# Multi-megapixel reference designs for video surveillance



# *IP camera solutions enable quick product development at analog camera price points*

Provided with TI's technology, several multiple highlyoptimized reference designs based on DaVinci<sup>™</sup> video processors are offered for the IP camera market that enable developers to speed through the design process as well as reducing overall bill of materials (BOM) costs.

#### These reference designs:

- Reduce development time by 90 percent
- Deliver higher quality, full HD video at >60 fps
- Decrease electronic bill of materials
- Empower customers to bring sub-\$100 HD IP cameras to the market
- Provide integrated auto white balance and auto exposure
- Provide software framework including input/output and media APIs, Codec Engine

#### Included at no additional cost:

- Complete schematics
- Gerber files

- Support for select Aptina, Omni-vision and Sony image sensors including drivers, camera module schematics and layout
- Complete Linux<sup>™</sup>-based IP camera application including free source code
- Royalty-free and production-ready codec
- ONVIF/PSIA standard support



TMS320DMxx-based IP Camera reference design software

## Multiple IP camera reference designs available based on TI technology

- Up to 10-Megapixel IP Camera Reference Design (TMDXIPCAM8127J3): Single-platform solution provides SVC<sup>T</sup> / H.264 4M 30 fps + SVC<sup>T</sup> / H.264 D1 30 fps + 750-MHz DSP for analytics
- Smart Analytics IP Camera Reference Design (DMVA2IPNC-MT5): Single-platform solution provides SVC<sup>T</sup> / H.264 720p 30 fps + SVC<sup>T</sup> / H.264 CIF 30 fps + smart analytics or 1080p at lower fps
- DM36x IP Camera Reference Design (DM368IPNC-MT5, DM365IPNC-MT5): Singleplatform solution provides up to full HD (1080p30) SVC<sup>T</sup> / H.264 30 fps encode with secondary channel

## DM812x IP camera reference design with on-chip DSP video analytics @ U.S. \$995

The DM812x IP camera reference design provides multi-megapixel video with 4× boost in host processing performance, built-in video analytics capability, advanced software for image signal processing tuning and encryption.

#### **Hardware features**

- DM812x DaVinci<sup>™</sup> video processor includes ARM<sup>®</sup> Cortex<sup>™</sup>-A8, C674x DSP, SVC<sup>™</sup>/H.264/MJPEG video coprocessor, Gigabit EMAC, PCIe for BOM savings
- Board size: 100×60 mm
- Power over Ethernet, audio, SD storage, along with WiFi<sup>™</sup> and GPS extensibility



 TMDXIPCAM8127J3 IP Camera Reference Design available from Appro Photoelectron Inc.

#### **Software features**

- TI's third-generation advanced graphical user interface
- Encode up to SVC<sup>T</sup>, H.264 high profile or MJPEG
  4-megapixel video at 30 fps or 1080p at 60 fps with secondary D1 channel at 30 fps
- Triple stream per channel (SVC<sup>T</sup>, H.264, MPEG-4, MJPEG)
- Software framework includes input/output and media APIs, Codec Engine
- Onboard C674x DSP for analytics



▲ DM812x IP camera reference design block diagram: TMDXIPCAM8127J3

## DMVA2 IP camera reference design with integrated smart video analytics @ U.S. \$895

The DMVA2 IP camera reference design provides entrylevel analytics including people counting, trip zone, intelligent motion detection, face detection and privacy masking, camera tamper detection, and streaming metadata.

#### **Hardware features**

- TMS320DMVA2 DaVinci video processor includes ARM926, vision coprocessor, H.264 video coprocessor, EMAC, RTC and integrated voice codec for BOM savings
- Board size: 65×50mm
- Power over Ethernet, audio, SD storage

#### **Software features**

Smart analytics GUI for setup, control and management of each application



 DMVA2IPNC-MT5 IP Camera Reference Design available from Appro Photoelectron Inc.

- Encode up to H.264 high profile. Level 3.1 720p at 30 fps or 1080p at 10 fps including MPEG-4 and MJPEG support
- TI's second-generation advanced graphical user interface
- Ability to add additional video analytics with DaVinci TMS320DM643x DSP



DMVA2 IP camera reference design block diagram: DMVA2IPNC-MT5

### www.ti.com/ipcamera

## DM368 IP camera reference design with H.264 high profile 1080p at 30 fps @ U.S. \$995

The DM368 IP camera reference design provides full HD video with 30 percent boost in host processing performance, advanced software for image signal processing tuning, and encryption.

#### **Hardware features**

- TI's TMS320DM368 DaVinci<sup>™</sup> video processor includes ARM926 @ 460 MHz and H.264 hardware video coprocessor, EMAC, RTC and integrated voice codec for BOM savings
- Board size: 65×50-mm, low power (3W)
- Power over Ethernet, audio, SD storage
- PSIA compliant



 DM368IPNC-MT5 IP Camera Reference Design available from Appro Photoelectron Inc.

#### **Software features**

- TI's second-generation advanced graphical user interface
- Encode up to H.264 high profile 1080p at 30 fps or 720p at 60 fps; MPEG-4 up to 720p at 60 fps; MJPEG at 5 megapixels at 15 fps
- Triple stream per channel (H.264, MPEG-4, MJPEG)
- Ability to add video analytics with DaVinci TMS320DM643x DSP



IP camera reference design block diagram: DM368IPNC-MT5

## DM365 IP camera reference design with tri-streaming @ U.S. \$795

The DM365 reference design is a single-platform solution that provides H.264 in HD with tri-streaming.

#### **Hardware features**

- TI TMS320DM365 DaVinci video processor includes ARM926 @ 300 MHz and H.264 HW video coprocessor, EMAC, RTC and integrated voice codec for BOM savings
- Board size: 65×50 mm, low-power (3W)
- Power over Ethernet, audio, SD storage



 DM365IPNC-MT5 IP Camera Reference Design available from Appro Photoelectron Inc.

### **Software features**

- Encode up to H.264 high profile/MPEG-4 HD 1080p at reduced frame rate or 720p full frame rate
- Triple stream per channel (H.264, MPEG-4, MJPEG)
- Ability to add video analytics with DaVinci TMS320DM643x DSP



▲ DM365 IP camera reference design block diagram: DM365IPNC-MT5

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