



LMH0324 3G/HD/SD SDI Dual Output Adaptive Cable Equalizer

1 Features

- Supports ST 424(3G), ST 292(HD), and ST 259(SD)
- Compatible with DVB-ASI and AES10 (MADI)
- Adaptive Cable Equalizer
- Cable Reach (Belden 1694A):
 - 200 m at 2.97 Gbps
 - 280 m at 1.485 Gbps
 - 600 m at 270 Mbps
- Low Power: 78 mW (typical)
- Power Save Mode: 15 mW
- On-chip input Termination (75 Ω single-ended)
- Integrated Input Return Loss Network
- Dual 100 Ω Output Drivers with De-Emphasis
- Independent Output Power Down Control
- Supports Signal Splitter Mode (-6 dB Launch Amplitude)
- Cable Length Indicator
- Digital MUTE_{REF} Threshold
- Powers from 2.5 V or 1.8 V Supply
- Configurable by Control Pins, SPI or SMBus Interface
- 4 mm x 4 mm 24-pin QFN Package
- Operating Temperature Range: -40°C to 85°C

2 Applications

- SMPTE Compatible Serial Digital Interface (SDI)
- Broadcast Video Routers, Switchers, and Monitors
- DVB-ASI and Distribution Amplifiers
- Digital Video Processing and Editing

3 Description

The LMH0324 is a low power, dual output, extended reach adaptive cable equalizer. It is designed to equalize SDI data transmitted over 75 Ω coax cable. The equalizer operates over a wide range of data rates from 125 Mbps to 2.97 Gbps. The equalizer includes an active sensing circuitry that ensures robust performance and enhanced immunity to variations in the input signal launch amplitude.

The LMH0324 provides extended cable reach with low power consumption. It offers power management to reduce power consumption further when no input signal is present.

The LMH0324 has two differential serial data outputs, which provide flexibility for fan-out buffering. The output drivers offer programmable de-emphasis to compensate for board trace losses at the LMH0324 outputs. The operating state of the LMH0324 can be set via pin control. Additional settings of the device can be programmed via SPI or SMBus interface.

The LMH0324 is pin-compatible to the LMH1219 (12 Gbps adaptive cable equalizer with integrated reclocker). The pin compatibility allows ease of upgrade from a 3 Gbps equalizer to a 12 Gbps equalizer with integrated reclocker.

Device Information⁽¹⁾

| PART NUMBER | PACKAGE | BODY SIZE (NOM) |
|-------------|----------|-----------------|
| LMH0324 | QFN (24) | 4 mm x 4 mm |

(1) For all available packages, see the orderable addendum at the end of the data sheet.

Simplified Block Diagram

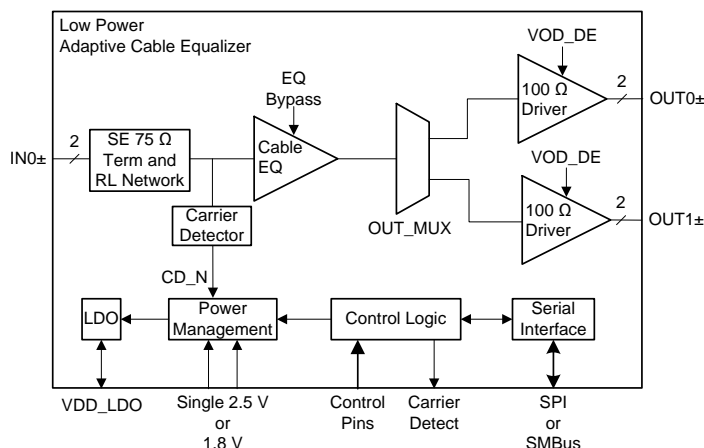


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4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

| Changes from Original (January 2016) to Revision A | Page |
|---|-------------|
| • Product Preview to Production Data Release | 1 |

5 Device and Documentation Support

5.1 Community Resources

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

TI E2E™ Online Community *TI's Engineer-to-Engineer (E2E) Community*. Created to foster collaboration among engineers. At e2e.ti.com, you can ask questions, share knowledge, explore ideas and help solve problems with fellow engineers.

Design Support *TI's Design Support* Quickly find helpful E2E forums along with design support tools and contact information for technical support.

