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# AR0237IR Face ID for Security Solution

3D imaging for Intelligent Access Control and Smart Video Security

Public Information



# AR0237IR Introduction

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# AR0237 RGB-IR: 2.1Mp 1/2.7" 1080p

## Features

- 1/2.7" optical format
- 1928 (H) x 1088 (V) [16:9]
- 3.0um FSI pixel, dual conversion gain
- 4 x 4 RGB-IR
- Electronic Rolling Shutter and GRR support
- HiSPi and parallel interface support
- <190mW 1080p30 linear mode
- Onboard temperature sensor
- -30°C to 85°C (Tj) operation
- mPLCC packaging

## Key Applications

- 1080p60 video monitoring
- Video recording and streaming
- High dynamic range imaging

## Key System Capabilities and Benefits

- HiSPi support for highest frame rate [60fps]
- Line interleaved T1/T2 High Dynamic Range [30fps] support through off-chip ISP
- Enhanced Near Infra Red [28% QE at 850nm] sensitivity for improved night vision
- Slave mode for multi-camera synchronization
- Tuned with select Image Signal Processor platforms

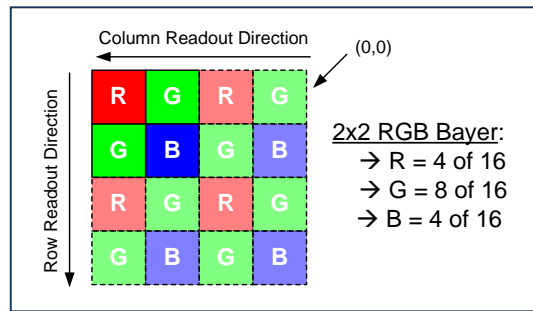
## Orderable Part Numbers

Part number	Product Description	Orderable Product
AR0237IRSC12SHRA0-DR	2Mp 1/2.7" CIS RGB-IR 12° CRA, mPLCC Package, HiSpi	Dry Pack
AR0237IRSC12SPRA0-DR	2Mp 1/2.7" CIS RGB-IR 12° CRA, mPLCC Package, Parallel	Dry Pack

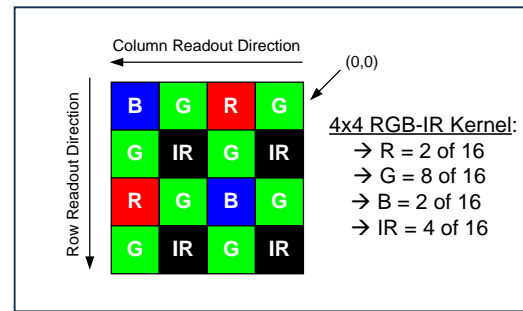
# RGB - IR - 4x4 Kernel

AR0237 RGB-IR: AR0237 RGB-IR deploys a 4x4 kernel which results in a 50% (8/16) spatial density for Green pixels, equivalent to that of RGB Bayer.

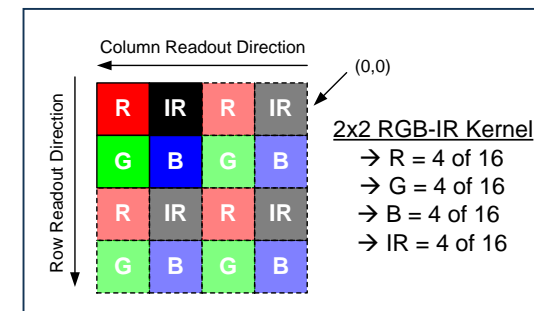
- The 4x4 kernel has a reduction in spatial density of the Red and Blue pixels used for the Chroma channel compared to RGB Bayer and 2x2 RGB-IR.



