

LSI Logic DiMeNtion™ 8602

DVD Recorder System Processor

DiMeNtion-2

www.DataSheet.in

OVERVIEW

The LSI Logic DiMeNtion-2 second-generation family of DVD recorder processor products is based on the proven DoMiNo™ architecture. The DiMeNtion-2 family is intended for demanding, yet cost-sensitive, A/V codec applications that allow consumer electronics manufacturers to offer a broad range of DVD recorder and other consumer electronics products. A true system-on-a-chip solution, the DiMeNtion 8602 (DMN-8602) reduces cost, design complexity, power consumption and time-to-market, and offers broadest feature set with the best image quality.

The DMN-8602 accepts video from broadcast TV and other analog video sources and compresses and formats the video for storage on DVD in industry-standard recordable formats. The DMN-8602 supports the simultaneous playback of previously recorded video from DVD, which may be from the same broadcast program, time-shifted. To support archiving digital camcorder content to a DVD, DMN-8602 integrates a second generation DV codec. The LSI Logic Direct Digital Dub™ technology simplifies the transfer of personal digital content from a cam-corder to DVD over FireWire, with one-touch control via a single remote.

The DMN-8602 offers DoMiNoFX™ technologies – industry-leading pre- and post-processing of video – to create a visibly superior viewing experience. LSI Logic's proprietary motion-compensated temporal filtering (MCTF) algorithm, TrueView™ Pro, provides a cleaner picture through substantial noise reduction. This technique is coupled with the LSI Logic fifth-generation compression technology, PerfectView® Pro for excellent video quality, even at very low bit rates. The motion-compensated de-interlacing (MCDI) TrueScan™ Pro then recreates clear images on progressive scan displays through the elimination of video blurring in moving scenes.



SYSTEM FEATURES

- Record broadcast TV to DVD with timeshift capability
- Store analog video on DVD
- Playback MPEG-4 video
- DVD playback
- Output video in progressive mode
- Connect to digital still cameras and memory cards via the USB port
- DoMiNoFX™ technologies for the highest-quality video
- Archive DV camcorder content on DVD with single remote control operation (Direct Digital Dub™)

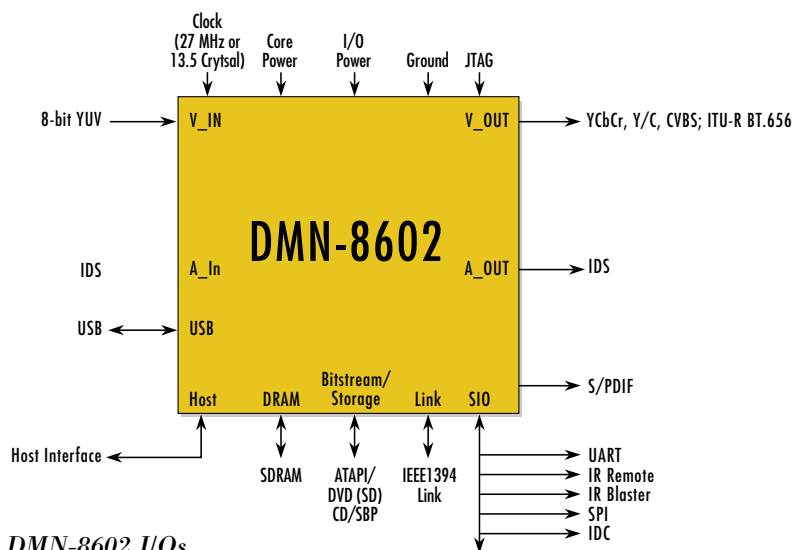


Figure 1: DMN-8602 I/Os



LSI Logic DiMeNasion™ 8602 DVD Recorder system Processor

www.DataSheet.in

DEVICE FEATURES

- Dual 150 MIPS RISC architecture with integrated audio DSP
- Flexible video DSP and motion estimation processors
- Integrated TV encoder and video DACs
- High-performance memory controller for support of up to 256 MB of external SDRAM
- Second-generation DV codec
- IEEE1394 link layer with 5C content protection and AV/C protocol support
- Integrated USB controller
- 2D graphics engine (native 24-bit RGB with 8-bit alpha) with DVD sub-picture decode
- Serial I/O interface controller for infrared port, general-purpose serial I/O, etc.
- Storage device interface controller for IDE/ATAPI devices

