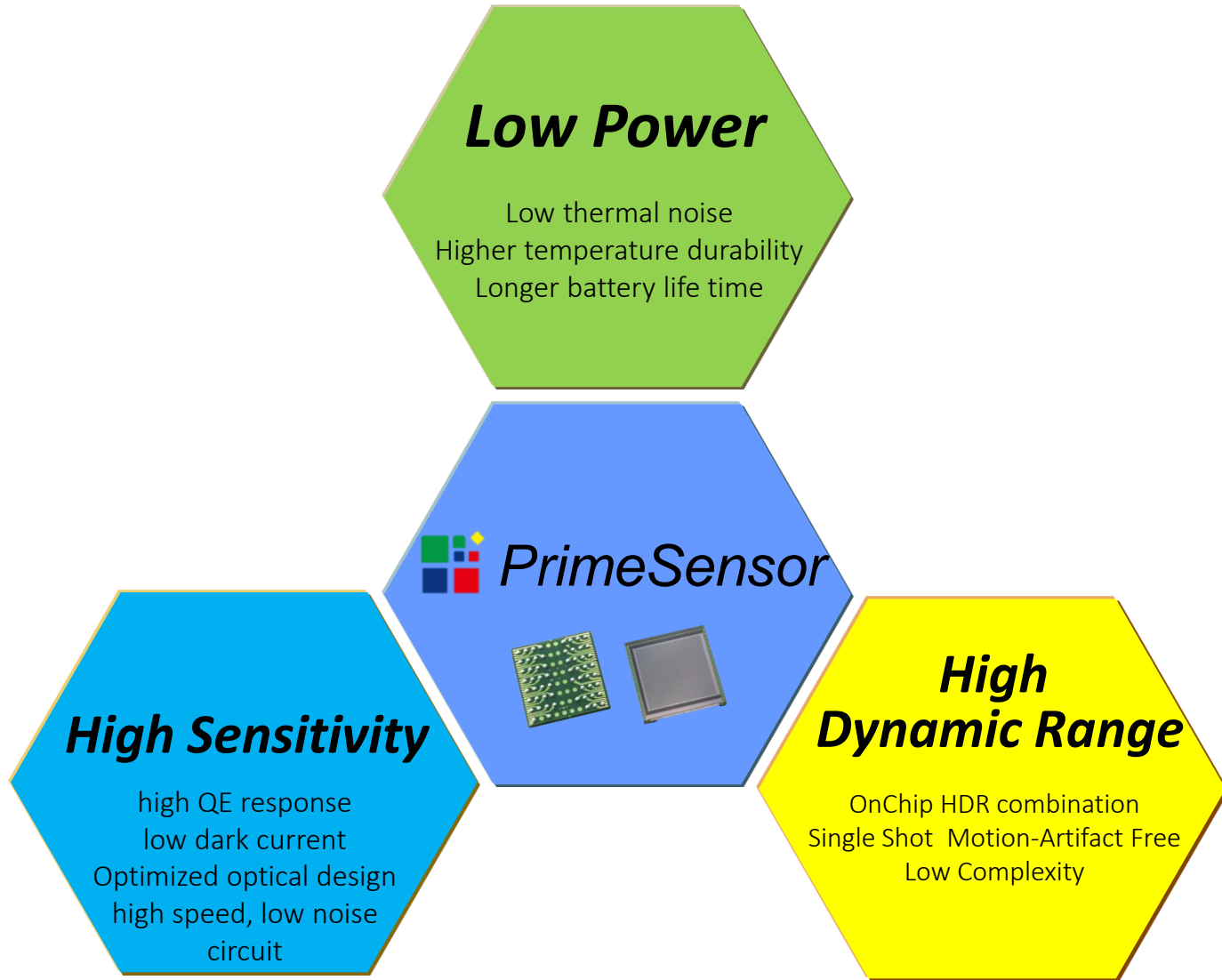


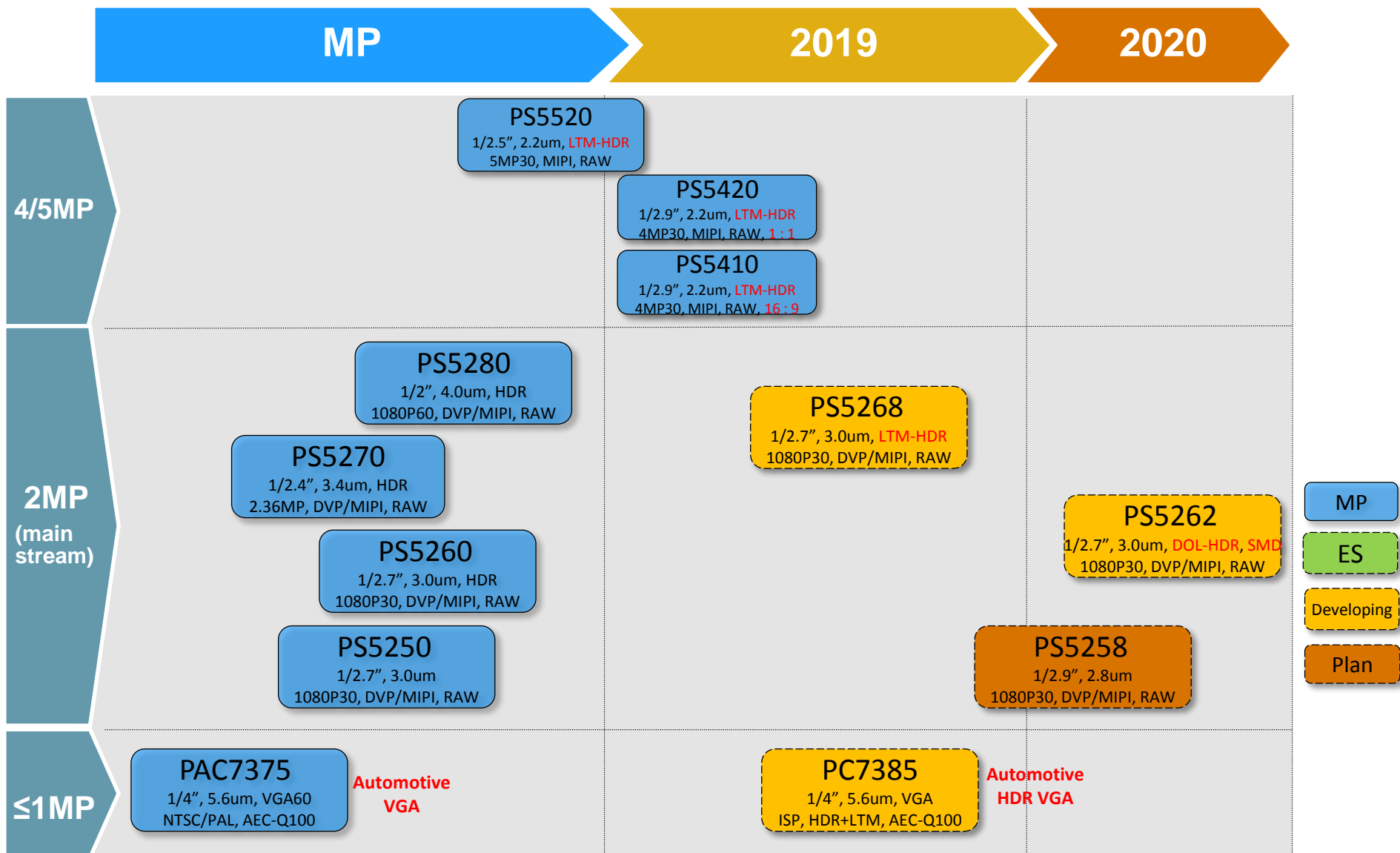
# PS5268 Introduction

2019.08  
Jim Wei

# PrimeSensor Advantages

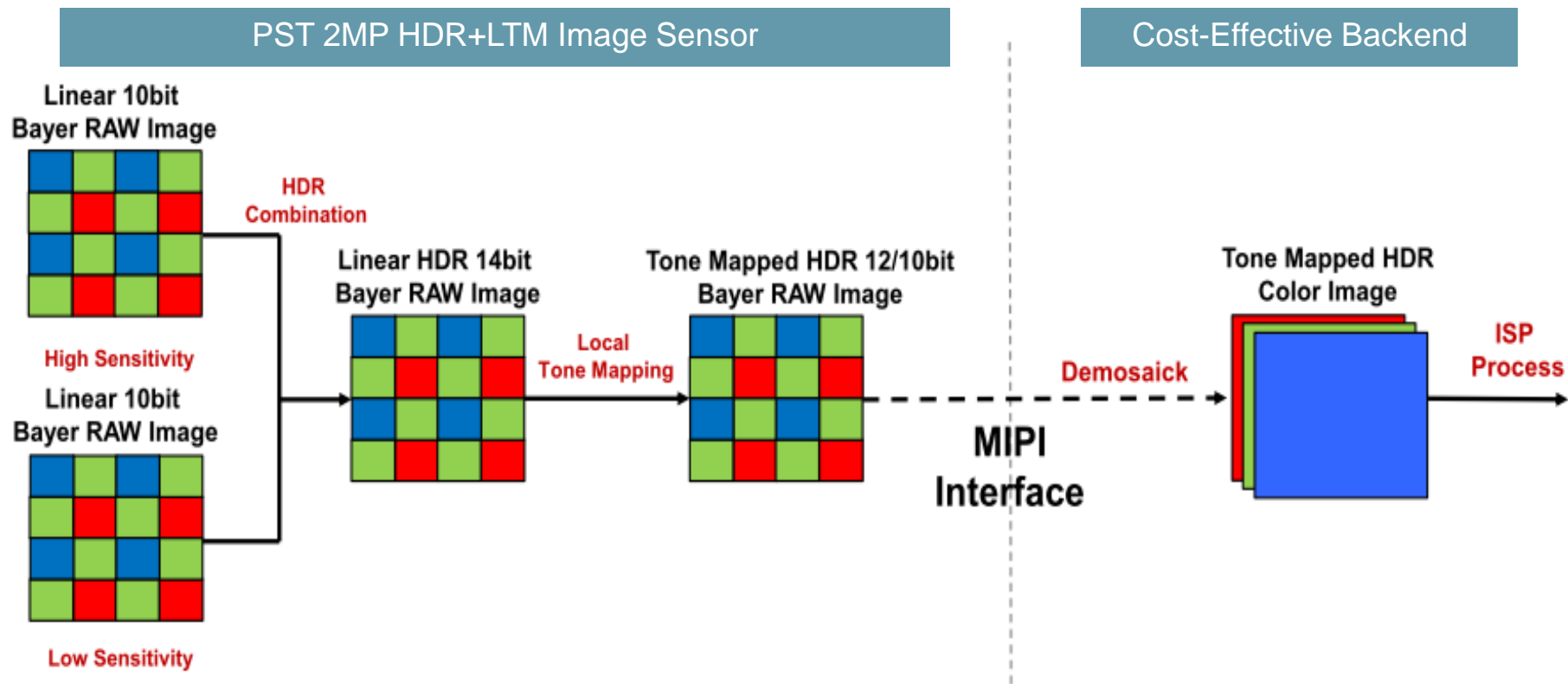


# PST Image Sensor Roadmap



## Key Features

- Optical Format: 1/2.7"
- Pixel Size: 3.0um x 3.0um
- Resolution: 1920(H) x 1080(V),
- Sensitivity: 4700mV / lux-sec
- Dynamic Range: 85dB (HDR)
- Frame Rate: HDR 1080p@30fps, 1080p@60fps
- Support MIPI CSI-2 2-lane (2\*800Mbps) Output
- Output Format: HDR-RAW14, HDR-CP-RAW12, RAW10
- Support Multi-Sensor Synchronization, LTM-HDR Output
- Fast AE: Boot up AE stable < 100ms
- Low Power Consumption
- Pin-to-pin compatible to PS5260LT / PS5250LT
- Package: 48ball CSP



