# EB-GS2984

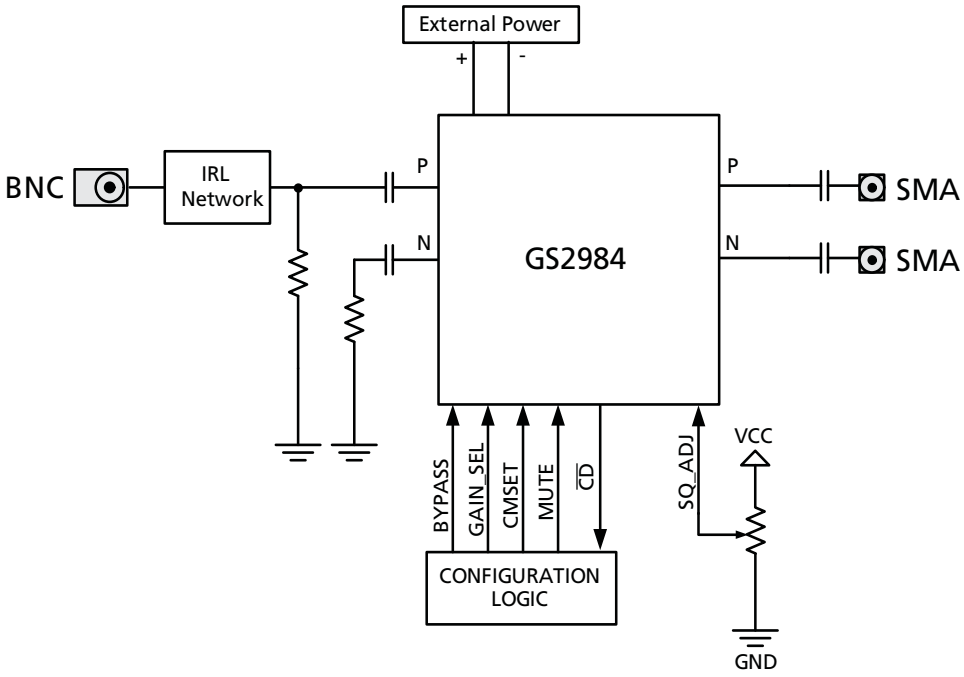
## Evaluation Board User Guide

| Version | ECR | Date | Changes and / or Modifications |
|---|---|---|---|
| 1 | 151189 | April 2009 | Updates. |
| 0 | 150666 | November 2008 | New document. |

# Contents

## Overview

The purpose of the EB-GS2984 Evaluation Board is to evaluate the GS2984, Gennum's 4th generation Adaptive Cable Equalizer. This device is designed to support SMPTE 424M, SMPTE 292M and SMPTE 259M serial digital video signals standards.




**Block Diagram of the EB-GS2984**

# 1. Evaluation Board User Guide

Figure 1-1 shows the inputs, outputs and power connections for the EB-GS2984.

