**OVERVIEW**

The PureVu® CNW5102 is a 1080p60 H.264 video processor SoC, specifically optimized for real-time, multi-stream embedded and industrial video applications. The highly integrated architecture of this chip enables very competitive system BOM pricing and low system power consumption.

The CNW5102 combines Cavium's Super-Low-Latency (SLL) H.264 video processor, widely deployed Nitrox security technology, and intelligent networking and packet processing capabilities in a fully integrated SoC that brings the company's revolutionary WiVu® technology to a variety of video applications, including security and surveillance, medical imaging, video conferencing and low-latency broadcast.

**KEY FEATURES**
- PureVu® H.264 video processor
- Dual core ARM11 CPU
- Up to 1200p60 encode/decode resolution
- Super Low Latency Technology™
- Error resiliency & concealment
- Channel adaptive bit rate control
- Hardware crypto engine option
- Graphics accelerator for GUI
- PCIe, RGMII/MII, USB, SPI, SDIO, etc.
- Dual BT.1120 bi-directional video ports
- I2S audio

**APPLICATIONS**
- Security and surveillance
- Video conferencing
- Medical imaging
- Low-latency broadcast
- Embedded/Industrial/Automotive

The CNW5102 delivers pristine 1200p quality video at a throughput range suitable for commonly deployed wired and wireless embedded and industrial applications. The deployed SMART (Secure Minimum-latency Adaptation and Reliable Transmission) technology ensures smooth video transmission over the most challenging WiFi channels.
**FEATURES**

**Embedded CPU**
- ARM11 Dual Core running at up to 466MHz
- 4 way set associative L1 I/D cache, 32 KB each, with I/D MMU managed by MicroTLB Architecture backed with unified Main TLB
- Support big- and little- endian ordering
- 8-way set- associative L2 cache of 128KB
- Floating point and DSP support

**Rate Control**
- Single pass, low-delay bit rate control
- Constant bit rate control
- Variable bit rate control
- Fixed QP

**Video Codec**
- H.264 Baseline Profile encoder & decoder up to L4.2
- Support for interfaced video
- Single-pass, multiple block motion estimation
- Half and quarter pixel interpolation
- All Intra-4x4 luma modes
- All Intra-16x16 luma and chroma modes
- Error resiliency and concealment
- Performance up to 1200p60 resolution

**Post-Processing**
- Intelligent chroma up-sampling (4:2:0 to 4:2:2)
- YUV to RGB conversion

**Audio**
- Support I2S interface for L/R stereo audio and multi-channel serial audio streaming
- Support SPDIF audio interface
- Sampling rates including 16kHz, 32kHz, 44.1kHz, 48kHz, 96kHz and 192kHz

**Flexible High-Speed Interfaces**
- 1x 10/100/1000 MAC (RGMII/MII)
- PCIe x1 root complex + target
- USB EHCI/OTG

**Miscellaneous Interfaces**
- Parallel NOR/SRAM
- 3x UART
- 16 GPIO
- TWI
- SDIO
- SPI

**Operational Characteristics**
- Core clock frequency 250MHz
- Power dissipation 2W max
- Intelligent power management
- -40° – +85° C operational temperature
- -55° – +125° C storage temperature
- 0-90% RH storage

**Memory Controller**
- 1x 16b DDR2-400MHz (CPU)
- 2x 8b DDR2-400MHz (CODEC)

**Security (Optional)**
- HDCP compliant
- AES 128 with all modes and RSA

**Package**
- 624 pin PBGA
- 27 mm x 27 mm

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**H.264 Video Processor**

**PureVu® CNW5102**

**Super Low Latency Full-HD Video Processor SoC**

**Product Brief**

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**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number</th>
<th>Streams</th>
<th>Video Ports</th>
<th>SoC I/F</th>
<th>Memory</th>
<th>Package</th>
<th>RoHS</th>
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<tr>
<td>CNW5102</td>
<td>CNW5102-250BG624-SCP-G</td>
<td>1x 1080p60</td>
<td>1x 1080p60 1x 1080p30 1x 1080p60</td>
<td>2 BT.1120/194 MHz 2x 1080i60 2x 720p60 4x 720p30 8x D1</td>
<td>PCIe x1 10/100/1000 Ethernet USB EHCI/OTG SDIO</td>
<td>1x 16-bit DDR2 2x 8-bit DDR2 400MHz</td>
<td>624 PBGA Pb-free RoHS-6</td>
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