

LMH0376 3 Gbps HD/SD SDI Low Power Reclocker with Integrated Eye Monitor and 4:1 Input Mux

Check for Samples: [LMH0376](#)

FEATURES

- SMPTE 424M, SMPTE 292M, and SMPTE 259M-C compliant
- Supports 125 Mbps, 270 Mbps, 1.4835 Gbps, 1.485 Gbps, 2.967 Gbps, and 2.97 Gbps serial data rate operation
- Supports DVB-ASI at 270 Mbps and MADI at 125 Mbps
- 100 mW typical power consumption (145 mW with both output drivers enabled)
- Integrated 4:1 multiplexed input with 0-60" FR4 equalizer and independent signal detect on each channel
- Two differential, reclocked outputs with option of recovered clock
- Output de-emphasis to compensate for up to 40" of FR4 trace losses
- 64 x 64 point eye opening monitor
- 27 MHz external reference or referenceless operation

- Optional SPI register access
- Internally terminated 100Ω inputs with rail-to-rail input common mode voltage
- Internally terminated 100Ω LVDS outputs with programmable output common mode voltage and swing
- Single 2.5V supply operation
- Power save mode with device power down control
- 48-pin LLP package (7 x 7 mm)
- Industrial temperature range: -40°C to +85°C
- Footprint compatible with the LMH0356 in pin mode

APPLICATIONS

- SMPTE 424M, SMPTE 292M, and SMPTE 259M serial digital interfaces
- Broadcast video routers, switchers, and distribution amplifiers

DESCRIPTION

The LMH0376 3 Gbps HD/SD SDI Low Power Reclocker with Integrated Eye Monitor and 4:1 Input Mux retimes serial digital video data conforming to the SMPTE 424M, SMPTE 292M, and SMPTE 259M-C standards. The reclocker operates at serial data rates of 125 Mbps, 270 Mbps, 1.4835 Gbps, 1.485 Gbps, 2.967 Gbps, and 2.97 Gbps.

The LMH0376 automatically detects the incoming data rate and retimes the data to suppress accumulated jitter. The reclocker recovers the serial data-rate clock and optionally provides it as an output.

The LMH0376 includes an integrated 4:1 input multiplexer for selecting one of four input data streams for retiming. Each of the four inputs has an FR4 equalizer capable of equalizing 0-60" of FR4 trace length. Each input also includes independent signal detection with a programmable threshold.

The LMH0376 has two differential serial data outputs and offers flexibility in selecting the output signals between the reclocked data, recovered clock, bypassed data, or the bypassed data from an independently selected input channel. The output drivers offer programmable de-emphasis for up to 40" of FR4 trace losses, in addition to programmable common mode voltage and swing for flexible interfacing.

The LMH0376 provides a 64 x 64 point eye monitor for analyzing the eye quality of the incoming signal.

The LMH0376 supports two modes of operation. In pin mode, the LMH0376 operates with control pins to set its operating state, and is footprint compatible with the LMH0356 reclocker. In SPI mode, an optional SPI serial interface can be used to configure and monitor multiple LMH0376 devices in a daisy-chain configuration.



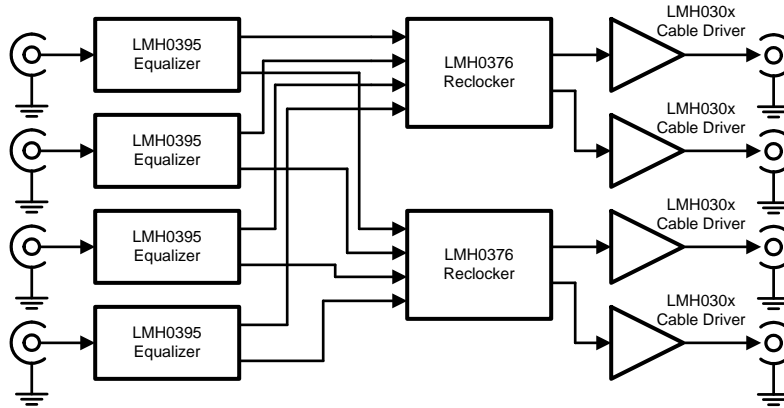
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These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

Typical Application



PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
LMH0376SQ/NOPB	PREVIEW	WQFN	RHS	48	1000	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR	-40 to 85	L0376SQ	
LMH0376SQE/NOPB	PREVIEW	WQFN	RHS	48		Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR	-40 to 85	L0376SQ	
LMH0376SQX/NOPB	PREVIEW	WQFN	RHS	48	2500	Green (RoHS & no Sb/Br)	CU SN	Level-3-260C-168 HR	-40 to 85	L0376SQ	

(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.

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TAPE AND REEL INFORMATION



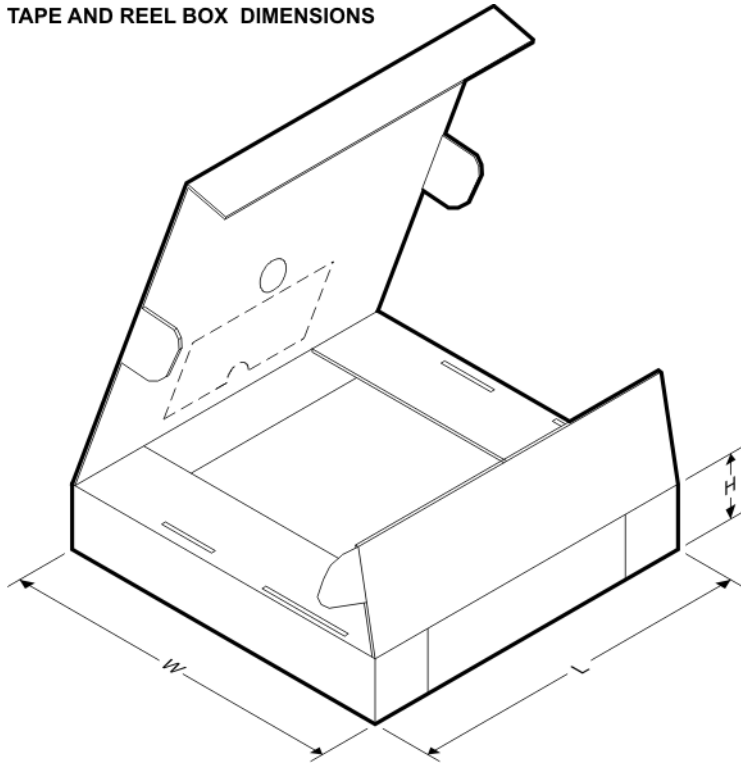
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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
LMH0376SQ/NOPB	WQFN	RHS	48	1000	330.0	16.4	7.3	7.3	1.3	12.0	16.0	Q1
LMH0376SQX/NOPB	WQFN	RHS	48	2500	330.0	16.4	7.3	7.3	1.3	12.0	16.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
LMH0376SQ/NOPB	WQFN	RHS	48	1000	367.0	367.0	38.0
LMH0376SQX/NOPB	WQFN	RHS	48	2500	367.0	367.0	38.0

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