TL810/811/812 STB/PVR Controller IC Family
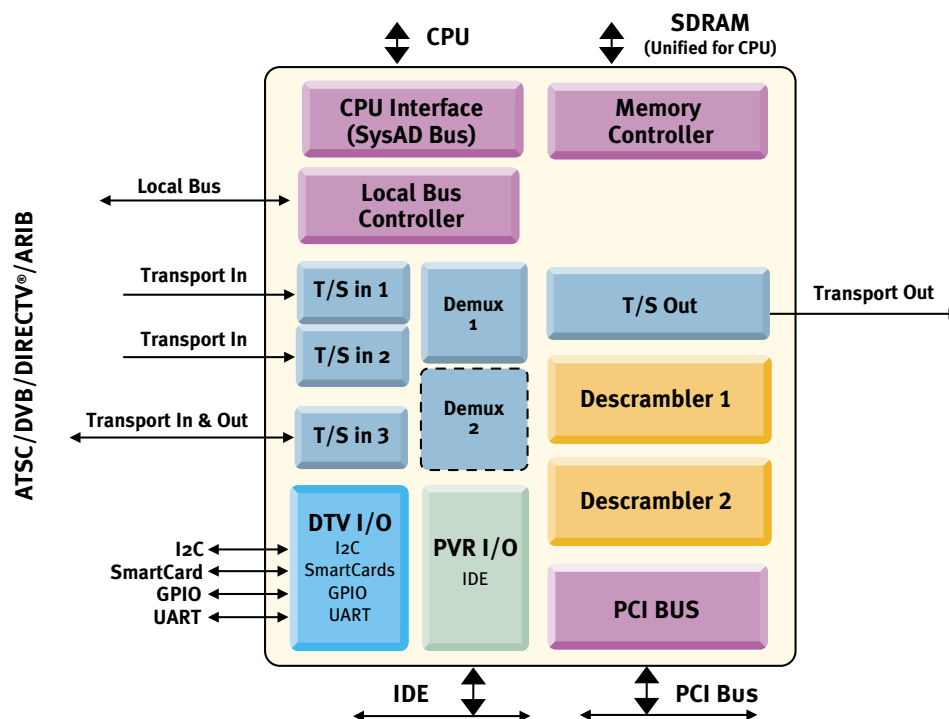
TeraLogic®

Multiple-transport, multiple-descrambler Controller ICs for Consumer Electronic OEMs to manufacture Digital TV sets, Digital Set Top Boxes and Personal Video Recorders

GLOBAL AND SCALABLE ARCHITECTURE

The STB/PVR Controller IC family from TeraLogic is a key element of its global and scalable architecture for Digital TV. It interfaces seamlessly to TeraLogic's Digital TV Decoder ICs to create a versatile solution to design consumer electronics products such as Digital Set-Top Boxes, Digital TV sets and Personal Video Recorders (PVR) for cable, satellite or terrestrial broadcast. These functions are integrated in a single IC – multiple transport demux, descramblers, conditional access, PCI bridge, CPU local bus, I2C, SmartCard interfaces, IDE interface, UART and GPIOs. This system-on-a-chip approach provides a very cost-effective solution by eliminating either the need to use discrete solutions or costly ASIC development.

These ICs address worldwide Digital TV requirements by incorporating four transport streams I/Os and multiple demultiplexers that are compatible with ATSC, ARIB, DVB, and DIRECTV®. The universal appeal of these devices is enhanced by the inclusion of DVB, DIRECTV DES-ECB, MPEG DES, Triple DES-CBC and Multi-2 descrambling schemes.

The Controller IC family can be used to design next generation PVR devices with advanced features or to upgrade an existing Set-Top Box to include PVR functions. The multiple transport inputs enable consumer-pleasing capabilities such as the ability to simultaneously watch and record or to have digital picture-in-picture on any television set.

TL81X BLOCK DIAGRAM

TL810/811/812
STB/PVR Controller IC Family

APPLICATIONS
- Set-Top Boxes
- Digital TV
- Personal Video Recorders

SUPPORTING TERALOGIC PRODUCTS
- TL85x Decoder ICs
- Cougar Development Platform

PROGRAMMABLE TRANSPORT INPUT/DEMULTIPLEXER
- Two dedicated and one bi-directional transport input ports
- One dedicated and one bi-directional transport output ports
- Glueless interface to IEEE 1394 devices
- TL810/811: One ATSC/DVB/ARIB/DIRECTV compliant demux
- TL812: Two ATSC/DVB/ARIB/DIRECTV compliant demux
- Glueless interface to most front-end ICs
- Maximum input bit rate of 80 Mbits/sec supported on each port
- Ability to transfer multiple SD streams to the TeraLogic DTV Decoder for SD PIP applications