5.2 Trademarks

E2E is a trademark of Texas Instruments.
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5.3 Electrostatic Discharge Caution



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

5.4 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| LMH0324RTWR | ACTIVE | WQFN | RTW | 24 | 3000 | Green (RoHS & no Sb/Br) | CU SN | Level-3-260C-168 HR | -40 to 85 | L0324A2 | Samples |
| LMH0324RTWT | ACTIVE | WQFN | RTW | 24 | 250 | Green (RoHS & no Sb/Br) | CU SN | Level-3-260C-168 HR | -40 to 85 | L0324A2 | Samples |

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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TAPE AND REEL INFORMATION


*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| LMH0324RTWR | WQFN | RTW | 24 | 3000 | 330.0 | 12.4 | 4.3 | 4.3 | 1.3 | 8.0 | 12.0 | Q1 |
| LMH0324RTWT | WQFN | RTW | 24 | 250 | 178.0 | 12.4 | 4.3 | 4.3 | 1.3 | 8.0 | 12.0 | Q1 |

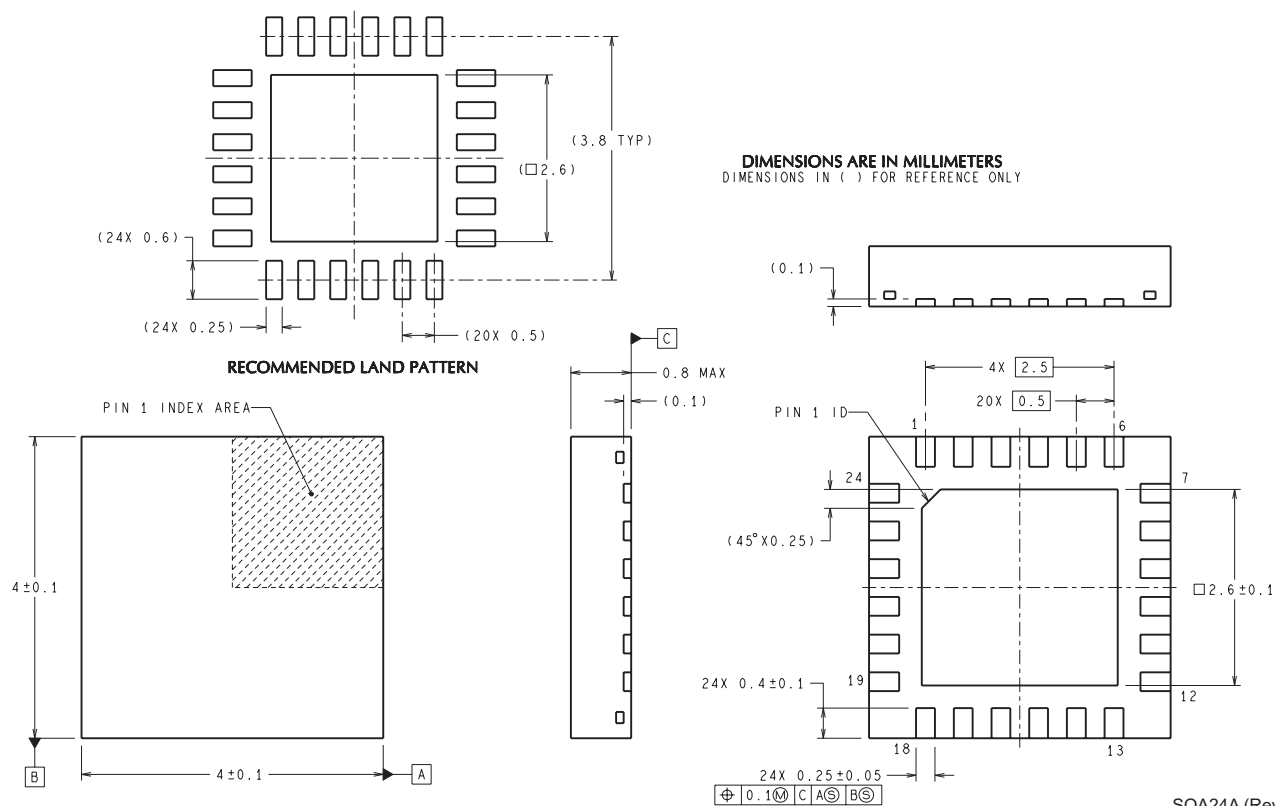
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|-------------|--------------|-----------------|------|------|-------------|------------|-------------|
| LMH0324RTWR | WQFN | RTW | 24 | 3000 | 367.0 | 367.0 | 35.0 |
| LMH0324RTWT | WQFN | RTW | 24 | 250 | 213.0 | 191.0 | 55.0 |

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|-------------------------------|--|
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