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## FEATURES

- Automatic gain control
- DC Restorer for immunity to SDI pathological bit patterns
- Supports SDI data rates from 143Mb/s to $1.485 \mathrm{~Gb} / \mathrm{s}$
- Signal strength indicator
- Internal 50 ohm output termination resistors
- Minimal external components
- Seamless output interface to other HD-LINX devices
- Single +5 V or -5 V power supply


## APPLICATIONS

- SMPTE 292M Fibre-Optic Serial Digital Interfaces


## DESCRIPTION

The GS1514 is an AGC \& DC Restorer circuit to be used in conjunction with an optical receiver. It will automatically amplify input signals in addition to restoring DC content to signals which have been AC coupled. This device also incorporates a signal strength indicator signal which is an indication of the received input swing (which equates to the received optical power). When the lower input limit is reached, the output is muted (latched to the last state) and the situation is indicated by the MUTE pin. This mute condition can be overridden and the output can be forced to either an active or a mute situation.

ORDERING INFORMATION

| PART <br> NUMBER | PACKAGE | TEMPERATURE |
| :---: | :---: | :---: |
| GS1514-CKD | 16 pin narrow SOIC | $0^{\circ} \mathrm{C}$ to $70^{\circ} \mathrm{C}$ |
| GS1514-CTD | 16 pin Tape and Reel | $0^{\circ} \mathrm{C}$ to $70^{\circ} \mathrm{C}$ |



GS1514 FUNCTIONAL BLOCK DIAGRAM

## ABSOLUTE MAXIMUM RATINGS

| PARAMETER | VALUE |
| :--- | ---: |
| Supply Voltage | $0.5 \mathrm{~V}_{\text {DC }}$ to $+5.5 \mathrm{~V}_{\mathrm{DC}}$ |
| Input ESD Voltage | TBD |
| Storage Tempature Range | $-50^{\circ} \mathrm{C}<\mathrm{T}_{\mathrm{S}}<125^{\circ} \mathrm{C}$ |
| Lead Tempature (soldering 10 <br> seconds) | $260^{\circ} \mathrm{C}$ |

## DC ELECTRICAL CHARACTERISTICS

$V_{D D}=5 \mathrm{~V}, \quad T_{A}=0^{\circ} \mathrm{C}$ to $70^{\circ} \mathrm{C}$, unless otherwise shown

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS | NOTES |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Positive Supply Voltage | - | +4.75 | +5.00 | +5.25 | V |  |
| Power Consumption | - | - | 260 | - | mW |  |
| Supply Current | - | - | 52 | - | mA |  |
| Input DC Voltage | - | - | 2.7 | - | V |  |
| Output CM Voltage | - | - | 4 | - | V |  |
| SSI DC Voltage | Max Input Swing | - | 3.5 | - | V |  |
|  | Min Input Swing | - | 1.5 | - | V |  |
| Mute DC Voltage | Below Min Input Swing | - | 1.8 | - | V |  |

AC ELECTRICAL CHARACTERISTICS
$V_{D D}=5 \mathrm{~V}, \mathrm{~T}_{\mathrm{A}}=0^{\circ} \mathrm{C}$ to $70^{\circ} \mathrm{C}$, unless otherwise shown

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS | NOTES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Jitter | $1.5 \mathrm{~Gb} / \mathrm{s}, 800 \mathrm{mV}$ input, Pathological \& PRN |  | 150 | - | ps | $p-p$ |
|  | $1.5 \mathrm{~Gb} / \mathrm{s}, 20 \mathrm{mV}$ input, Pathological \& PRN |  | 250 | - | ps | $p-p$ |
| Data Rate | - | 143 | - | 1485 | Mb/s |  |
| Output Rise/Fall Time | - | - | - | 270 | ps | 20\% to 80\% |
| Input Resistance | - | - | 2.8 | - | $k \Omega$ | Single-ended |
| Output Resistance | - | - | 50 | - | $\Omega$ | Single-ended |
| Output Signal Swing | $50 \Omega$ Loads | - | 0.4 | - | V | p-p (same as GS1504) |
| SSI Range | - | - | 2 | - | V | Ranges ~ 3.5V to 1.5 V , max. to min. input swing |
| Force Output Mute | Applied to Mute | - | 4.2 | - | V | Min. to Mute |

PIN DESCRIPTIONS

| PIN | NAME | LEVEL | I/O | DESCRIPTION |
| :---: | :---: | :---: | :---: | :---: |
| 1 | SSI | Analog | Output | Signal Strength Indicator. Provides a linear voltage representation of the received signal swing. |
| 2,15 | $\mathrm{V}_{\text {cc }}$ |  | Input | Most positive supply voltage |
| 3, 6,11,14 | $V_{\text {ee }}$ |  | Input | Most negative supply voltage. |
| 4,5 | SDI, $\overline{\text { SDI }}$ | Analog | Input | Serial Data Input. Differential input pins. Output of optical receive module should be AC coupled to these pins. |
| 7 | SSADJ | Analog | Input | Signal Strength Adjust. Adjusts the minimum input signal strength which be restored. To set no minimum limit, this pin should be left open. |
| 8, 9,10 | NC |  |  | No Connect. Do not connect these pins to supply or ground |
| 12,13 | SDO, $\overline{\text { SDO }}$ | PECL | Output | Serial Data Output. Differential serial output pins with $50 \Omega$ output impedance. |
| 16 | $\overline{\mathrm{CD}} / \mathrm{Mute}$ |  | Output/Input | Carrier Detect/Mute indicator/control. When the CD/Mute output is low, the carrier is present and the data output is active. When the CD/Mute output is high, the carrier is not present and the data output is muted (latched to the last state). This indicates that the minimum input signal as set by SSADJ has been reached. <br> The above default $\overline{C D} /$ Mute function can be overwitten as follows: if the $C D /$ Mute pin is tied to ground, the data output will not mute and the SSADJ setting is overwritten. If the mute pin is tied high, the data output will always mute and the SSADJ setting is overwritten |

## PACKAGE DIMENSIONS

Dimensions in millimeters



> DOCUMENT IDENTIFICATION
> ADVANCE INFORMATION NOTE
> 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.

REVISION NOTES:
Update to AC and DC tables.
Watermark Removed

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