System LSI for world-wide Smart TV system
MN2WS0270E/ H (Standard/ High-performance type)

**Features**
- Suitable for standard Smart TV solution
- Integrated flexible TCON and Ethernet-PHY to reduce BOM cost
- Integrated high performance CPU (ARM® Cortex®-A9) and GPU

**Applications**

![Smart TV system diagram]

- Tuner
- HDMI x3 (x4: MN2WS0270H)
- Component
- CVBS
- VGA
- Audio
- Ether Net
- USB
- DDR3
- Flash
- LVDSx2
  - Full-HD/60Hz
- AMP
- Headphone
- Optical
### Specifications

#### SoC
- **Package**: BGA (21x21mm)
- **Number of balls**: 526
- **Ball pitch**: 0.8mm
- **Power**: 1.1/ 1.5/ 3.3V

#### CPU
- ARM® Cortex®-A9
- Up to 600-MHz operation
  (Up to 800-MHz: MN2WS0270H)
- Instruction / Data caches: 32 / 32-KB

#### UniPhier® processor (IPP3)
- Up to 600-MHz operation
- Instruction / Data caches: 64 / 64-KB

#### General purpose peripherals
- Timers x17 (WD x1, 16-bit x12, 8-bit x4)
- UART x6
- SPI x1
- I²C x4
- IC card x2
- NAND flash x1
- eMMC flash x1

#### Media I/F
- USB2.0 x3-ports
- SD/SDIO x1-port

#### Video I/O
- Analog input: CVBS x1, RGB/YPbPr/YC x3
- HDMI x3-ports (ver.1.4a)
  (4-ports: MN2WS0270H)
- LVDS x2-links (LVDS, mini-LVDS)

#### Audio I/O
- Analog input: Stereo x4
- Digital input: I²S x1, SPDIF x1
- Analog output: Stereo x1, HP x1
- Digital output: I²S x2, SPDIF x1

#### Graphics processor
- 2D/3D accelerator
- OpenGL ES1.1 compliant
  (OpenGL ES1.1/2.0: MN2WS0270H)

#### Standby microcontroller
- 32-bit microcontroller

#### Low power consumption
- Power voltage control technology
- Low power in standby-mode

#### Integrated World-wide DTV Demodulator
- ISDB-T/S
- ATSC / QAM (Cable)
- DVB-T/C (Supports CI/CI+)

#### Integrated high performance Multi-format Video Decoder supports (*1)
- MPEG-1, MPEG-2
- MPEG-4 AVC (H.264)
- VC-1
- DivX 3/4/5/6
- AVS
- Real Video 8/9/10
- VP8
- JPEG

#### Integrated Audio Processor supports (*1)
- MPEG-1 Layer 2/3
- MPEG-2 Layer 2/3
- MPEG-2 AAC (SBR)
- Dolby Digital, Dolby Digital Plus
- DTS, DTS-HD
- WMA 8/9, WMA pro
- Vorbis
- FLAC
- G.726
- WAV, IMA-ADPCM
- DRA
- LPCM

#### Integrated Video Processor
- 3D processor with 2D-to-3D converter
- High quality IP convertor and Noise reducer
- Super-resolution

#### Memory subsystem
- DDR3 (1333Mbps)
- 2 channels, 16-bit width of each channel

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*1: To use some of these formats, you may have to acquire a license or perform a software development. In addition, some combinations of audio/video formats may have a limitation to use.

For details, please contact our service representative.

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