'Standard' RGB Bayer

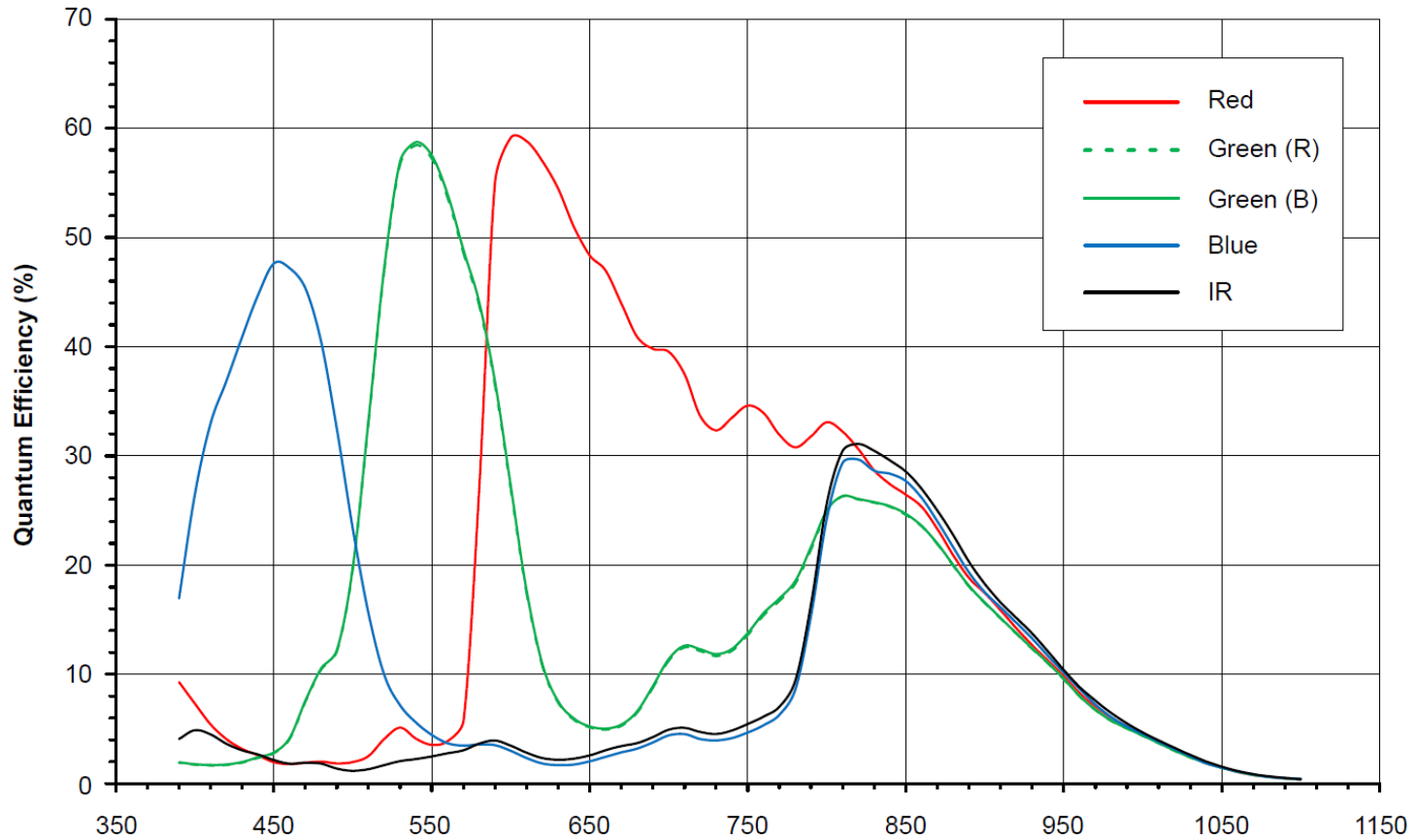


AR0237 - 4x4 RGB-IR



AR0141 - 2x2 RGB-IR

# AR0237 RGBIR Has High QE Response



# Target Application



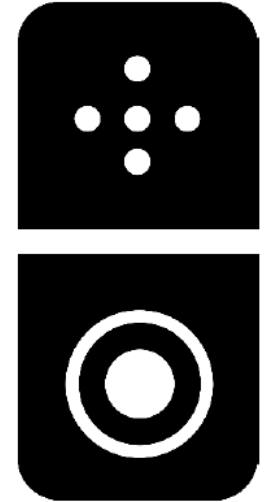
Access Control



Security Panel



Smart Video Lock

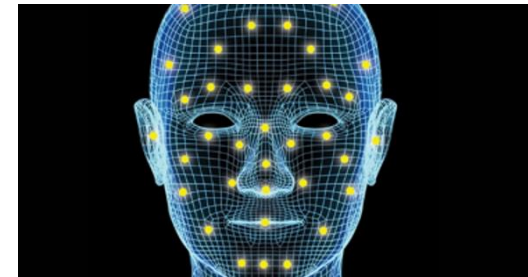
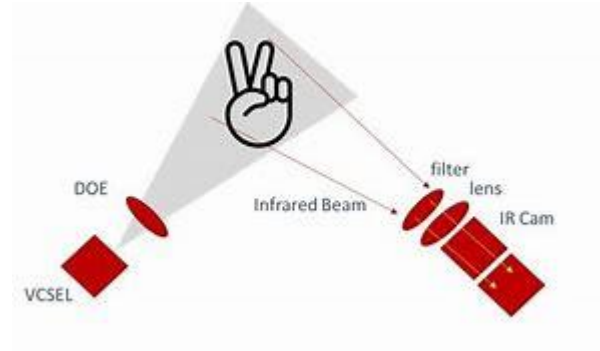


Video Door Bell

# 3D Imaging For Antispoofing Feature

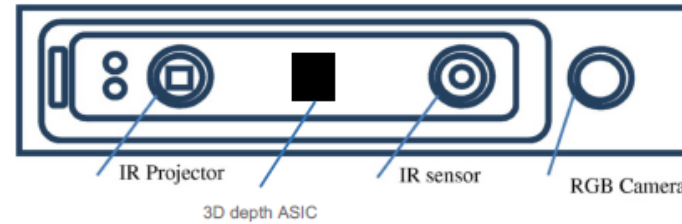
- 2D Face Recognition is not enough
- Adding 3D imaging for antispoofing feature

