



GS6042 6G/3G/HD/SD Adaptive Cable Equalizer

Key Features

- Multi-standard operation from 125Mb/s to 5.94Gb/s
- SMPTE ST 424, SMPTE ST 292 and SMPTE ST 259 compliant
- Automatic cable equalization
- Performance optimized for 270Mb/s, 1.485Gb/s, 2.97Gb/s, and 5.94Gb/s. Typical equalized length of Belden 1694A cable up to:
 - ◆ 80m at 5.94Gb/s
 - ◆ 200m at 2.97Gb/s
 - ◆ 400m at 1.485Gb/s
 - ◆ 550m at 270Mb/s
- Supports DVB-ASI at 270Mb/s
- Manual bypass (useful for low data rates with slow rise/fall times)
- Programmable carrier detect with squelch threshold adjustment
- Automatic power-down on loss of signal
 - ◆ Standby power <30mW (typical)
- Differential output supports DC-coupling from 1.2V to 3.3V CML logic
- Option to compensate for 6dB flat attenuation prior to input of device
- Selectable output de-emphasis: 2dB, 4dB and 6dB
- Standard EIA/JEDEC logic control and status signal levels
- Single 3.3V power supply operation
- 167mW power consumption (typical)
- Wide operating temperature range of -40°C to +85°C
- Small footprint QFN package (4mm x 4mm)
 - ◆ Footprint compatible with the GS2984, GS2994, and GS3440
- Pb-free and RoHS compliant

Applications

- 5.94Gb/s, SMPTE ST 424, SMPTE ST 292 and SMPTE ST 259 coaxial cable serial digital interfaces

Description

The GS6042 is a high-speed BiCMOS device designed to equalize and restore signals received over 75Ω coaxial cable.

The device is designed to support 5.94Gb/s, SMPTE ST 424, SMPTE ST 292 and SMPTE ST 259, and is optimized for performance at 270Mb/s, 1.485Gb/s, 2.97Gb/s, and 5.94Gb/s.

The GS6042 features DC restoration to compensate for the DC content of SMPTE pathological signals.

The Carrier Detect output pin (\overline{CD}) indicates whether an input signal has been detected. It can be used in combination with the SLEEP pin to enable automatic sleep on loss of carrier.

A voltage programmable threshold, set via the SQ_ADJ pin, forces \overline{CD} high when the input signal amplitude falls below the threshold. This allows the GS6042 to distinguish between low-amplitude SDI signals and noise at the input of the device.

The equalizing and DC restore stages are disengaged and no equalization occurs when the BYPASS pin is HIGH. Setting the BYPASS pin HIGH is useful for signals launched at the signal source with low data rates and/or slow rise/fall times.

The GS6042 features a gain selection pin (GAIN_SEL) which can be used to compensate for 6dB flat attenuation prior to the input of the device.

The differential output can be DC-coupled to Semtech's reclockers and cable drivers, as well as industry-standard 1.2V, 1.8V, 2.5V and 3.3V CML logic by changing the voltage applied to the VCC_O pin. In general, DC-coupling to any termination voltage between 1.2V and 3.3V is supported.

The GS6042 also features programmable output de-emphasis with three, user-selectable operating levels to support long PCB traces at the output of the device.

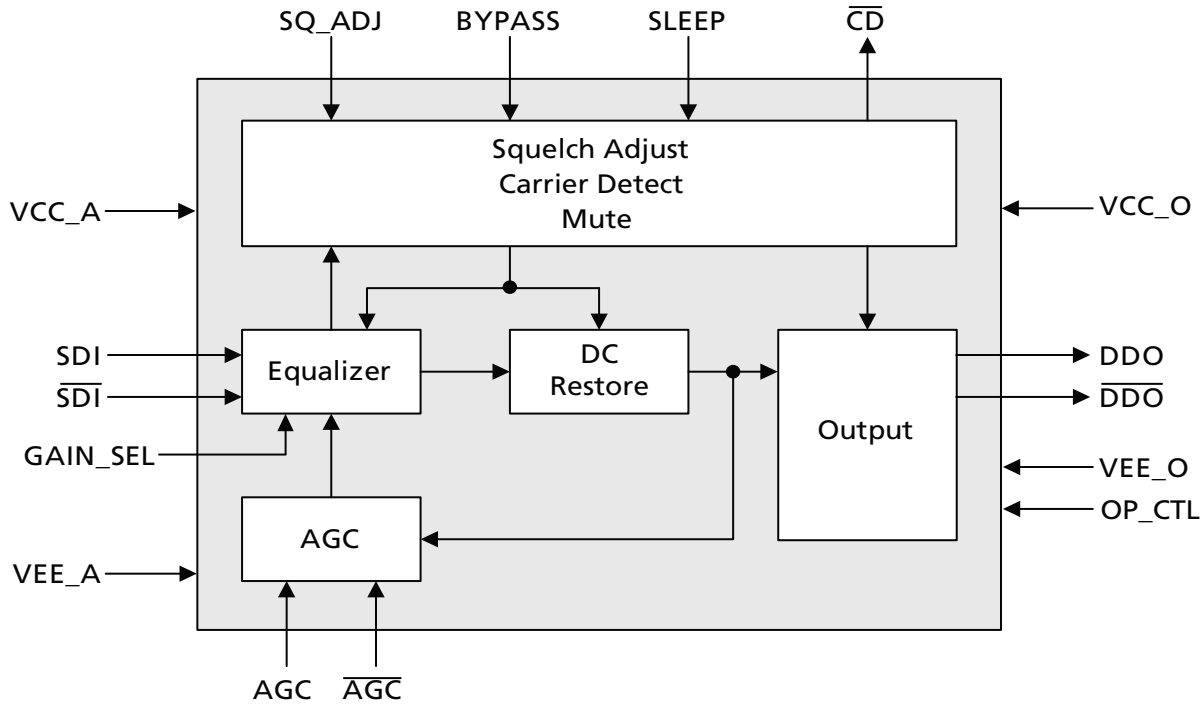
Description (continued)

The device comes in a 16-pin, 4mm x 4mm QFN package and is footprint compatible with Semtech's GS2984, GS2994, and GS3440 equalizers.

Power consumption of the GS6042 is typically 167mW when DC-coupled at 1.2V.

The GS6042 is Pb-free, and the encapsulation compound does not contain halogenated flame retardant.

This component and all homogeneous subcomponents are RoHS compliant.



GS6042 Functional Block Diagram



**DOCUMENT IDENTIFICATION
PRODUCT BRIEF**

Information relating to this product and the application or design described herein is believed to be reliable, however such information is provided as a guide only and Semtech assumes no liability for any errors in this document, or for the application or design described herein. Semtech reserves the right to make changes to the product or this document at any time without notice.

CAUTION

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



© Semtech 2013

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