

Multi-Rate Adaptive 3G SDI Equalizer

Genum 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 -40°C to +85°C
 - 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}±10% (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.

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.

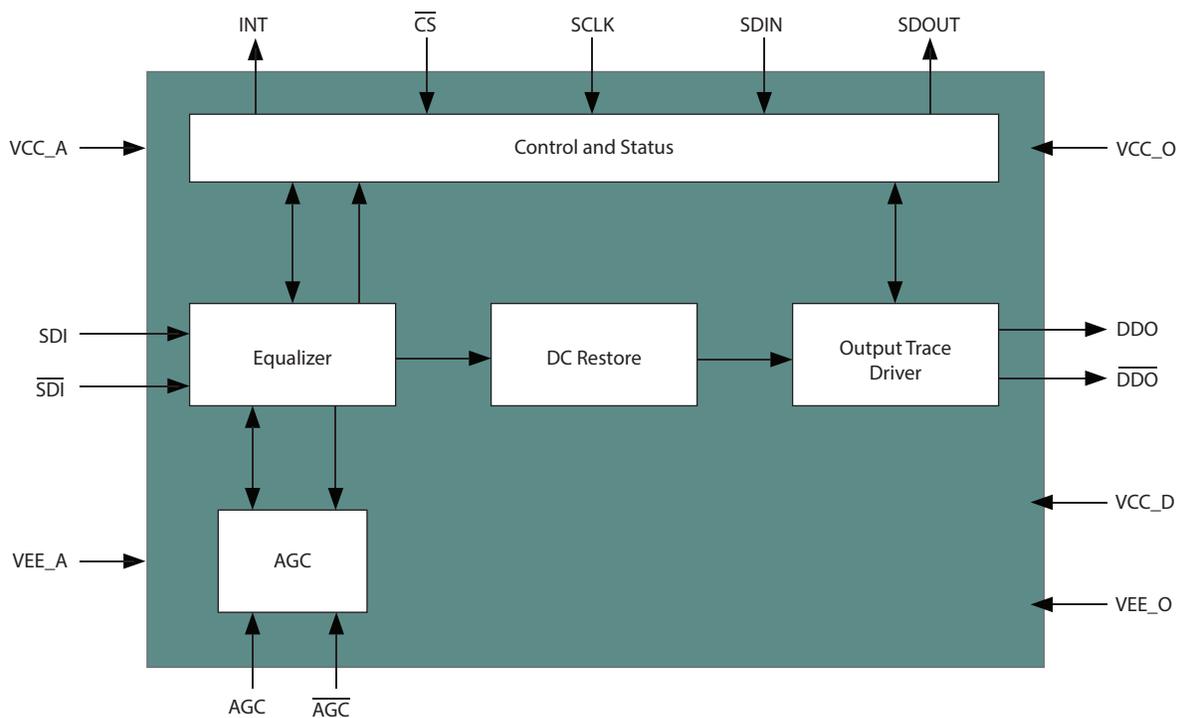
The GS3140 also features programmable output de-emphasis with eight user-selectable operating levels to support long PCB traces at the output of the device. The output swing can be programmed, via the user interface, from approximately $250\text{mV}_{\text{ppd}}$ to 1V_{ppd} in 50mV_{ppd} steps.

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 $\text{OUTPUT_SWING} = 0011_{\text{b}}$.

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



**DOCUMENT IDENTIFICATION
PRODUCT BRIEF**

The product is in a development phase and specifications are subject to change without notice. Semtech 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



© Semtech 2015

All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent or other industrial or intellectual property rights. Semtech assumes no responsibility or liability whatsoever for any failure or unexpected operation resulting from misuse, neglect improper installation, repair or improper handling or unusual physical or electrical stress including, but not limited to, exposure to parameters beyond the specified maximum ratings or operation outside the specified range.

SEMTECH PRODUCTS ARE NOT DESIGNED, INTENDED, AUTHORIZED OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT APPLICATIONS, DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF SEMTECH PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE UNDERTAKEN SOLELY AT THE CUSTOMER'S OWN RISK. Should a customer purchase or use Semtech products for any such unauthorized application, the customer shall indemnify and hold Semtech and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs damages and attorney fees which could arise.

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

Contact Information

Semtech Corporation
200 Flynn Road, Camarillo, CA 93012
Phone: (805) 498-2111, Fax: (805) 498-3804
www.semtech.com