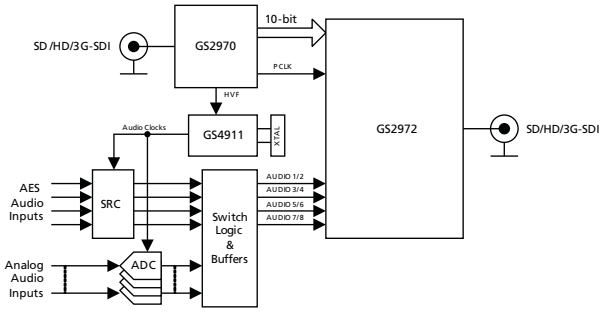
Application: 1080p 50/60 Camera/Camcorder



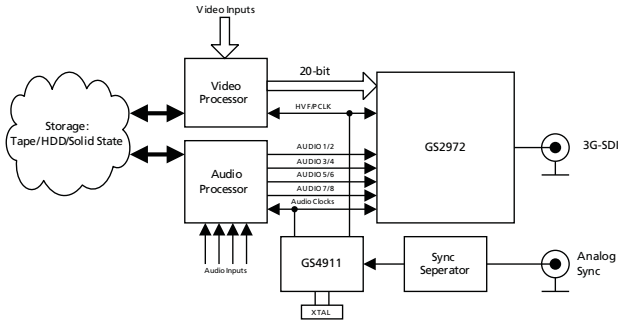
Application: Dual Link (HD-SDI) to Single Link (3G-SDI) Converter



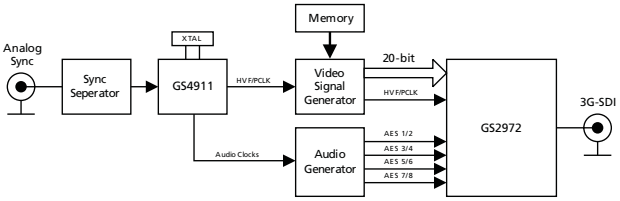
Application: Multi-format Audio Embedded Module



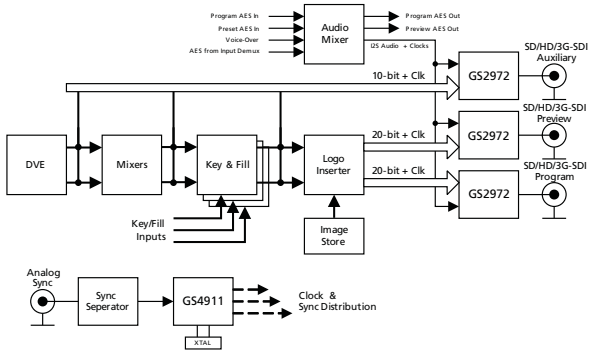
Application: Multi-format Digital VTR/Video Server



Application: 3Gb/s SDI Test Signal Generator



Application: Multi-format Presentation Switcher (Output Stage)



Description

The GS2972 is a complete SDI Transmitter, generating a SMPTE 424M, SMPTE 292M, SMPTE 259M-C or DVB-ASI compliant Serial Digital Output signal.

The integrated ClockCleaner™ allows the device to accept parallel clocks with greater than 300ps input jitter and still provide a SMPTE compliant Serial Digital Output.

The device can operate in four basic user-selectable modes: SMPTE mode, DVB-ASI mode, Data-Through mode, and Standby mode.

In SMPTE mode, the GS2972 performs SMPTE scrambling and NRZ to NRZI coding. In addition, the device can insert TRS words, calculate and insert line numbers and line based CRCs, re-map illegal code words, map 8-bit TRS to 10-bit TRS, calculate and insert EDH CRCs and flags, and insert SMPTE 352M payload identifier packets. All of the processing features are optional, and may be disabled via external control pins and/or via the Host Interface.

The GS2972 provides ancillary data insertion in SMPTE mode as well. The entire ancillary packet is programmed into internal registers through the GSPI Host Interface, including the Ancillary Data Flag (ADF), Data Identification words (DID and SDID) and checksum. The GS2972 then recalculates the checksum and inserts the complete ancillary packet into the video stream.

The user may present the parallel data as either SMPTE 425M Level B or Level A. If the parallel data is presented as Level A, it may be processed and serialized as Level A or converted to Level B (conversion only available for 1080p 50/60 4:2:2 10-bit). If the parallel data is presented as Level B then the serial data will also be Level B.

In DVB-ASI mode, the device will perform 8b/10b encoding prior to transmission.

In Data-Through mode, all SMPTE and DVB-ASI processing is disabled, and the device can be used as a simple parallel to serial converter.

The device can also be placed in a lower power Standby mode. In this mode, no signal is generated at the output.

