



# Qualcomm<sup>®</sup> Vision Intelligence 100/200 Platforms (APQ8053 Lite/Pro)

The Qualcomm Vision Intelligence Platform is purpose-built with powerful image processing and machine learning for smart camera products in the consumer and enterprise IoT spaces.

Cameras have evolved to become smarter and more relevant in the Internet of Things (IoT). The Qualcomm Vision Intelligence Platform is designed to provide superior image processing together with enhanced Artificial Intelligence (AI) capabilities in a cost-effective platform to serve a variety of IoT devices. These include action, VR/360, home security, enterprise security and wearable cameras.

The Qualcomm Vision Intelligence 100 Platform is based on the APQ8053-Lite processor and Qualcomm Vision Intelligence Platform 200 is based on the APQ8053-Pro processor. These SoCs are built to support Linux or Android as the operating system. Each design integrates power management ICs, audio codec support, and Wi-Fi/Bluetooth connectivity, designed to empower customers to reduce costs by saving on the BOM, as well as on commercialization efforts to integrate several subsystems.

To further facilitate fast and cost-effective development, Qualcomm Technologies, Inc. has worked with ODMs to provide full form factor reference devices, as well as ISVs, to provide solutions that address various camera market segments. In addition, we have collaborated with several popular AI solutions that demonstrate the extensibility of the platform to support a host of machine learning solutions that perform face/body detection, face recognition, object classification, license plate recognition, etc. Third party algorithms for performing on-device stitching of dual camera streams is also demonstrated on the reference platforms.

## Highlights

### Powerful computing for on-device machine learning and more

Highly optimized custom CPU and GPU designed to provide high compute capability at low power. Powerful computing made simple with easy to use SDKs giving flexibility to implement a variety of AI use cases.



### Highly integrated for reduced BOM costs and rapid commercialization

Integrated PMIC, audio codecs and connectivity solutions designed to reduce the commercialization efforts while keeping BOM costs low.



### Designed to accelerate development and scalability

Purpose-built reference designs are engineered to help support customers with rapid commercialization. Optimized to provide ease of integration into customer applications with SDK documentation and sample code.



### Support for leading video analytics

Collaborations with third-party leading AI software vendors to help provide deep learning on the edge.



- Action Camera
- VR/360
- Home Security
- Enterprise Security
- VR/180 Stereo
- Wearable Cameras

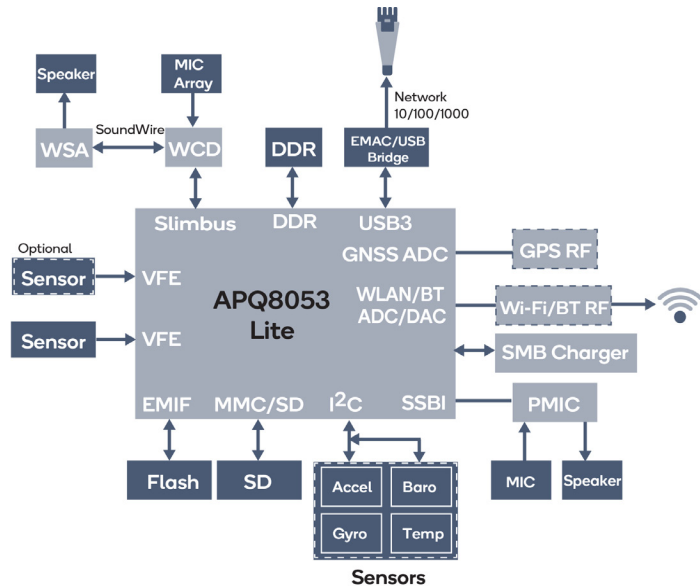
## Features

- Dual ISP ideal for supporting intelligent camera features for action cameras, IP security cameras and VR/360 cameras
- Qualcomm® Adreno™ GPU with 64-bit addressing @ up to 650MHz with latest API support
- Qualcomm® Hexagon™ 546 DSP designed to provide battery-efficient audio, video, and computer vision use cases
- Heterogeneous architecture includes 64-bit, quad and octa-core CPU solutions ranging from 1.8GHz to 2.2GHz per core
- Low power Qualcomm® Snapdragon™ sensor core helps support always-on use cases at reduced power levels
- Integrated Wi-Fi 802.11ac, Bluetooth and GPS support
- Worldwide ecosystem of vendors, customers, developers and embedded device OEMs

