

LMH1226 Low Power Dual Output 12G UHD Reclocker

1 Features

- Supports ST-2082-1(12G), ST-2081-1(6G), ST-424(3G), ST-292(HD), and ST-259(SD)
- Supports SFF8431 (SFP+) for SMPTE 2022-5/6
- Compatible with DVB-ASI and AES10 (MADI)
- Reference-Less Reclocker Locks to SMPTE and 10 GbE Rates: 11.88 Gbps, 5.94 Gbps, 2.97 Gbps, 1.485 Gbps, or Divide-by-1.001 Sub-Rates, 270 Mbps, and 10.3125 Gbps
- Reference Free with Fast Lock Time
- Adaptive Board Trace Equalizer at Input 1 (IN1)
- Low Power: 214 mW (typical)
- Power Save Mode: 16 mW
- Integrated 1:2 Fanout Outputs with De-Emphasis
- On-Chip Loop Filter and Eye Opening Monitor
- Powers from Single 2.5 V with On-Chip 1.8 V Regulator
- 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)
- UHDTV/4K/8K/HDTV/SDTV Video
- Broadcast Video Routers, Switchers, and Monitors
- Digital Video Processing and Editing
- 10 GbE - SDI Media Gateway

3 Description

The LMH1226 is a low-power dual-output 12G UHD reclocker. It supports SMPTE video rates up to 11.88 Gbps and 10 GbE video over IP, enabling UHD video for 4K/8K applications. An adaptive board trace equalizer at IN1 is SFF-8431 compatible and supports both SMPTE and 10 GbE data rates.

The reclocker attenuates high frequency jitter and provides the best signal integrity. High input jitter tolerance of the reclocker improves timing margin. The reclocker has built-in loop filter and operates without the need of a precision input reference clock. A non-disruptive eye monitor allows for real time measurement of the serial data to simplify system debug and accelerate board bring-up.

The integrated 1:2 Fanout provides flexibility for multiple video signals. The output drivers offer programmable de-emphasis to compensate board trace losses at its outputs. The typical power consumption of LMH1226 is 214 mW. In the absence of input signal, power is further reduced to 16 mW.

The LMH1226 is pin compatible with the LMH1219 (12G UHD cable equalizer with integrated reclocker).

Device Information⁽¹⁾

PART NUMBER	PACKAGE	BODY SIZE (NOM)
LMH1226	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

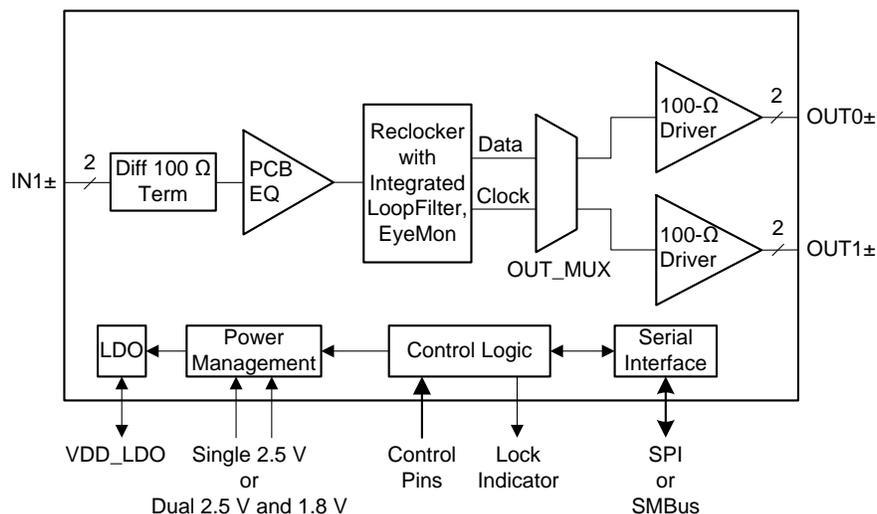


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4 Revision History

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

Changes from Original (February 2016) to Revision A	Page
• Product Preview to Production Data	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
LMH1226RTWR	ACTIVE	WQFN	RTW	24	3000	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR	-40 to 85	L1226A2	Samples
LMH1226RTWT	ACTIVE	WQFN	RTW	24	250	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR	-40 to 85	L1226A2	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.