- Using VCSEL Structure light for 3D depth information



# Structure Light Solution Today

Existing Market Solution



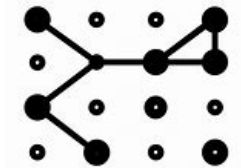
On/Amba Solution



Cost

High

2\*image sensor,  
2\*lens,  
1\*depth ASIC,  
1\*SOC Chip  
More power,  
3 elements needs  
to do the alignment  
in the system



Complexity

High



Manufacturability

High

Low

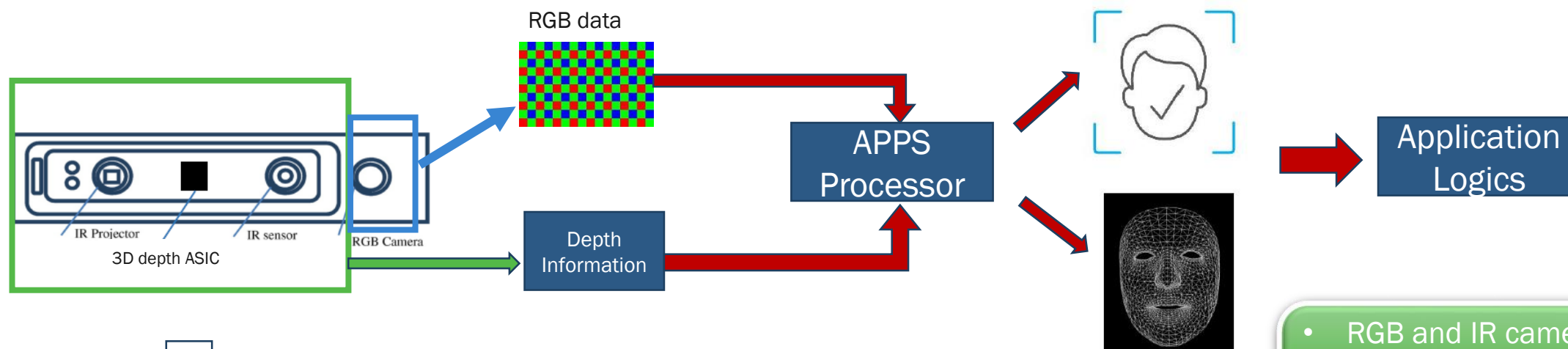
1\*image sensor,  
1\*lens,  
0\*depth ASIC,  
1\*SOC Chip  
less power,  
2 elements needs to do  
the alignment in the  
system

