

# Product Profile



## MB86H21

## SmartMPEG

November 2003  
Edition 0.55

## MPEG-2 Decoder with Integrated NDS ICAM

FME/MM/PP/1103

### INTRODUCTION:

This **SmartMPEG** is an integrated MPEG-2 set-top-box decoder which includes the hardware extensions required to support the NDS Conditional Access system.

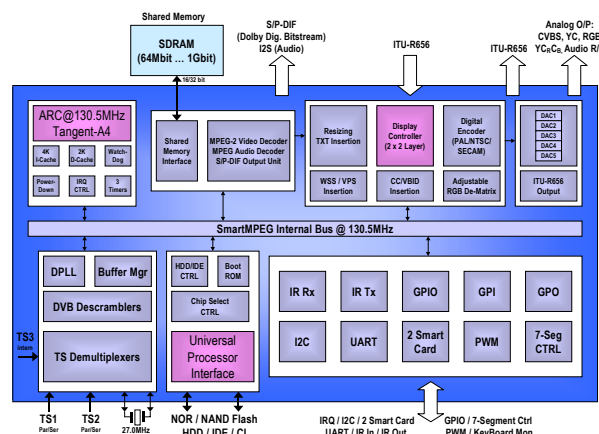
**Highlights of the SmartMPEG** include an ARC RISC CPU (@130.5MHz), two transport stream demultiplexers with integrated DVB descramblers, a PAL/NTSC/SECAM digital video encoder and a display controller, which overlays up to four layers of graphic data. A specially designed, shared SDRAM memory interface for the CPU and MPEG decoder connects to a single SDRAM device using either a 16 or 32-bit data bus depending on customer bandwidth requirements. The included universal processor interface allows simple connection to FLASH, hard disk drives (IDE), Common Interface and other asynchronous devices.

The **SmartMPEG** is part of Fujitsu's MPEG decoder family, and is the successor to the MB87L2250. The **SmartMPEG** offers several advantages over the MB87L2250, including support for 16/32-bit SDRAM devices up to 128Mbytes, an integrated S/P-DIF interface, DPPLL, and internal audio DAC's. This helps to reduce product cost by eliminating the need for external components. The **SmartMPEG** adds also NDS support, DPPLL functionality, SECAM encoding, and two Smart-card interface to former MPEG devices.

To help our customers achieve the shortest possible time-to-market, the **SmartMPEG** comes with the **Fujitsu Driver Application Programming Interface (FAPI)**. FAPI is a complete driver set, allowing fast and efficient customer software design. In addition, FAPI is now the standard programming interface for Fujitsu DVB components, easing migration to future devices.

### FEATURES

- MPEG2 video ISO/IEC 13818-2 (MP@ML...SP@ML)
- MPEG audio layer 1/2
- 32-bit RISC CPU (ARC Tangent A4 @130.5MHz)
- 4K I-cache, 2K D-cache
- Three timers / watchdog / power-down mode
- Shared memory interface (SDRAM, 16/32 bit data), 64Mbit...1Gbit
- Universal processor interface (IDE, NAND/NOR FLASH & Common Interface)
- Two transport stream decoders (decoding/recording) including two DVB descrambler and one NDS ICAM
- Flexible MPEG video resizing (factor 1/16 to 2)
- Display controller with up to 4 true colour graphic or CLUT layers (total 6 layers)
- Flexible frame rate conversion (e.g. 50/60Hz)
- Flicker fixer for better on-screen text clarity
- Teletext / WSS / VPS / CC / VBI insertion
- PAL/NTSC/SECAM digital encoder
- RGB De-matrix (RGB or YCrCb output)
- Control of brightness, contrast and colour saturation of RGB and YCrCb output
- 5 video DAC's @10bit for analogue video / audio O/P
- ITU-R 656 video input/output (shared with TS2 input)
- S/P DIF output for PCM/AC3/MPEG
- UART / 2 x Smart Card IF / I2C / GPIO / PWM Output
- 7-segment LED controller for 5 digits / KeyBoard mon.
- Infra Red receiver / transmitter
- On-chip DPPLL, requiring only 27.0MHz crystal
- Bootable from NOR Flash or I2CPROM
- FPT-208P-M06 (LQFP-Package)
- Ambient Temperature Range (Std Pkg): 0°C to +70°C
- Advanced Technology: Fujitsu CMOS Cx81 (0.18µm)
- 1.8 volt device with 3.3 volt I/O
- Power consumption: typ. 700mW (Standby: 100mW)



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