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Gennum Products

Key Features

- Multi-standard operation at rates between 1Mb/s and 2.97Gb/s

- SMPTE ST 424, SMPTE ST 292 and SMPTE ST 259 compliant

- AES10 (MADI) compatible

- Industry leading cable reach, with automatic cable equalization for different lengths of cable

- Performance optimized for 125Mb/s, 270Mb/s, 1.485Gb/s, and 2.97Gb/s. Typical equalized length of Belden 1694A cable up to:

  - 200m at 2.97Gb/s
  - 280m at 1.485Gb/s
  - 500m at 270Mb/s

- 1.8V core power supply

- Typical power consumption of 84mW when DC-coupled at 1.2V with OUTPUT_SWING = 0011_b

- Ultra-low power mode for shorter cable reach applications

- Upstream launch swing compensation from $250mV_{ppd}$ to $1V_{ppd}$ in approximately $50mV_{ppd}$ steps (Default $750mV_{ppd}$)

- Auto/Manual bypass (useful for low data rates with slow rise/fall times)

- Robust, noise-immune signal detection with squelch threshold adjustment

- Auto/Manual control of SLEEP/MUTE/DISABLE OUTPUT modes

- Data Rate detection and indication

  - <MADI, MADI, SD, HD, 3G differentiation

- Digital cable length indication (CLI)

- Differential output supports DC-coupling from 1.2V to 2.5V CML logic and AC-coupling for other logic families

- Programmable/Rate-dependent output de-emphasis level and delay

- Host interface for status and control

- 3kV HBM ESD protection on all pins

- Wide operating temperature range of -40ºC to +85ºC

- Small footprint QFN–COL package (16-pin, 4mm x 4mm)

- Pb-free and RoHS compliant

- Pin-compatible with the GS6140

Applications

- SMPTE ST 424, SMPTE ST 292, SMPTE ST 259 and AES10 coaxial cable serial digital interfaces

Description

The GS3140 is a high-speed BiCMOS device designed to equalize and restore signals received over cable.

The device is designed to support SMPTE ST 424, SMPTE ST 292, SMPTE ST 259 and AES10 (MADI), and it is optimized for performance at 125Mb/s, 270Mb/s, 1.485Gb/s, and 2.97Gb/s.

The device supports MADI serial signals at 125Mb/s with peak-to-peak launch amplitude between $300mV_{ppd}$ and $600mV_{ppd}$ (with AES10 spec rise and fall times) and $800mV_{ppd}\pm10\%$ (with SD-SDI rise and fall times).

The GS3140 features DC restoration to compensate for the DC content of SMPTE pathological signals.

Loss of Signal (LOS) is detected when the input carrier is lost or signal amplitude falls below a programmable threshold. This is further processed by a filter programmable up to 1.6s before LOS status is asserted. The device can be programmed to automatically sleep/mute/disable the output on loss of signal.

An interrupt pin (INT) indicates LOS by default, and can be programmed to signal various other statuses.

When the BYPASS control bit is set, the equalizing and DC restore stages are disengaged. This is useful for signals launched at the source with low data rates and/or slow rise and fall times.

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The differential output can be DC-coupled to Semtech's reclockers and cable drivers, as well as industry-standard +1.2V, +1.8V and +2.5V CML logic by changing the voltage applied to the VCC_O pin.
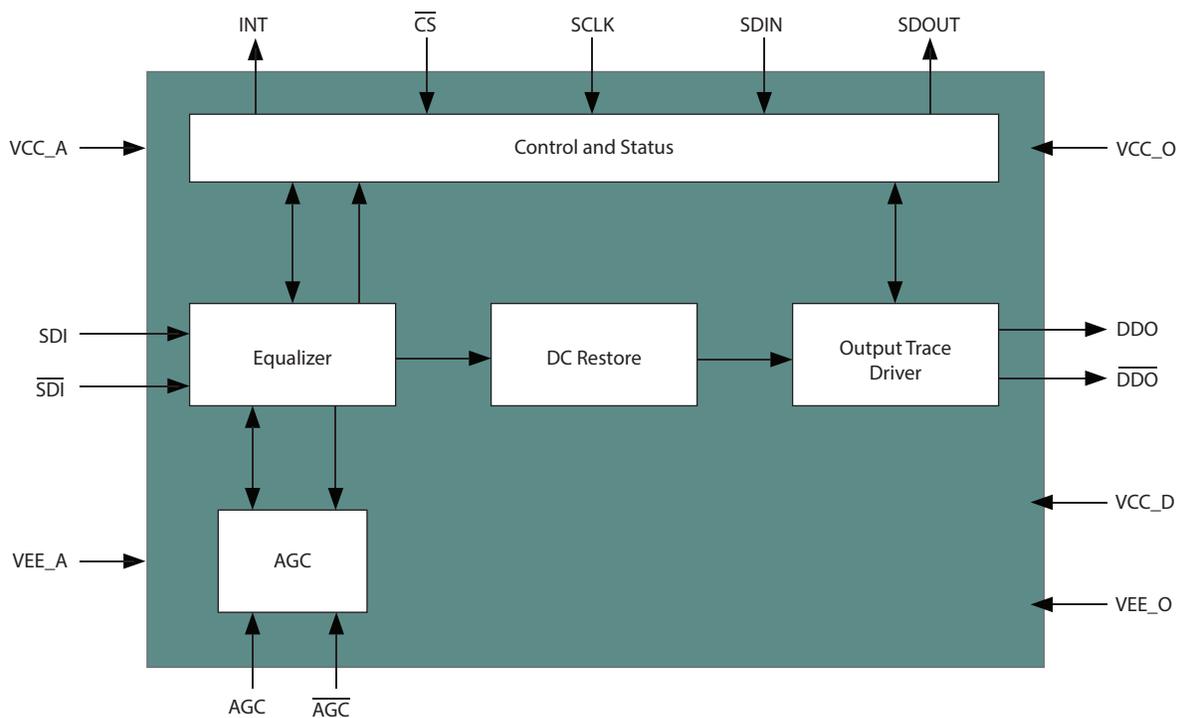
The GS3140 also features programmable output de-emphasis with eight user-selectable operating levels to support long PCB traces at the output of the device. The output swing can be programmed, via the user interface, from approximately 250mV$_{ppd}$ to 1V$_{ppd}$ in 50mV$_{ppd}$ steps.

The device comes in a 16-pin, 4mm x 4mm QFN–COL package.

Power consumption of the GS3140 is typically 84mW when DC-coupled to a +1.2V termination voltage with OUTPUT_SWING = 0011$_b$.

The GS3140 is Pb-free, and the encapsulation compound does not contain halogenated flame retardant.

This component and all homogeneous subcomponents are RoHS compliant.

GS3140 Functional Block Diagram

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CAUTION
ELECTROSTATIC SENSITIVE DEVICES

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

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