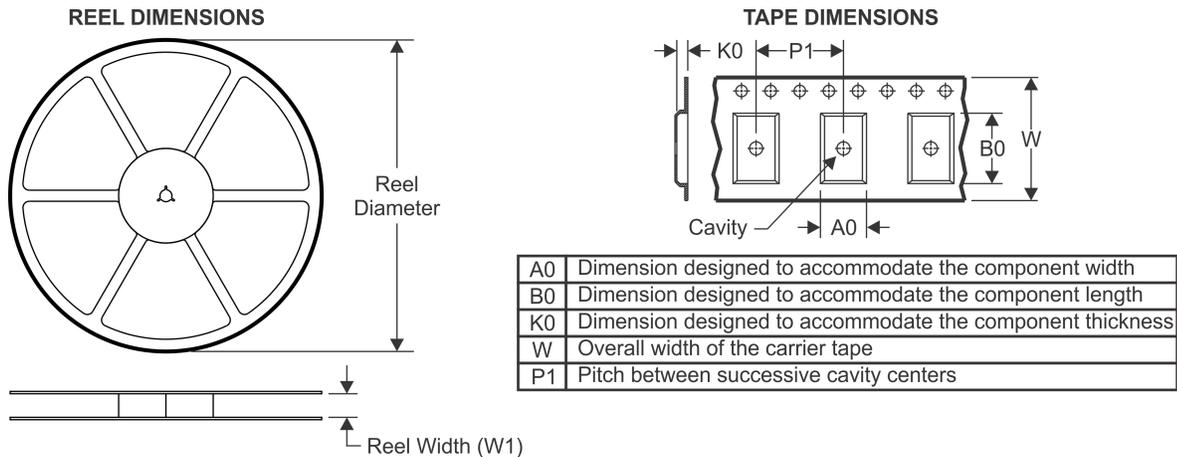
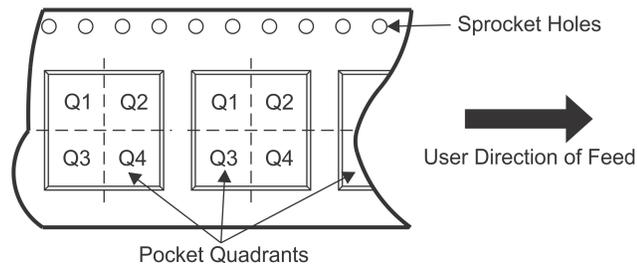
(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(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.

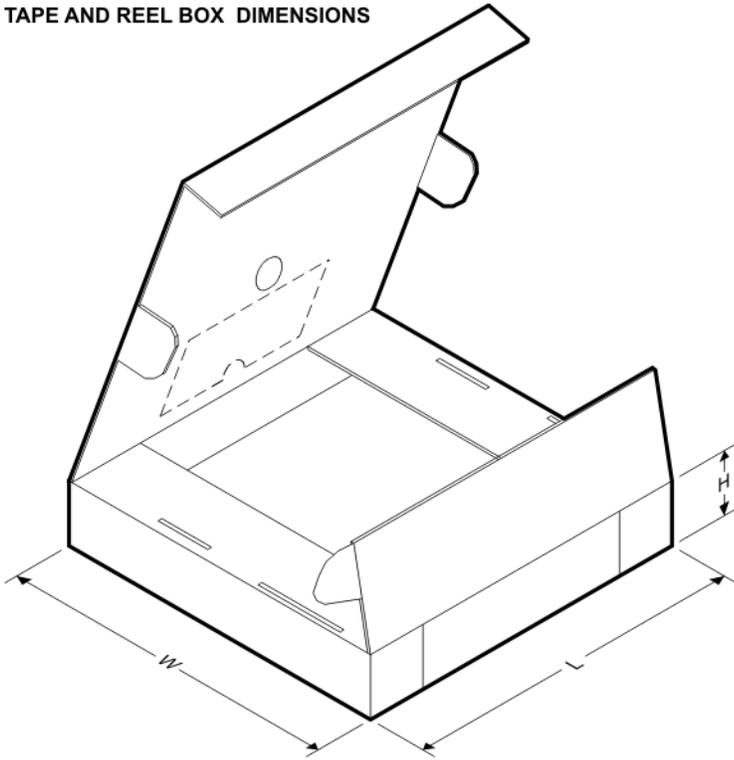
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TAPE AND REEL INFORMATION