CAPABILITIES

For DVD video recording applications, the DMN-8602 supports video compression in compliance with the MPEG-1, MPEG-2, and DV-25 specifications, and video decompression in compliance with the MPEG-1, MPEG-2, DV-25, and MPEG-4 specifications. The DMN-8602 also enables transcoding between DV-25 and MPEG-2. The product supports corresponding audio compression and decompression in compliance with the Dolby Digital CE and MPEG-1 layer 2 specifications.

The DMN-8602 supports the DVD-RAM, DVD-RW/-R, and DVD+RW/+R video recording formats and complete DVD recordable drive buffer management. The DMN-8602 can support either half-duplex (separate recording or playback) or full-duplex (simultaneous recording and playback) operations on the DVD recordable drive.

For playback applications, the product supports the playback of DVD-Video disks with Dolby Digital 5.1, MPEG-1 layer 2 and DTS audio encoding, and VCD and SVCD disks. For audio playback applications, the product supports the decoding of DVD-Audio disks (MLP), Windows Media Audio (WMA) and CD-DA formats. The DMN-8602 also performs all audio post-processing tasks such as 3D audio effects (Phantom™ Surround) and bass management functions.

SYSTEM DESIGN

The high level of integration drastically reduces system component count, and consequently system cost. Figure 2 shows a block diagram of an advanced DVD recorder based on DMN-8602.

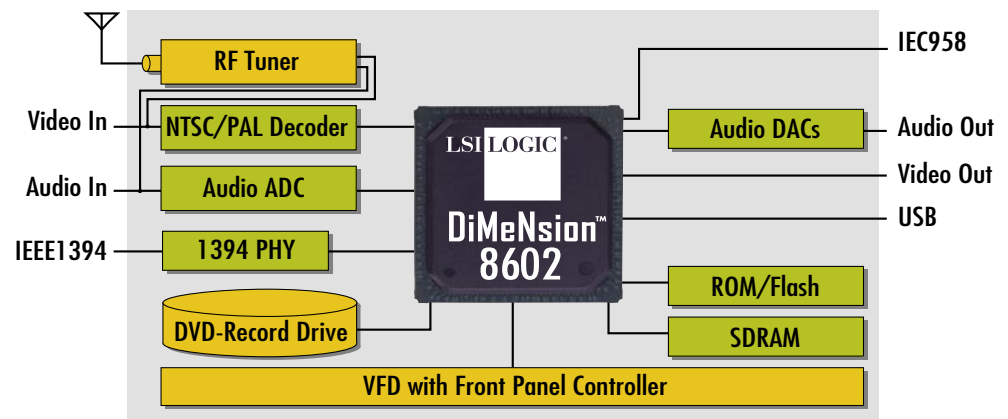



Figure 2: DMN-8602 DVD Recorder System



In addition to including a CPU, graphics engine, and complete audio and video systems, the DMN-8602 integrates an NTSC/PAL TV encoder, a second-generation DV codec, a Unified Memory Architecture and a USB controller. The USB controller allows for connectivity with flash memory cards and digital still cameras. This high level of integration makes DMN-8602 one of the most comprehensive and cost-competitive DVD recordable solutions in the market today.

ARCHITECTURE

The DoMiNo architecture – the foundation of the DMN-8602 product features – represents the optimal balance between hardware and software. Repetitively executed, computationally complex pixel processing tasks are accelerated in hardware execution units. Higher-level data processing is performed on standard RISC processors, permitting substantial product flexibility and use of industry-standard development tools.