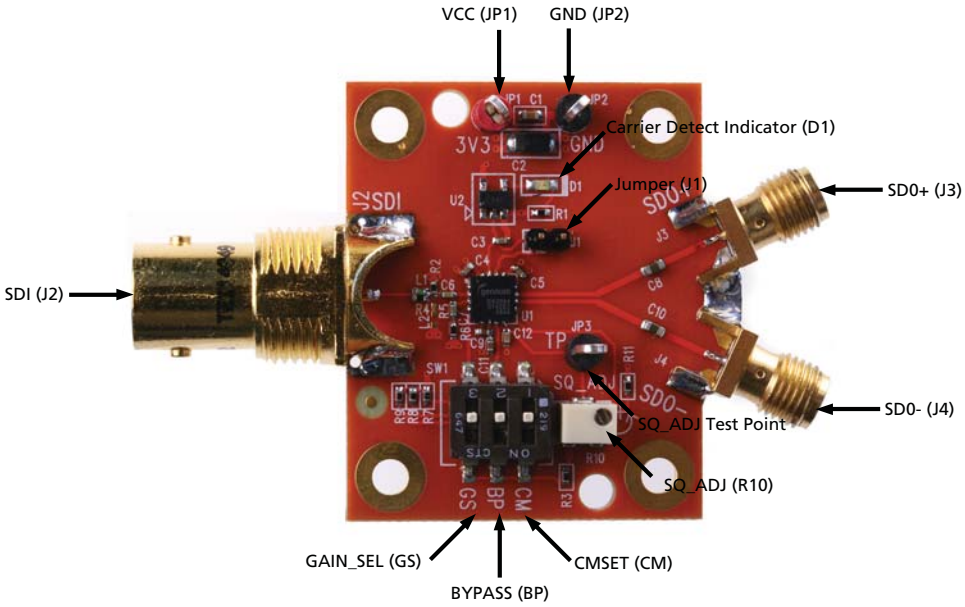



Figure 1-1: GS2984 Evaluation Board (EB-GS2984)

## 1.1 SDI Inputs and Outputs

The GS2984 is a high-speed BiCMOS integrated circuit designed to equalize and restore signals received over 75Ω coaxial cable. The EB-GS2984 is the Evaluation Board for the GS2984. It features one 75Ω BNC connector (J2) for single ended input and two 50Ω SMA connectors (J3, J4) for differential output.

## 1.2 Power

The EB-GS2984 evaluation board uses a 3.3V external power supply through 3V3 (JP1) and GND (JP2) connections.

## 1.3 Switch Settings

GAIN_SEL: Gain Selection. When set HIGH, the equalizer compensates for 6dB flat attenuation. When set LOW, there is no change in gain. This input is controlled through the switch position on SW1 marked GS.

BYPASS: Bypass Mode selection. When set HIGH, it forces the Equalizing and DC Restore stages into Bypass Mode and no equalization occurs. This input is controlled through the switch position on SW1 marked BP.

CMSET: Common Mode Adjust. When set HIGH, output common mode is set to 2.1V. When set LOW, output common mode is set to 2.9V. This input is controlled through the switch position on SW1 marked CM.

**Table 1-1: Switch Settings**

| Switch Label | Switch Name | On (HIGH) | Off (LOW) |
|---|---|---|---|
| CM | Common Mode Set | Output CM set to 2.1V | Output CM set to 2.9V |
| BP | Bypass | Bypass On | Bypass Off |
| GS | Gain Select | Compensation for 6dB flat attenuation | No change in gain |

## 1.4 Jumper Settings

Jumper (J1) is used to connect the $\overline{CD}$ and Mute pins. When connected, the board will be set in Auto-Mute Mode; otherwise the Mute pin will remain unconnected.

## 1.5 Potentiometer Settings

There is one multi-turn potentiometer (R10) on the EB-GS2984 which adjusts the voltage seen at the Squelch Adjust (SQ_ADJ) pin. This voltage adjusts the approximate amount of maximum cable equalized before $\overline{CD}$ goes HIGH.

The maximum cable length to be equalized varies with the voltage range of SQ_ADJ. This voltage range is between a lower threshold and an upper threshold. When SQ_ADJ is set to a voltage higher than the upper threshold, $\overline{CD}$ will be HIGH for all cable lengths and if it is set to a voltage lower than the lower threshold, $\overline{CD}$ will function normally. Adjusting the potentiometer clockwise will decrease the voltage level at the SQ_ADJ pin.

## 1.6 Carrier Detect Indicator

The EB-GS2984 board features a green LED (D1) which indicates when a carrier has been detected. The LED turns on when a carrier is detected and stays off otherwise.