# PS5268 LTM+HDR Advantage



## Benefit:

- Low BOM Cost ( sensor and ISP cost )
- Low Power ( lower sensor + backend total power )
- Low Transmission Bandwidth ( Min. only 10bit data to ISP backend )
- Time-To-Market ( easy driver porting non DOL-HDR sensor )
- Good HDR performance ( Tuned LTM performance )

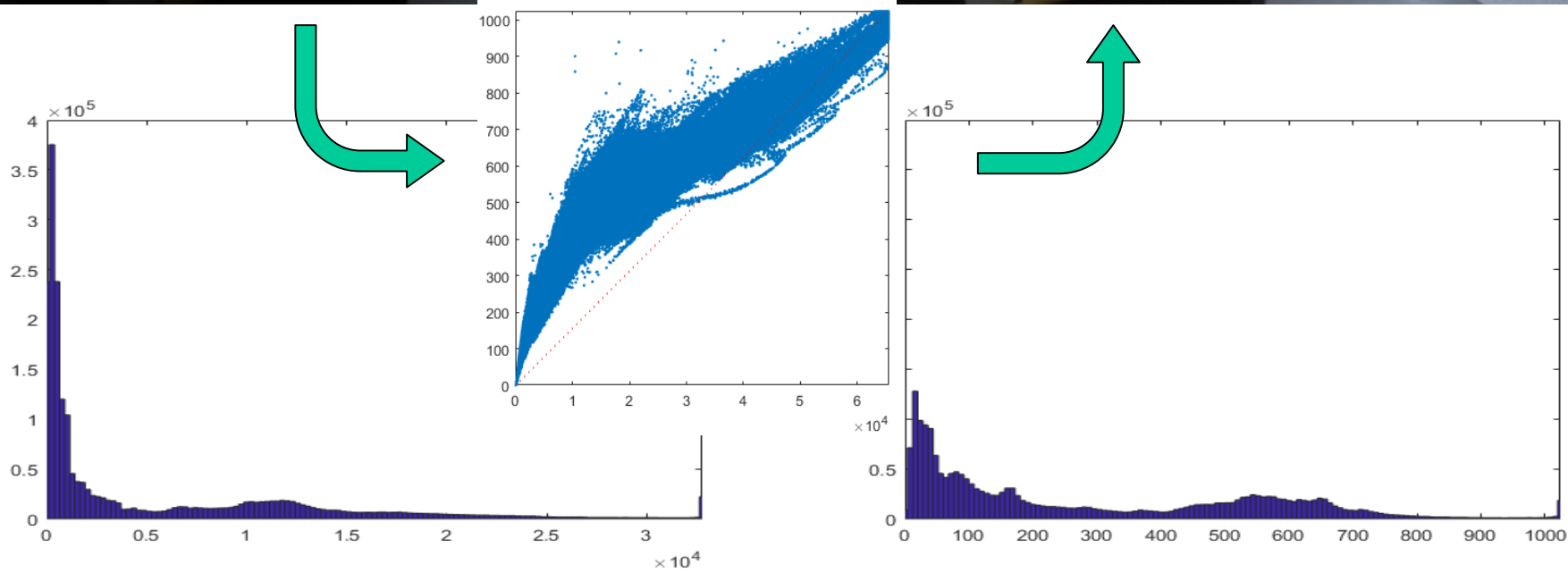
Soc : W/O HDR  
Sensor : W/ LTM+HDR

SoC : Realtek RTS390x US\$1.x

SoC : W/ HDR  
Sensor : W/ HDR

SoC : GM 98512 US\$2.x

# PS5268 LTM Effect



# PS5268 HDR+LTM Benchmark



Original



