MDE 9517D, MDE 9518D

Nov/2004

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Digital Decoder for DVB Set-Top Boxes and IDTV Sets

The MDE 9517D and the MDE 9518D are highly integrated MPEG-2 decoders for DVB-compliant digital set-top boxes (STBs) and integrated digital television sets (IDTVs). The most recent members of the Micronas MDE family feature an integrated transport stream demultiplexer, a high-performance CPU, MPEG-2 audio and video decoding, and the video, graphic, and audio output unit. The ICs are cost-effective, powerful platforms for the complete transport stream processing in satellite, cable, or terrestrial STBs and IDTVs. They provide a range of features that is easily deployed thanks to Micronas' Integrated Consumer Television Operating System MICTOS. The complete system solution significantly simplifies the design of STBs, including optional PVR functionality, and integrated digital TVs.

The new MDE 95xyD single-chip decoders enable a full range of applications including free-to-air, pay-TV and personal video recorder (PVR) set-top-boxes. The MDE 9517D with digital RGB outputs fulfils the increased picture quality requirements of the FPD IDTV market. Chip family members with advanced security features are ideally suited for pay-TV applications.

Features

◆ Highly-integrated single-chip DVB compliant decoder:
  – Embedded 32-bit RISC processor as system and chassis controller
  – Transport stream filtering and demultiplexing
  – DVB descrambling
  – MPEG-2 MP@ML video decoding
  – MPEG-2 layer I, II audio decoding
  – High-performance 2-D graphics accelerator
  – Support of 4 graphic/video layers (video, graphics, PIP or subtitle, background)
  – PAL and NTSC video and graphic resolutions
  – Teletext L2.5 decoding
  – Integrated audio and video DACs
  – Only one 20.25 MHz crystal required

◆ Compelling features for IDTV applications
  – RGB digital output for graphic
  – ITU656 output for video
  – 100 Hz interlaced or 50 Hz progressive graphics output
  – Graphic synchronizable to external H/V-sync pulses

◆ A multitude of interfaces enable scalable applications:
  – Up to two transport stream (TS) inputs
  – Configurable parallel or serial TS interfaces
  – Analog RGB, Y/C (S-Video), CVBS video output
  – VBI data service (e.g. Teletext) reinsertion
  – Video encoding in PAL, NTSC and SECAM format
  – Stereo L/R, S/PDIF and I^2S audio output
  – Unified SDRAM interface
  – ATA interface for PVR applications
  – Control interface for up to two common interface (CI) modules

◆ Flexible power-down modes

◆ IEEE 1149.1 boundary scan

◆ Packages
  – MDE 9518D: PLQFP208-1
  – MDE 9517D: PBGA352-1 package

Applications

◆ Satellite, cable, terrestrial set-top boxes

◆ Personal video recorders (PVRs)

◆ Pay-TV set-top boxes

◆ Integrated digital TV sets (IDTVs)

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Software Kit

The MDE 95xyD family is offered together with Micronas' Integrated Consumer Television Operating System MICTOS. MICTOS supports the software designer by handling the digital A/V transport stream decoding (demultiplexing, A/V synchronization, clock control loop etc.) and offering standard interfaces for hard drive, Flash, and SDRAM management. It integrates a real-time operating system kernel, a comprehensive set of device drivers and driver managers, while offering a well-defined API. MICTOS allows for software stacks, that are reusable and portable among all versions of the MDE 95xyD family and other Micronas 32-bit IC platforms.