# 2. Schematics

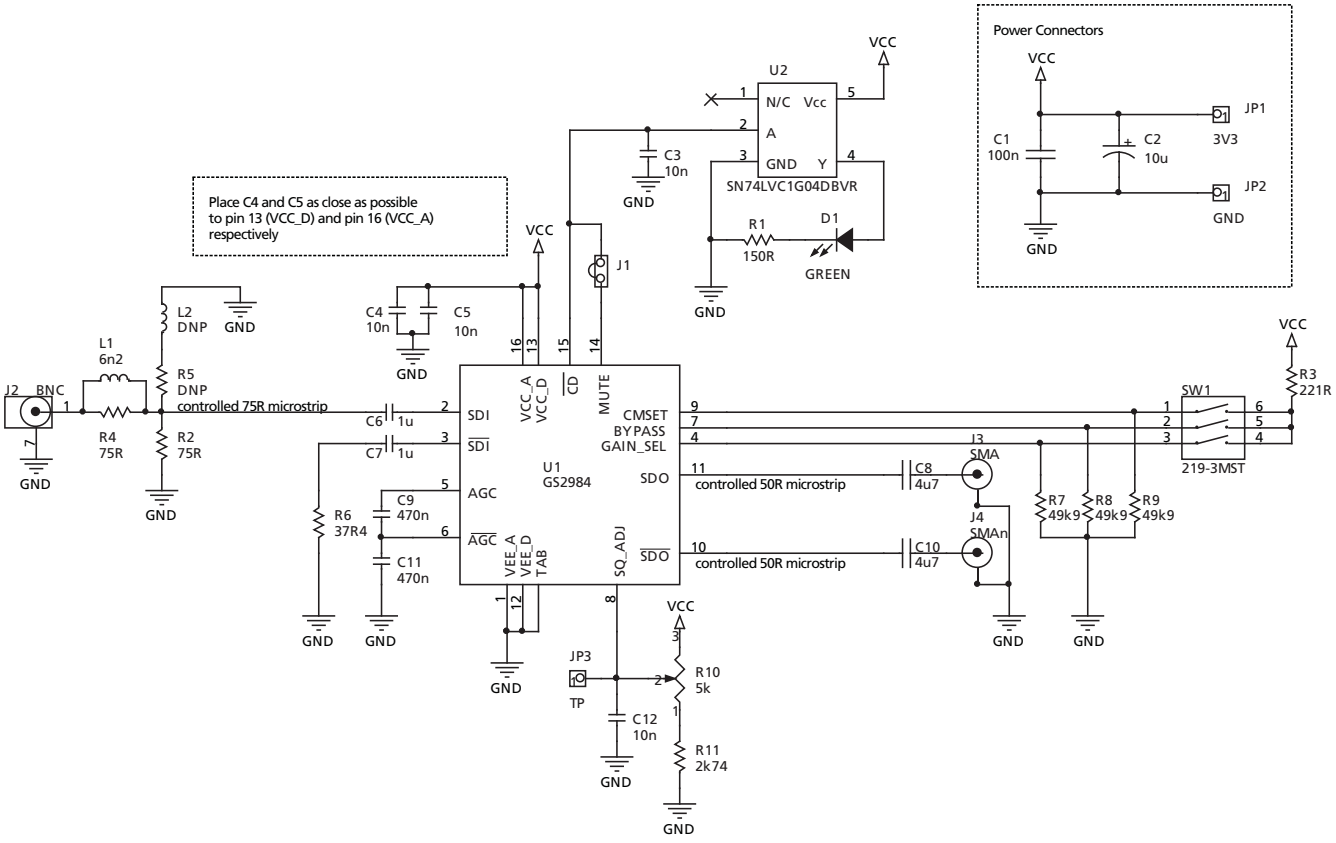



Figure 2-1: EB-GS2984 Schematic

# 3. Board Layout

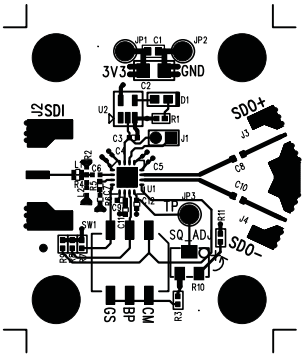



Figure 3-1: Layer 1 (Top Layer) and Top Silkscreen

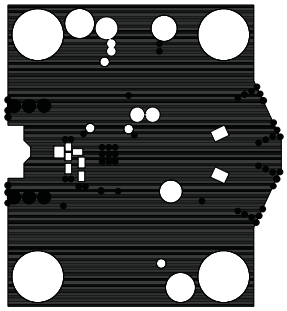


Figure 3-2: Layer 2 (Ground)

