

Product Bulletin

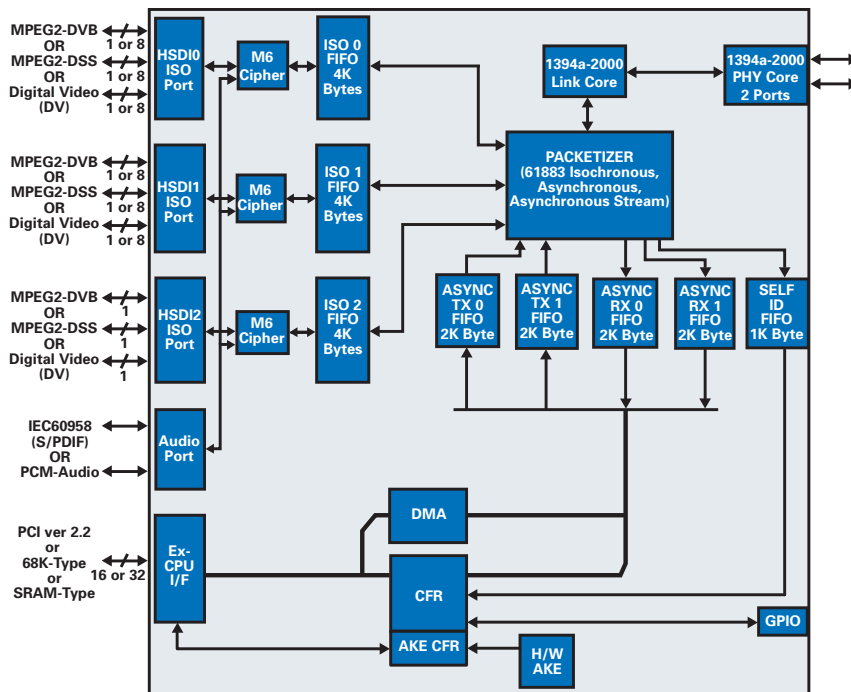
# TSB43DA42/TSB43DB42/TSB43DA42A— IEEE 1394a Link-Layer Controllers with Integrated 2-Port PHY

The TSB43DA42/TSB43DB42/TSB43DA42A (later referred to as TSB43Dx42) from Texas Instruments (TI) are single-chip IEEE 1394 solutions containing both the link-layer controller and the physical-layer controller functionality. The primary function of the TSB43Dx42 is to handle communication of audio/video data (such as DV or MPEG-TS) across a 1394 network as required by the consumer electronics market.

Each of the three high-speed data interfaces (HSDIs) are associated with an isochronous

datapath and can be independently configured to transmit (to IEEE 1394) or receive (from IEEE 1394). All three HSDI ports support seamless connections to the various codecs on the market.

Once the TSB43Dx42 is configured appropriately by an external CPU (connected to the host interface using either a PCI or SRAM/168K bus), it will handle all of the formatting of the IEC61883 packets. When transmitting to the 1394 network, this means the codecs will be responsible for outputting the compressed A/V



**Key Features**

- Single device 1394 solution
- DTCP (5C) content protection (TSB43DA42/TSB43DA42A only)
- Communication of compressed A/V data (DV, MPEG-TS, DirectTV TS) and digital audio according to the IEC61883 standard
- PID Filtering/Packet Insertion functionality as required by EIA-775
- Three data paths for isochronous data (each containing a 4Kbyte FIFO and a DTCP cipher)
- 2-port PHY capable of communicating at 400, 200, or 100 Mbps
- Compliant to IEEE 1394-1995 and IEEE 1394a-2000 standards
- Controlled by external CPU using either PCI or SRAM/68K interface
- DMA mechanisms to greatly enhance throughput of asynchronous data such as SBP2 (serial bus protocol) transactions and OSD (on-screen-display) data
- Hardware acceleration of DTCP-AKE functionality
- Local encryption block for protection of DTCP parameters
- Linux software driver source code available

data, but the TSB43Dx42 will generate and output the IEC61883 packet containing the compressed A/V data (along with appropriate 1394 headers, time-stamp information, etc.) When receiving data from the 1394 network, the TSB43Dx42 will remove the 1394 headers and timestamps from the IEC61883 packet and then output the compressed A/V data to the codec.

The TSB43Dx42 also has various DMA engines that can greatly accelerate communication of SBP2 data (used by PC-type 1394 hard disk drives) as well as OSD data (used in CEA-775A connections).

### Technical Details

- 196-pin MicroStar BGA™  
15 x 15mm (1.0mm pitch)
- 32-bit 3.3-V PCI I/F compliant to PCI v2.2
- Three HSDI ports (each dedicated to an isochronous datapath) to support I/O of compressed AV data (such as DV or MPEG-TS)
- One digital-audio port provided to support I/O of SPDIF and PCM data

### Applications

- Set-top box
- Digital TV
- DVD recorder
- Digital VCR (DVHS)
- Digital video recorder (DVR)
- Digital camcorder

### For More Information

Note: The TSB43DA42 and TSB43DA42A devices are currently available only to licensees of DTCP content protection technology. More information on this technology can be found at: [www.dtcp.com](http://www.dtcp.com)

The TSB43DB42 is HW and SW compatible to the TSB43DA42/TSB43DA42A but does not include DTCP content protection. The TSB43DB42 can be used in applications where content protection is not required or while the manufacturer is in the process of licensing DTCP.

If you would like more information on the TSB43Dx42 devices or other 1394 devices from TI, please contact your local TI field sales office or visit:

[www.ti.com/1394](http://www.ti.com/1394)

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