"英"為有你,盡收"眼"底

與英飛凌一起探索網路攝像機的黑科技

英飛凌安全與互聯系統事業部	賈智勇
威健實業產品應用部協理	楊以誠



Metaverse is approaching



Meta universe

Al Video Wireless Security Edge

All American game changing accounts are positioning themselves in the camera industry





Market Drivers



Cloud computing & storage vs. edge computing & storage
 Increasing number of cloud-based offerings (private / shared / on premise) by vendors despite complementary trend to edge computing / storage for specific operations

- Deep Learning / Artificial Intelligence
 Self-optimizing algorithms to be widely deployed in cameras, especially also with GPUs & at the edge
- Deliver better and faster results for large amount of data as well as unlabeled data

Cybersecurity & privacy issue

- More connected cameras also mean higher potential for cyberattacks
- In US and especially Europe heightened concern for privacy issues of data (GDPR & similar laws)

Maturing IoT market

- More and more cameras connected that generate an enormous amount of data
- Challenges in data storage and analyses need to be overcome and scalable solutions to be found

IP Camera is one of the key application for Infineon







- Battery based camera grow faster than average, power consumption is key. We have better position in market.
- WiFi SoC is trend in battery camera, target to reduce total BOM cost and lower power consumption in system level.
- Long range demand and room construction drives high TX power WiFi in outdoor camera and indoor camera respectively.
- BLE Onboarding

The scope of application Surveillance Camera is ...



Application Scope

- > Devices with video camera capabilities, that are used for observing or recording a specific area. They may be connected to a recording device, a local IP network or directly to the cloud.
- > Initial scope is cameras that are wireless (wired connected cameras is used for specified installation)
- > Surveillance Cameras can be deployed outdoor or indoor, in residential/home or commercial settings. Example products are security camera, video doorbell, peephole, after-market dashcam for cars, sports camera.
- > We anticipate SAM to grow with ~23% CAGR over the next 5 years, with annual volume to reaching 140Mu globally in 2025.





Block diagram with sub-blocks for Common IP Camera





Infineon provide the diverse solution for IP camera



Infineon Wireless Offerings for IP Camera



Good

CYW43438/43439

- Single band, 1x1 11n, iPA. SDIO/UART
- > BT/BLE 5.2
- > TCP/IP keep a live
- Antenna diversity
- Cost-effective connectivity for baseline cameras

Long Range solution

- > CYW4334W + ePA (2.4G Single Band)
- > Azurewave module NM378SM

Available Module (CYW43438) AzureWave NB197SM NM372SM 12x12 BM-26A 9.5x15 Type 1DX 6.95x5.15

Better

CYW4373/43455

- > Dual band, 1x1 11ac, iPA. USB/SDIO/UART
- > BT/BLE 5.2
- > TCP/IP keep a live
- > Antenna diversity
- > Entry-level 11ac for high speed and wider coverage

Long Range solution

CYW4373 + ePA (2.4G/5G Dual Band)



Best

Lowest Power CYW43012

- > Dual band, 1x1 11n, iPA. SDIO/UART
- BT/BLE 5.0
- > TCP/IP keep a live
- > Ultra Low Power, optimal battery life
- > MCU and Network offloading
- > Support ePA + eLNA option

Highest Performance CYW54591

- MIMO, Dual band, 2x2 11ac. BT/BLE 5.1
- > Best performance / RSDB supported





Customer Get Benefits from IFX Solution





Is Your Surveillance Camera SECURE and SAFE?