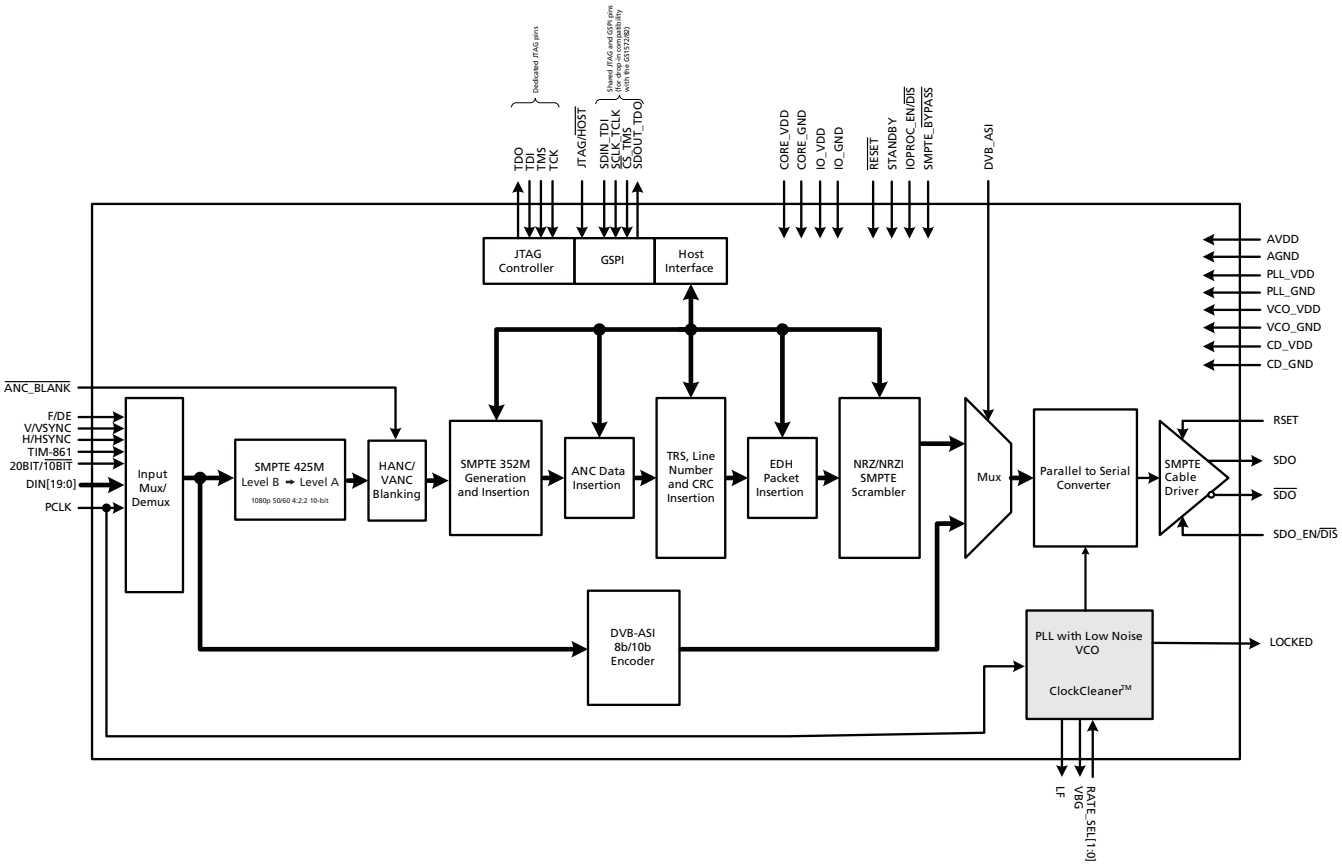
Parallel data inputs must be provided in 20-bit or 10-bit multiplexed format for 3Gb/s, HD and SD video rates. For 1080p 50/60 4:2:2 10-bit video formats, the video data can be presented at the parallel bus with Y on 10 bits and Cb/Cr on the other 10 bits. As such, this parallel bus can interface directly with video processor ICs. For all other format described in SMPTE 425M, the user must map the data to the 20-bit virtual interface as described in the standard. The device can accept both the 20-bit virtual interface directly, or the equivalent pre-multiplexed 10-bit format. The associated Parallel Clock input signal operates at 148.5 or 148.5/1.001MHz (for all 3Gb/s HD 10-bit multiplexed modes), 74.25 or 74.25/1.001MHz (for HD 20-bit mode), 27MHz (for SD 10-bit mode) and 13.5MHz (for SD 20-bit mode).

Note: for 3Gb/s 10-bit mode the device operates in Dual Data Rate (DDR) mode, where the data is sampled at both the rising and falling edges of the clock. This reduces the I/O speed requirements of the downstream devices.

The GS2972 includes an integrated Cable Driver fully compliant with SMPTE 259M-C, SMPTE 292M and SMPTE 424M. It features automatic dual slew-rate selection, depending on 3Gb/s, HD, or SD operational requirements.

Up to eight channels, in two groups, of serial digital audio may be embedded into the video data stream, in accordance with SMPTE 272M and SMPTE 299M. The input audio signal formats supported by the device include AES/EBU, I^2S and serial audio. 16, 20 and 24-bit audio formats are supported at 48kHz synchronous for SD modes and 48kHz synchronous or asynchronous in HD or 3Gb/s modes. Additional audio processing features include individual channel enable, group selection, group replacement, channel swapping and audio channel status insertion.

Functional Block Diagram



GS2972 Functional Block Diagram

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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