DESCRAMBLERS
- DVB, DIRECTV DES-ECB, MPEG DES, Triple DES-CBC, Multi-2 descrambling supported
- Simultaneous descrambling of two streams supported
- All three transport input ports can access the descramblers
- Bypass mode of transport streams supported

CPU INTERFACE
- Glueless interface to MIPS CPUs such as QED RM5231, NEC V$_R$5432
- 32-bit wide multiplexed address/data supported
- Write and Read posting buffers between CPU and external resources (PCI, memory bus and local bus).

LOCAL BUS
- Generic bus interface (16-bit data and 24-bit address bus)
- 6 Pre-decoded, programmable chip selects
- Can be configured to be fixed 8-bit only, or 8- and 16-bit width device support

IDE ULTRA DMA INTERFACE
- Supports one IDE connector for up to 2 IDE drives
- Ultra DMA specifications allows 66 MByte transfer rate

SDRAM INTERFACE
- 32-bit wide SDRAM interface
- Supports 16/64/128-Mbit SDRAM devices
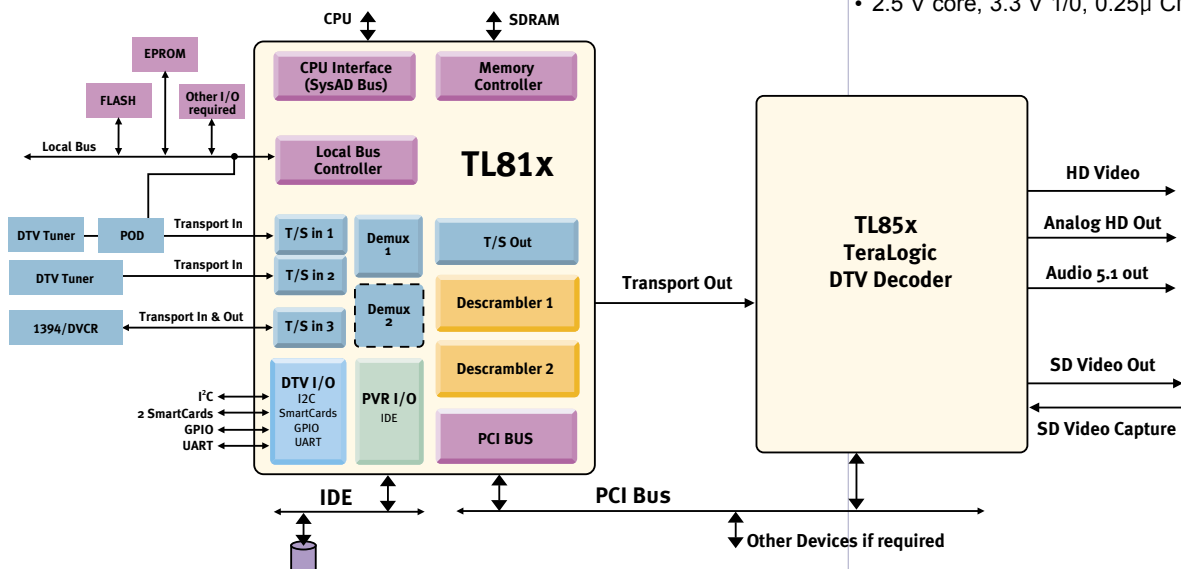
PCI BUS INTERFACE
- 32-bit PCI 2.1 compliant interface
- 50 MHz or 33 MHz bus clock
- PCI Master/Slave/Arbiter capability supported
- Supports burst transfers for efficient data movement

PERIPHERALS
- Two ISO-7816 smart card interfaces
- Four Asynchronous UART
- Two I^{2}C compatible master and slave ports
- Three 32-bit timers/counters
- NRSS-A/NRSS-B support
- User-configurable general purpose I/Os

TECHNOLOGY
- See grid below for packaging
- 2.5 V core, 3.3 V 1/0, 0.25µ CMOS

TL81x SYSTEM DIAGRAM

DEVICE	MARKET POSITIONING	PACKAGING
TL810	Satellite (i.e. DIRECTV, ARIB, DVB)	324 BGA
TL811	Satellite, Cable & Terrestrial (i.e. Adds ATSC, OpenCable to TL810)	352 BGA
TL812	Satellite, Cable & Terrestrial & Enhanced PVR (Dual Demux)	352 BGA

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