360家用监控摄像头被黑客入侵偷拍大量居家隐私视频



泰国一监狱视频摄像头被黑客攻破: 牢狱生活遭在线直播



Hardware- based trust anchors for Secure Identities

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Comparing hard- and software trust anchors

		Main CPU SW	Main CPU SW HW
luct	Crypto functionality	\checkmark	\checkmark
Proc	Security certified	×	\checkmark
Process	Tamper resistant	×	\checkmark
	Secure sourcing	×	\checkmark
	Secure manufacturing	×	\checkmark
	Secure shipment	×	\checkmark



Infineon offering TPM for secure IP camera data

- The security of your surveillance data is just as important as the people and premises you are safeguarding.
- We secure data from hackers by encrypting it at the hardware level, using a cryptographic key that is safely stored in an unique built-in Trusted platform module(TPM)



Infineon Sensor empower the convenience

MEMS麥克風





Make It connected

Bluetooth Low Energy (BLE) integrated into some PSoC 4 devices simplifies RF design. Additional wired interfaces such as USB and CAN are also available.



Infineon offer 3D ToF to sense environment



3D ToF camera Lens above Infra-red illumination (850 or 940 nm) Depth in every pixel Application (red=close, processor blue=far) Amplitude, Depth map calculation grey scale picture Post processing

Time-of-Flight in a nutshell:

- Camera based technology >
- Sending out active infrared light (LED/VCSEL) >
- Comparing transmitted with reflected signal >
- Depth map is calculated out of the phase shift >

What do I get?

- High resolution depth map of my environment
- Distance information in every pixel and grey > scale picture simultaneously
- In darkness and strong sunlight >

Application SW

imager



Radar Technology: sensing 3D asthetically



60 GHz mmWave sensor



Radar in a nutshell:

- > RF frequency is transmitted and interacts with targets in space
- > Conversion from RF frequency to IF at receiver
- Information is encoded in phase and frequency of IF signals can be extracted by time and frequency domain analysis

What do I get?

- > Range, angle and velocity of targets in the sensing environment
- > Micro-Doppler motions for lifeform detection
- > Radar point clouds (represent target at a location)

Completely Autonomous RADAR Sensor for IP camera BGT60LTR11AIP







Key Features:

- 60GHz mmWave Doppler RADAR Motion detector
- 3.3 x 6.7 x 0.56 mm package size
- 1Tx 1Rx Antennas in Package (AIP) with 80 ° Half Power Beam-Width
- Built-in motion detector/direction detector
- Multiple modes of operation incl. a completely autonomous mode
- Adjustable performance parameters: detection sensitivity, hold time and frequency of operation
- FR4 material for PCB design

Operation Mode:

- Autonomous mode
 - Up to 7m detection range
 - Less than 2mW power consumption
 - Required minimal external circuitry
- Add MCU extends flexibility(SPI mode)
 - Up to 10m detection range
 - Advanced functionalities by SPI configuration

Infineon offer one stop solution for customer



Wireless: AIROC

Find more useful resource in Wireless Community https://community.cypress.com/community/product-forums/wireles Training and Video https://community.cypress.com/community/software-forums /training-videos Module Selection Guide https://community.cypress.com/docs/DOC-3021 Product Datasheet https://www.cypress.com/file/

MCU: PSoC

Product Datasheet http://www.cypress.com/psoc6ds

Software ModusToolbox (PSoC 6): <u>https://www.cypress.com/products/</u> <u>modustoolbox-software-environment</u> PSoC Creator (PSoC 3, 4, 5): <u>https://www.cypress.com/products/psoc-</u> <u>creator-integrated-design-environment-ide</u> Getting Started App Note: PSoC 4: <u>https://www.cypress.com/documentation/application-</u>

notes/an79953-getting-started-psoc-4

Security: Optiga

Product Datasheet <u>www.Infineon.com/tpm</u> More Information <u>www.trustedcomputinggroup.org</u> Certification Information <u>https://csrc.nist.gov/Projects/cryptographic-module-validation-</u> program/modules-in-process/Modules-In-Process-List

All the others



Summary





英飛凌與你一起攜手前進,引領網路攝像頭行業潮流



以上所有内容均是基於使用者感興趣的產品和應用定制呈現!



Part of your life. Part of tomorrow.