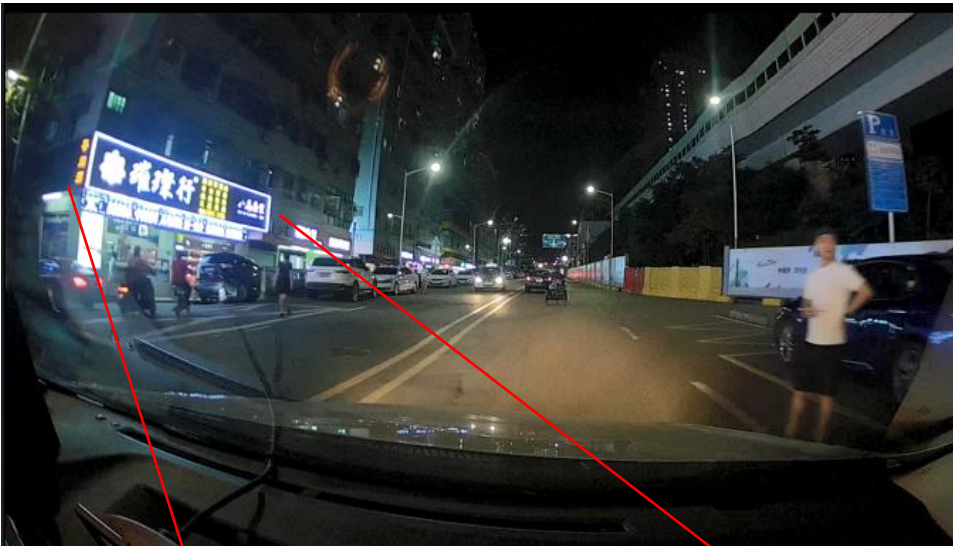
G-company SoC LTM



PS5268 LTM

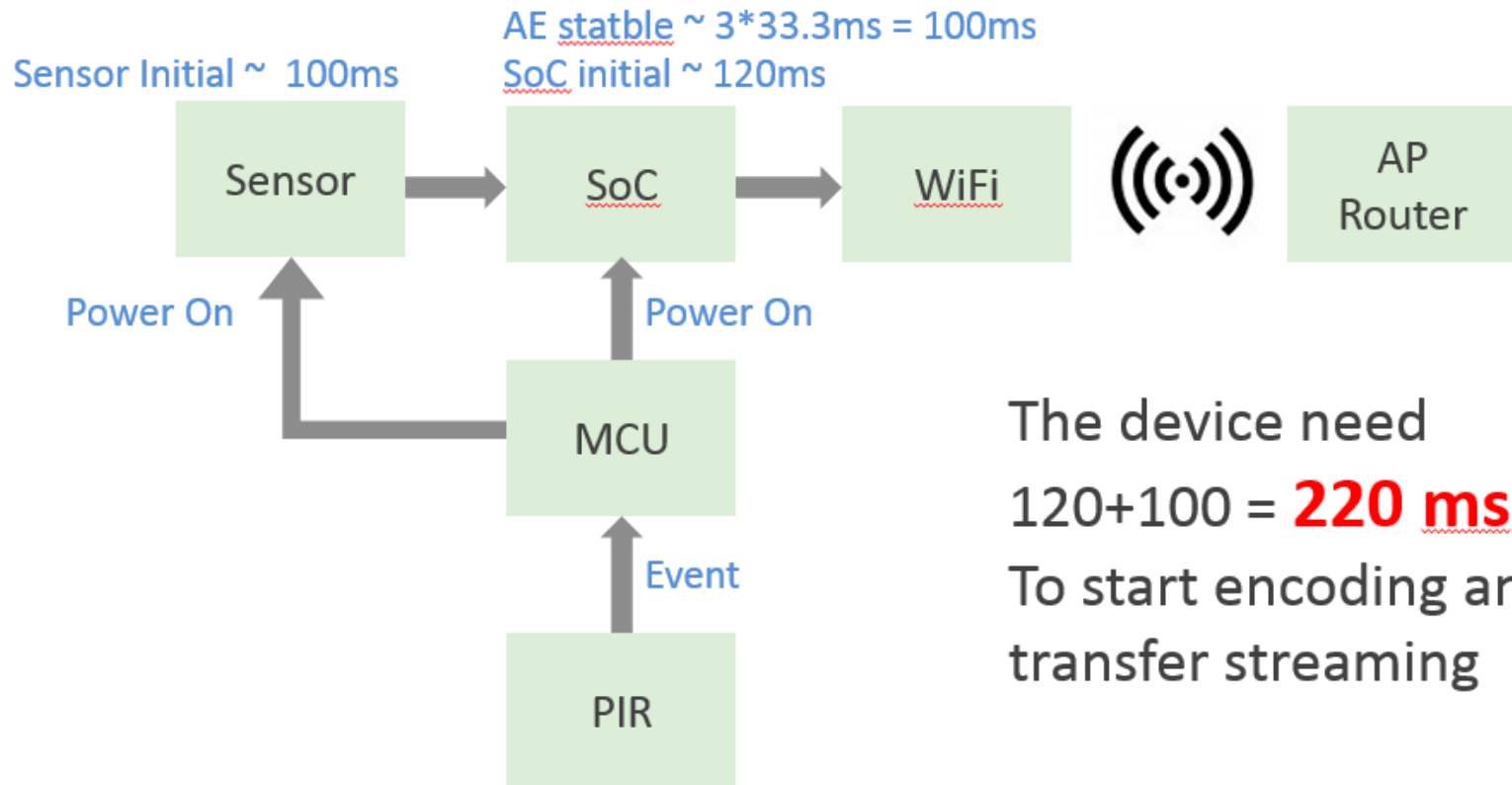


# PS5268 vs IMX30x 拖影效果比較



# PS5268 Fast AE

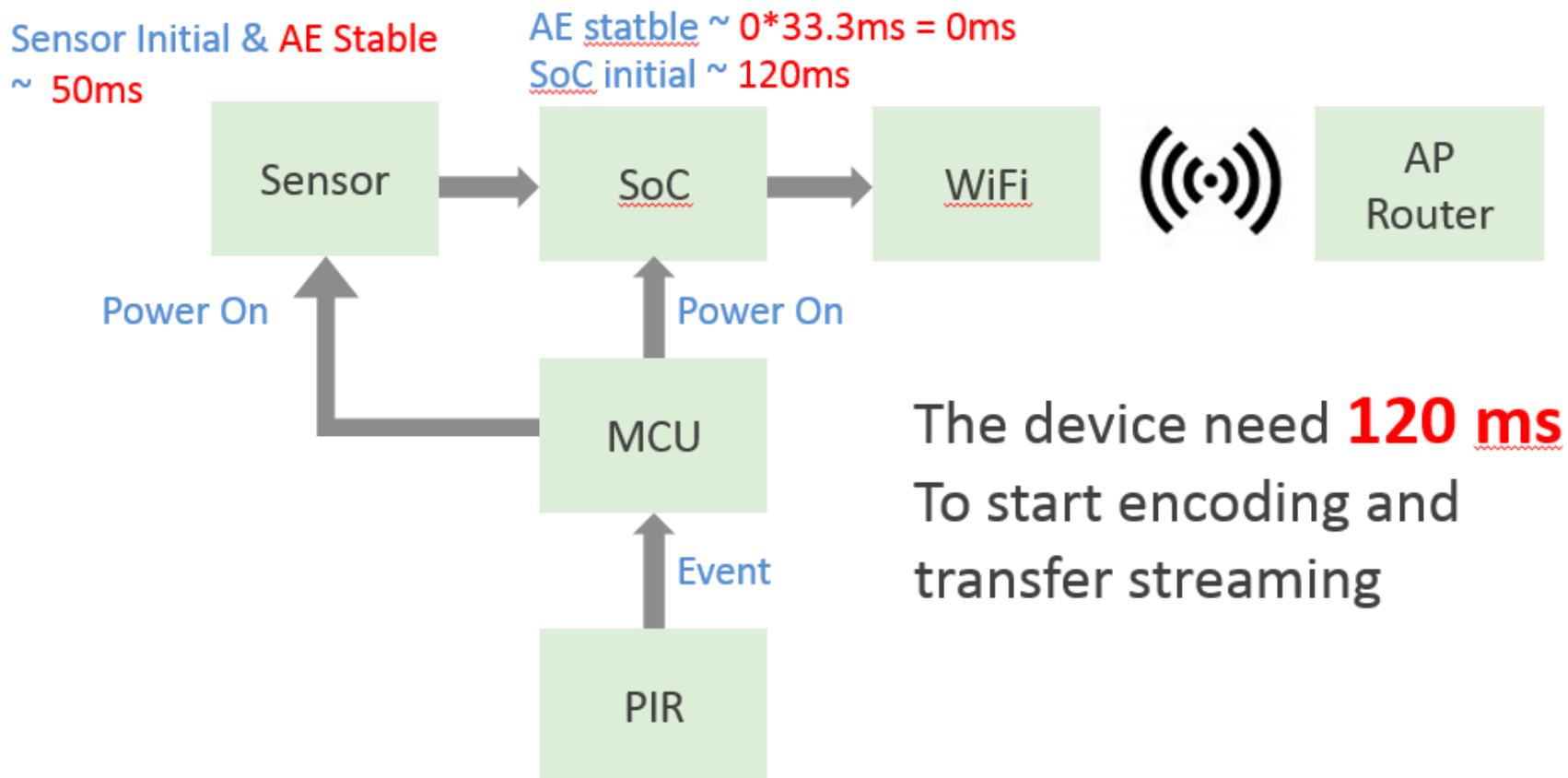
## Typical Battery Camera Event Trigger Flow