## Software

- Support for Linux and Android operating systems
- **Qualcomm® Connected Camera SDK:** abstracting dependency of underlying layers designed to allow customers to easily develop and port their development of connected camera use cases between different operating systems and chipset of selection
- **Qualcomm® Neural Processing SDK:** optimizing deep learning processing performance across available resources to achieve superior edge computing experience
- **Video Analytic Manager:** enabling easy integration of 3rd party video analytic solution.
- **Camera:** Temporal Noise Reduction (TNR), stagger High Data Rate (sHDR) snapshot and video, Electronic Image Stabilization (EIS), Lens Distortion Correction (LDC), Chromatic Aberration Correction (CAC), Edge Smooth, etc.
- **Security:** Full Disk Encryption (FDE), Security Boot, Kernel and BSP Protection.

## Platform Block Diagram



## Platform Specifications

	Qualcomm Vision Intelligence 100 Platform	Qualcomm Vision Intelligence 200 Platform
<b>CPU</b>	<b>APQ 8053-Lite</b> 8x A53 @ 1.8 GHz, 1MB L2	<b>APQ 8053-Pro</b> 8x A53 @ 2.2 GHz, 1MB L2
<b>Video</b>	<b>Decode</b>	1080p60 HEVC
	<b>Encode</b>	1080p90
<b>Camera</b>	<b>Performance</b>	930Mpix/sec, HW WNR, LTM, Advanced AF
	<b>Interface</b>	Dual ISP 21MP30 ZSL
<b>Memory &amp; Storage</b>	1x 32-bit LPDDR3 933MHz, eMMC5.1, SD3.0	930Mpix/sec, HW WNR, LTM, Advanced AF
<b>Location</b>	GPS/GLONASS, BeiDou, Galileo	Dual ISP 24MP30 ZSL
<b>Wireless Connectivity</b>	Integrated 1x1 802.11b/g/n/ac, Bluetooth 4.x, FM	
<b>Display</b>	<b>Resolution</b>	1920x1200 60fps + 1080p30 Miracast
	<b>Interface</b>	2x DSI 4+4 lane
<b>GPU</b>	Adreno 506 @ 650MHz	
<b>Audio</b>	<b>Analog</b>	Integrated Codec PM8953 or WCD9326/35
	<b>Audio</b>	HD-Audio, Dolby, SVA
	<b>Voice</b>	Qualcomm® Noise and Echo Cancellation
<b>Sensor DSP</b>	Hexagon DSP based	
<b>Modem</b>	Snapdragon X9 LTE modem LTE Category 13 (uplink peak speed of 150Mbps) LTE Category 7 (downlink peak speed of 300Mbps)	
<b>Technology / Package</b>	14LPP, 12x14 mm2, non-POP	



## Qualcomm Vision Intelligence Reference Design Applications

- Consumer IP Camera - Home Security
- Enterprise IP Camera - Enterprise, Infrastructure
- Sports/Body/Dash Camera - Action Sports, Police, Life Logging
- 360/VR Camera - Full 360, Virtual Reality Capture

## Features

### 4K Ultra HD HEVC/H.264/ Video Engine

- Encode: up to 4K30fps (HEVC/H.264)
- Concurrent video streams: up to 3 multiple videos supported (1080p@30fps + 720p@30fps + VGA@30fps)

### High Performance Heterogeneous Computing

- CPU + Octa -core 64-bit Arm Cortex-A53 up to 2.0GHz
- Adreno 506 GPU
- Hexagon 546 DSP

### High-Speed Data Module

- Integrated 802.11ac Multi-User MIMO (MU-MIMO)
- Qualcomm® Location

### Flexible Low-Power Platform

- PoP memory rather than on-board; two channel 32-bit LPDDR3 at up to 933 MHz
- RPM (Resource power manager) system:
  - Modem power manager (MPM)
  - MPM coordinates shutdown/wakeup, clock rates, and VDDs
- 14 nm

### Advanced Imaging

- Camera + Dual ISPs support up to 24MP
- Graphics processor unit: Adreno 506 for multi-camera stitching, de-warping and advanced noise filtering