Set-Top Box Application

The MDE 9518D can be combined with any DVB-S/-C/-T demodulator or NIM for satellite, cable or terrestrial STB designs. An example of a terrestrial STB application, based on MDE 9518D and Micronas' fourth-generation COFDM demodulator DRX 397xD, is shown in Fig. 1.
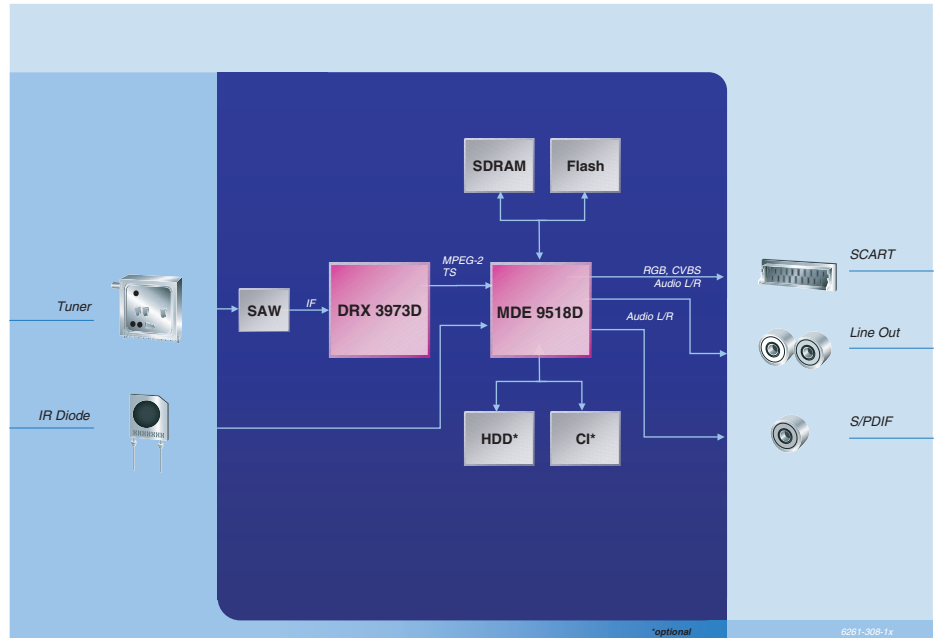
IDTV Application

Fig. 2 shows a block diagram of a flat-panel design using the MDE 9517D performing all the digital MPEG processing, the VGC video, graphic, scaler and controller IC, handling all the analog services, the MSP 44xyK for analog audio demodulation and baseband processing and the DRX 39xyD/DRX 386xA as front-end.
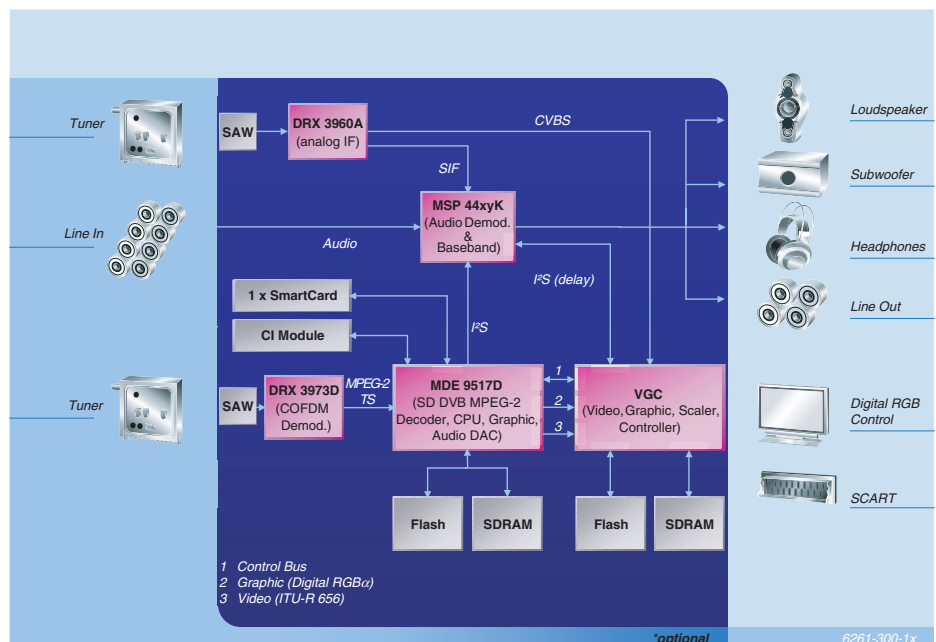

Fig. 1: Set-top box application

Fig. 2: IDTV application

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