The DMN-8602 is compatible with the LSI Logic C-Ware™ architecture, which provides a standardized API that is reusable across LSI Logic DoMiNo-based consumer digital video products, fully preserving software investment. C-Ware is integrated with the Wind River Systems® VxWorks RTOS and is supported by an industry-leading software development tool-chain.

LSI Logic DiMeNtion™ 8602 DVD Recorder System Processor

Summary of Specifications

Video Interface

Input	One 8-bit YUV 4:2:0 video stream
Output	Digital: One 8-bit ITU-R BT.656 interlaced video output Analog: Support for (M) NTSC, (B,D,G,H,I) PAL, CVBS, Y/C, analog component video RGB or SMPTE YCbCr outputs

Audio Interface

Inputs	2 channels, IDS compatible, 16-24 bits/sample
Outputs	8 channels, IDS compatible, 16-24 bits/sample, S/PDIF

I/O

Low Speed Serial	UART, SPI, IR, IR Blaster, IDC
Storage	IDE interface for ATAPI devices
High Speed Serial	IEEE 1394 Compliant, USB

Processing

A/V Codec	Single-stream, full-duplex, audio and video codec
Encode Formats	MPEG-2 MP@ML, MPEG-1, DV-25, DDCE
Decode Formats	MPEG-2 MP@ML, MPEG-1, MPEG-4, DV-25, AC-3, DDCE, MLP, AAC, DTS, WMA
Logical Disk Formats	DVD-VR (DVD-RAM, DVD-RW), DVD-V (DVD-R, DVD-RW), DVD+VR (DVD+RW, DVD+R)
Encryption/Decryption	CPPM, CPRM, CSS, 5C

System

Host	Internal host with 16-bit generic external bus interface
Graphics	2D OSD - up to 24 bit/pixel RGB with 8-bit alpha channel - with flicker filter, video scaler

Memory

Memory	Up to 256 MB of SDRAM
--------	-----------------------

Physical

System Clock	13.5 or 27 MHz
Operating	Power <2.7 W
Package	308 BGA

JTAG

Compliance	IEEE 1149.1 compliant boundary scan and PCB assembly testing
------------	--

For more information please call:

LSI Logic Corporation

North American Headquarters
Milpitas, CA
Tel: 866-574-5741

North America

Milpitas, CA
Tel: 1-408-490-8000
Fax: 1-408-490-8590

Europe

European Headquarters
United Kingdom
Tel: 44-1344-413200
Fax: 44-1293-651119

Hong Kong

Kowloon Tong, Hong Kong
Tel: 852-2192-1789
Fax: 852-2511-6939

China

Beijing, China
Tel: 86-10-626-38296
Fax: 86-10-626-38322
Chengdu, China
Tel: 86-28-667-8831
Fax: 86-28-667-8054

Japan

Tokyo, Japan
Tel: 81-3-5463-7821
Fax: 81-3-5463-7820

Korea

Seoul, Korea
Tele: 82-2-528-3400
Fax: 82-2-528-2250

LSI Logic, LSI Logic logo, DoMiNo, DiMeNtion, C-Ware, TrueScan, TrueView, PerfectView, Direct Digital Dub, and ZiVA are trademarks or registered trademarks of LSI Logic Corporation. All other brand and product names may be trademarks of their respective companies.

LSI Logic Corporation reserves the right to make changes to any products and services herein at any time without notice. LSI Logic does not assume any responsibility or liability arising out of the application or use of any product or service described herein, except as expressly agreed to in writing by LSI Logic; nor does the purchase, lease, or use of a product or service from LSI Logic convey a license under any patent rights, copyrights, trademark rights, or any other of the intellectual property rights of LSI Logic or of third parties.

Copyright ©2003 by LSI Logic Corporation.
All rights reserved.

Order No. I20110
1203.1K.JG.IK - Printed in USA