### Available from Thundercomm

<https://www.thundercomm.com/app/store/detail/151764-8128887357>

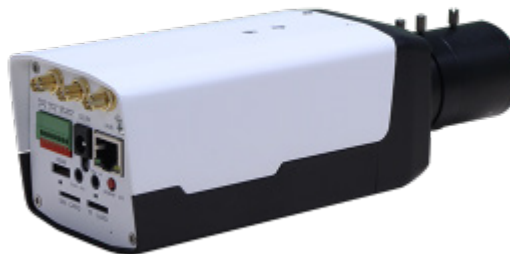
For additional product information visit: [createpoint.qti.qualcomm.com](http://createpoint.qti.qualcomm.com)

### Go to Product Kits: Connected Camera

- APQ8053 Android Camera (Platform)
- APQ8053 Linux Camera (Platform)
- APQ8053 Linux Battery Operated Camera (Platform)

## Connected Camera Evaluation Platform

based on Qualcomm Vision Intelligence 200 Platform (APQ8053-Pro)



## Qualcomm Snapdragon 625 IP Camera

<b>CPU</b>	APQ8053-Pro SoC
<b>Memory &amp; Storage</b>	2GB LPDDR3, 16GB eMMC, eMCP
<b>Display</b>	MicroHDMI for debugging only, Video Out, HDMI
<b>Camera &amp; Lens</b>	1 2/3 inch, 8M CMOS Sensor, CSI C/CS Lens Mount
<b>Connectivity</b>	RJ45 100M Base-T Ethernet, USB3.0 802.11DB a/b/g/n/ac Wi-Fi, SDIO
<b>Interfaces</b>	Serial RS485 *1 UART, Micro SD card up to 32GB, 2/1 Alarm I/O GPIO, 3.5mm Audio in/out, WI-FI antenna
<b>Key &amp; Button</b>	System Boot Reset
<b>LED Indicator</b>	Red LED for PWR on/off, Link/Act Ethernet
<b>Power</b>	DC12V or POE interface, Dedicated power chip
<b>OS/Application Support</b>	Linux Yocto Jethro 2.0.2 (based on Linux kernel 3.18) Qualcomm Connected Camera SDK, Android Mobile Application, Web Browser UI

Materials are subject to change without notice.



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- Consumer IP Camera - Home Security
- Enterprise IP Camera - Enterprise, Infrastructure
- Sports/Body/Dash Camera - Action Sports, Police, Life Logging

## Features

The new TurboX Smart Camera Reference Design from Thundercomm is an enhanced development kit powered by Qualcomm APQ8053 (SDA626) chipsets and includes multiple OS and various camera sensors support. The new camera sensors include OS08A10, IMX290 and OV2718 with corresponding optics lens which is specially targeted for Surveillance Cameras, Home Security Cameras and other form factors of Smart Cameras. This new Smart Camera Reference Design is designed to help OEM/ODM and developers build not only a proof of concept project, but also through to a final product.

## Smart Camera Reference Design

based on Qualcomm Vision Intelligence Platform (APQ8053)



**COMING SOON!**

Available from Thundercomm

[https://www.thundercomm.com/app\\_en/product/1545272695586014](https://www.thundercomm.com/app_en/product/1545272695586014)

## Thundercomm TurboX Smart Camera

<b>CPU</b>	APQ8053 SoC
<b>Memory &amp; Storage</b>	LPDDR3 2G + eMMC 16GB
<b>Display</b>	LCD 1080p
<b>Camera Sensors &amp; Lens</b>	OS08A10, IMX290 and OV2718 with corresponding optics lens
<b>Connectivity</b>	Wi-Fi: 802.11a/b/g/n /ac & 4x (BR/EDR + BLE)
<b>Audio</b>	1x 3.5mm ANC headset; 4x digital mic in; 2x analog out; 1x digital out
<b>Interfaces</b>	1x UART debug (USB micro-B); 1x USB 3.0 client Type B; 3x USB 3.0 host hub, Type A; 1x HDMI output; 1x SD card; 1x RJ45; 1x Digital IO 40-pin port configurable as I2C, SPI, UART,I2S, alarm or GPIO
<b>Power</b>	DC-IN +12V and POE
<b>Carrier Board Size</b>	188.2 L x 103.4 W x 61.4 H mm

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