

New SDI Equalizer Delivers Longest Cable Reach at Half the Power



A new serial digital interface (SDI) cable equalizer from National Semiconductor Corp. (NYSE: NSM) extends the reach of broadcast video signals by forty percent (200m at 3 Gbps) while delivering half the power (115 mW typical) of comparable equalizers.

The emergence of 3D-TV, which requires stereoscopic video to be captured with two independent cameras, is forcing broadcasters to migrate to higher data rates (up to 3 Gbps) to transport high-definition (HD) video signals between equipment. The increased data rates present signal integrity and power budget challenges at greater distances. The LMH0394 addresses these challenges by providing the industry's longest reach across all supported data rates - 200m at 3 Gbps (3G), 220m at HD and 400m at standard definition (SD) - and the lowest power consumption.

Until now, broadcasters have used either copper links with multiple distribution amplifiers (a type of signal repeater) or more expensive optical solutions to extend the reach of video equipment. By enabling reception of 3G-SDI across a single 200m link of coax cable, National's LMH0394 improves performance and reduces system complexity, bill of materials (BOM) cost and operating power. The LMH0394 also alleviates the need to upgrade to costly fiber solutions for longer-reach outdoor installations (such as sporting events), which allows broadcasters to get more out of their existing coax installations.

The LMH0394's low power consumption provides system designers the power budget margin they need to add functionality such as audio processing and reclocking on video input cards. The device also includes an automatic power-down

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mode that, in the absence of an input signal, reduces power consumption by 85 percent.

In addition, the LMH0394 provides the lowest output jitter across the entire range of cable lengths, enabling designers to meet system jitter budgets. The typical jitter is less than 0.15 unit intervals (UI) of output jitter up to 100m, 0.20 UI up to 140m and 0.40 UI up to 180m at 3G data rates. The LMH0394's low output jitter also removes the need for input relocking of short-reach links, further saving power consumption.

The LMH0394's advanced features include power-efficient low-voltage differential signaling (LVDS) drivers with programmable offset, amplitude and output de-emphasis, a cable length indicator that can approximate cable lengths within 1m of accuracy, and support for passive external splitters. These enhanced features can be accessed through the LMH0394's SPI programming interface. Offered in a 4 mm by 4 mm, 16-pin LLP® package, the LMH0394 is backward-compatible with National's SDI equalizer family.

A dual output version (the LMH0395) is also available. The LMH0395 has very low operating power, consuming 145 mW from a 2.5V supply. The chip's dual outputs remove the need for an external 1:2 buffer, further reducing system power and cost. Each of the outputs can be independently enabled and programmed to drive downstream devices with different input requirements and trace lengths. The LMH0395 is supplied in a space saving 4 mm by 4 mm, 24-pin LLP package.

Pricing and Availability

The LMH0394 is priced at \$21.95 each and the LMH0395 is priced at \$22.95 each in 1000-unit quantities. Both devices are sampling now, with production quantities scheduled for October 2010. For more information on the LMH0394 or to order samples and an evaluation board, visit www.national.com/pf/LM/LMH0394.html.

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