Low

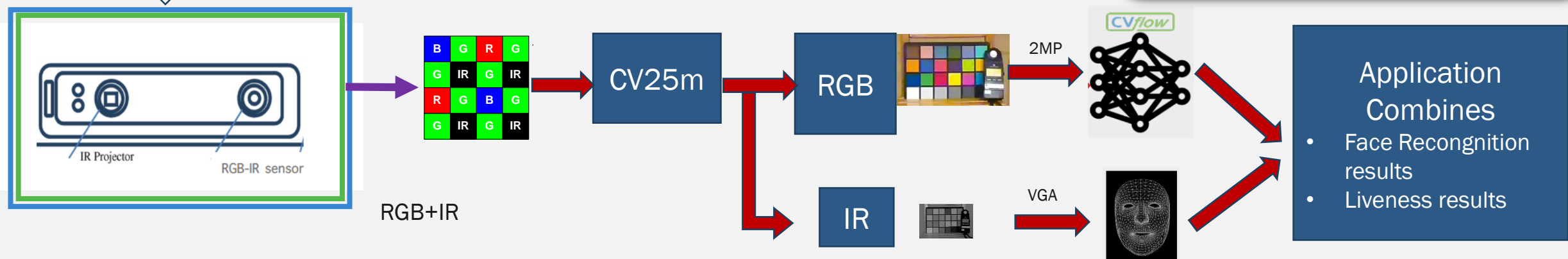
Low



# AR0237IR/Amba CV25m – An Innovative Solution



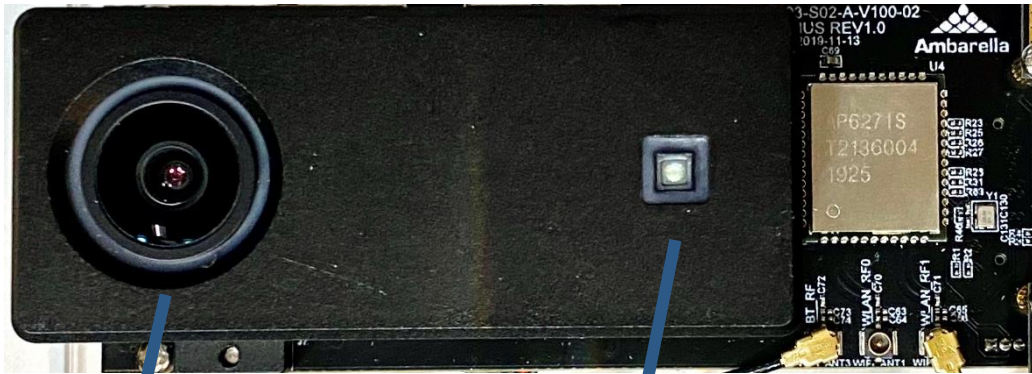
- RGB and IR camera 2-in-1
- Improved Manufacturability
- Much boosted AI performance
- Much lower power consumption



- Application Combines
- Face Recognition results
  - Liveness results

# AR0237IR with CV25M 3D Sensing Platform Reference Design

## Janus 3D Sensing Platform



ON Semiconductor  
AR0237IR Camera

Lumentum VCSEL  
projector

### Solution Detail

- ON Semiconductor AR0237IR CMOS image Sensor
- Ambarella CV25M AI Vision SoC
  - 10nm ultra-low power
  - Advanced ISP
  - Depth processing
  - H.265/H.264 video encoder
- Lumentum VCSEL powered structured-light

# Data Flow and Process

