# RENESAS

# MPEG-4 SD, DVR-Ready, STB IC

## EMMA3SL/L and EMMA3SL/LP

**Enhanced MultiMedia Architecture**
**EMMA**

The EMMA3SL/L(P) (µPD6131x) is a third generation 'Enhanced Multi-Media Architecture' (EMMA) device featuring a cost effective standard definition (SD) MPEG-4 video decoder and a flexible yet powerful audio processor capable of decoding Dolby Digital and Dolby Digital Plus. Dual decode for audio descriptor, a powerful Bit BLTer for graphics applications, a MIPS32™ 4KEc™ CPU providing 440 MIPS are also integrated. Pay-TV variants of the IC , namely EMMA3SL/LP, include the latest advanced security features required by the leading conditional access vendors.
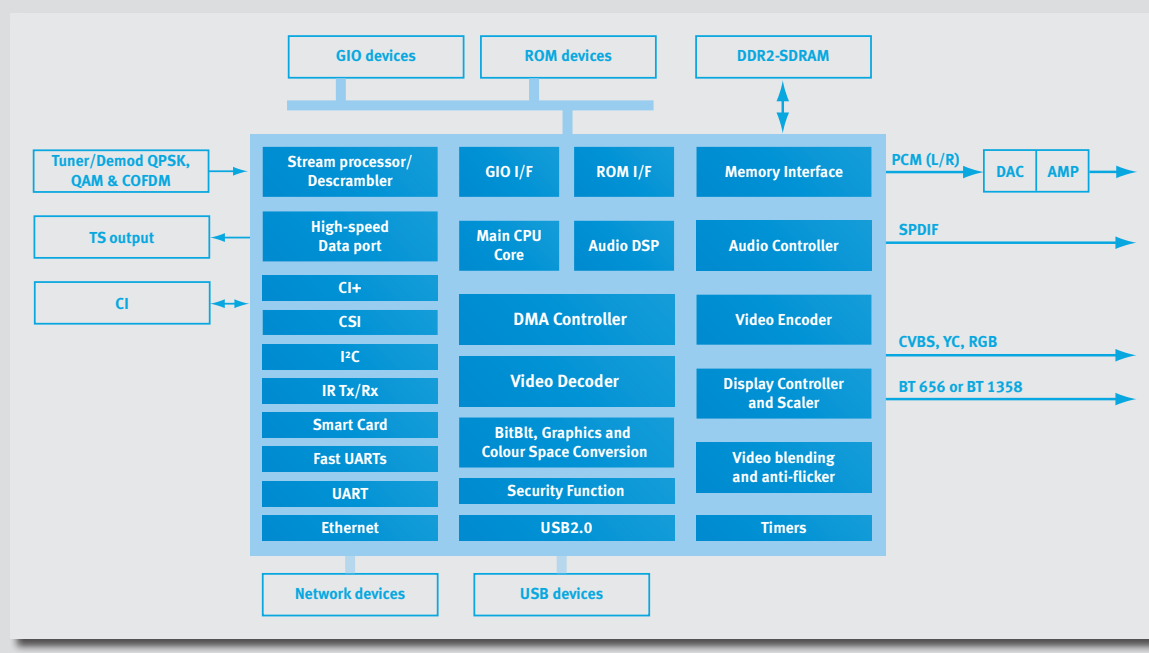
For enhanced connectivity, the device supports an Ethernet MAC with RMII and a USB2.0 host controller. The USB2.0 interface allows basic PVR functionality. Another key feature of the device is low power consumption both in operational and standby modes exceeding European Low Power.

## Applications

EMMA3SL/L(P) is a flexible set top box device enabling solutions for MPEG-4 markets ranging from low cost converter boxes required for the emerging markets, cost efficient cable and satellite pay-TV basic boxes to technically demanding IP boxes, IP hybrid boxes and IP clients for the home networks. capability, will provide a responsive feel to to any DTT set top box.

## Block Diagram

## Key Features

- CPU:
  - » MIPS32™ 4KEc™ (440MIPS@288MHz)
- Memory:
  - » Unified DDR2 memory interface
  - » 16-bit bus
  - » 128 MB total memory
  - » NOR Flash up to 64 MB, 8- or 16-bit
  - » NAND Flash 4 Gb, 8- or 16-bit
- Stream processor:
  - » MPEG-2-TS (DVB)
  - » 1x parallel and 1x serial input
  - » 36 PID filters, 32 section filters
  - » Integrated DVB descrambler
  - » Integrated DVB-CI with flexible configuration for serial or parallel DVB demodulators
  - » DVB CI+ supported
- Video decoder:
  - » MPEG-2: MP@ML
  - » H.264/AVC: HP, MP@L3.2
  - » Dual AVC SD decode (1 TS 2PID)
  - » VC-1: AP@L1
  - » WMV9 & DivX 6.x
- Audio processor:
  - » MPEG-1/2, Layer 1/2
  - » MPEG-4 AAC, HE-AAC, DD (AC3), MP3, DD+, WMA

- » Audio descriptor
- » Dual decoding of MPEG-1 L1/L2 or Dolby Digital.
- » Multichannel decoder outputs are down-mix to stereo or can be bypassed to SPDIF
- Audio Outputs:
  - » SPDIF and PCM
- Display:
  - » 2D Bit BLT
  - » 5 graphics planes with 8-bit alpha blending
  - » 1x video, 2x OSD, 1x still, 1x background
  - » 2x real-time video scalars (8 and 1/4 H/V)
  - » De-interlace function
- Video Encoder:
  - » 4x DACs for CVBS or Y/C and RGB or YpbPr/YCbCr
  - » PAL, NTSC and SECAM
  - » MacrovisionTM 7.1 L1, Dwight Cavendish
  - » Networking and Storage:
  - » Ethernet 10/100 MAC RMII compliant
  - » USB2.0 Host Controller EHCI compliant including PHY
- Peripherals:
  - » 2x FUART, 2 x I²C, 2x Smart Card, 2x IR Rx, 1x IR Tx, CSI, PCMCIA
  - » GIO Bus

## Ordering Information

| Part number | Description | Remarks |
|---|---|---|
| µPD6131bF1-xyz-KA9-A<br><br>[b, x, y, z are functional options. Please contact Renesas for details.] | Options available:<br>CA & CA Vendor Security, Macrovision, DivX, Progressive Scan, Audio Decoders. | All products are lead-free.<br>Please contact Renesas for details of other variants. |

## Documentation

| Document number | Description | Remarks |
|---|---|---|
| t.b.d. | µPD6131bF1-xyz-KA9-A | Data Sheet |
| t.b.d. | µPD6131bF1-xyz-KA9-A | User's Manual |
| S19589 | µPD6131bF1-xyz-KA9-A | EMMA3SL/LP Reference Design Product Brief |

Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

## RENESAS