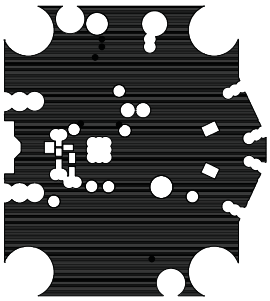


Figure 3-3: Layer 3 (Power)

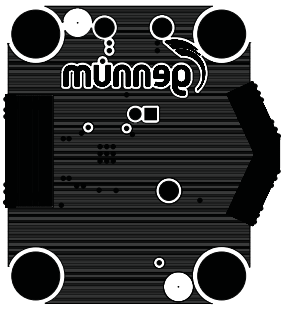



Figure 3-4: Layer 4 (Bottom)

# 4. Bill of Materials

**Table 4-1: Bill of Materials**

| Quantity | Reference Designator | Part |
|---|---|---|
| 1 | C1 | Capacitor, ceramic; 0.1µF, 16V, 10%, X7R, 0603 |
| 2 | C8, C10 | Capacitor, ceramic; 4.7µF, 10V, X5R, 0603 |
| 1 | C2 | Capacitor, tantalum; 10µF, 6.3V, 10%, 1206, SMD |
| 4 | C3, C4, C5, C12 | Capacitor, ceramic; 10000pF, 16V, 10%, X7R, 0402 |
| 2 | C6, C7 | Capacitor, ceramic; 1µF, 10V, X5R, 0402 |
| 2 | C9, C11 | Capacitor, ceramic; 0.47µF, 10V, X5R, 0402 |
| 1 | D1 | LED, green; TSS type 0603, 1.9V, 565nm |
| 1 | install on J1 | Connector, shunt; 2mm open top tin 2-position |
| 1 | J1 | Header, male; 2-pole, 2mm |
| 1 | J2 | BNC connector; edge-mount, PCB |
| 2 | J3, J4 | SMA connector; edge-mount, 26GHz |
| 1 | JP1 | Test point, male; 1-pole loop clip test point, red |
| 2 | JP2, JP3 | Test point, male; 1-pole loop clip, black |
| 1 | L1 | Inductor; 6.2nH, 300mA, 0402 |
| 1 | R1 | Resistor; 150Ω, 1/16W, 1%, 0402 SMD |
| 2 | R2, R4 | Resistor; 75.0Ω, 1/16W, 1%, 0402 SMD |
| 1 | R3 | Resistor; 221Ω, 1/16W, 1%, 0402 SMD |
| 1 | R6 | Resistor; 37.4Ω, 1/16W, 1%, 0402 SMD |
| 3 | R7, R8, R9 | Resistor; 49.9kΩ, 1/16W, 1%, 0402 SMD |
| 1 | R10 | Potentiometer; Surface Mount, 5kΩ, 12-turn |
| 1 | R11 | Resistor; 2.74kΩ 1/16W 1% 0402 SMD |
| 1 | SW1 | Switch; tape seal 3-position SMD |
| 1 | U1 | Gennum GS2984 3Gb/s Equalizer |
| 1 | U2 | Integrated circuit; single inverter-gate SOT-23-5 |
| **Parts Not To Be Populated** | | |
| | L2 | Inductor; 3.3nH, 300mA, 0402 |
| | R5 | Resistor; 75.0Ω, 1/16W, 1%, 0402 SMD |

**DOCUMENT IDENTIFICATION**
**EVALUATION BOARD USER GUIDE**

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**CAUTION**

ELECTROSTATIC SENSITIVE DEVICES

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


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