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE


*All dimensions are nominal

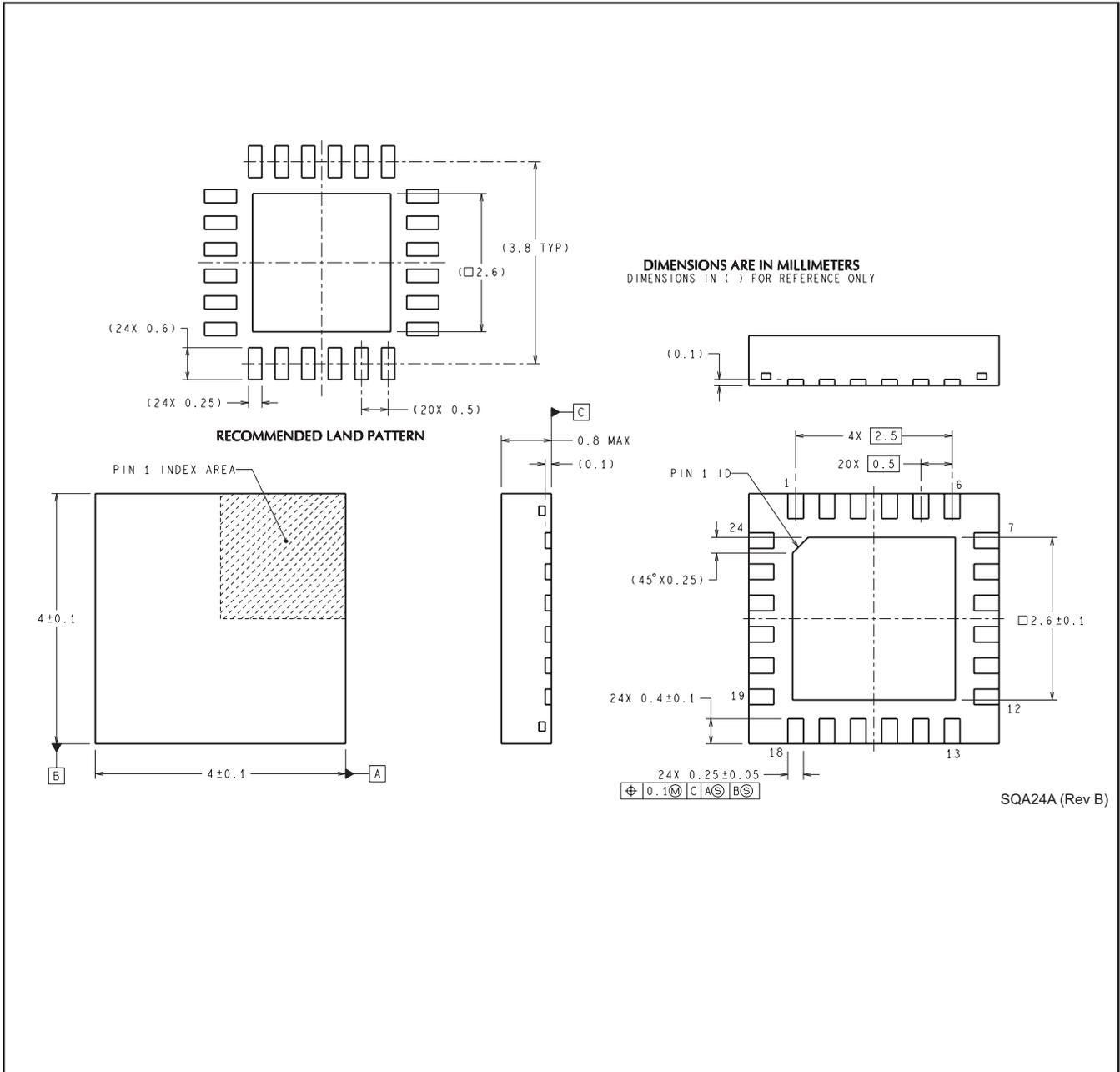
Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
LMH1226RTWR	WQFN	RTW	24	3000	330.0	12.4	4.3	4.3	1.3	8.0	12.0	Q1
LMH1226RTWT	WQFN	RTW	24	250	178.0	12.4	4.3	4.3	1.3	8.0	12.0	Q1

TAPE AND REEL BOX DIMENSIONS


*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
LMH1226RTWR	WQFN	RTW	24	3000	367.0	367.0	35.0
LMH1226RTWT	WQFN	RTW	24	250	210.0	185.0	35.0

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