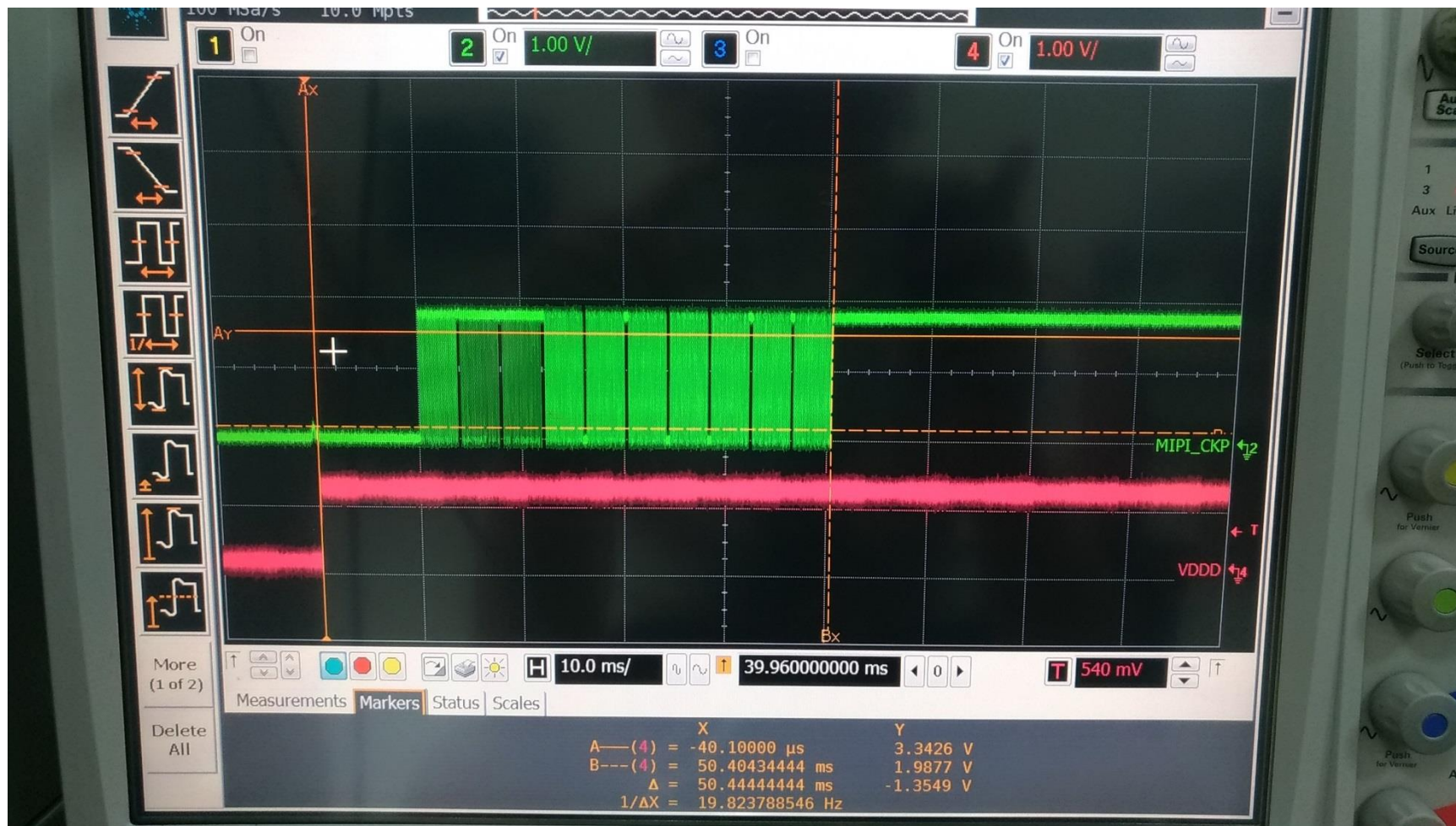


The device need  
 $120 + 100 = 220 \text{ ms}$   
To start encoding and  
transfer streaming

# PS5268 Fast AE

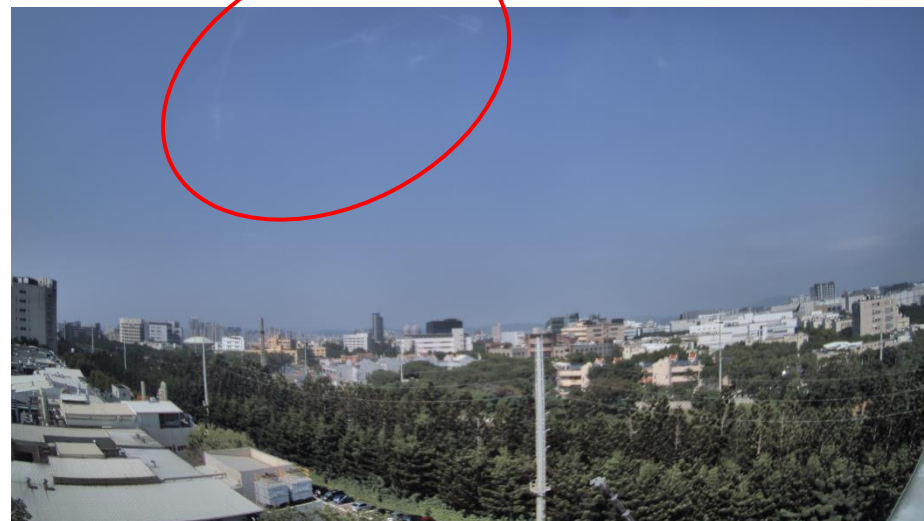
## Fast AE Battery Camera Event Trigger Flow







OFF



ON

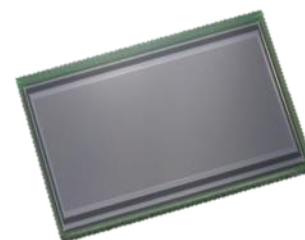
# Full-HD 1080p CMOS Sensor

	PrimeSensor	OnSemi	OmniVision	SONY
	PS5268	AR0230	OV2718	IMX307
Pixel Size	3.0 x 3.0	3.0 x 3.0	2.8 x 2.8	2.9 x 2.9
Array Size	1920x1080	1920x1080	1920x1080	1920x1080
Optical Format	1/2.7"	1/2.7"	1/2.9"	1/2.8"
Frame Rate	RAW 60fps HDR 30fps			
DCG	V	V	V	X
DOL	X	X	X	V
LTM	V	V	X	X
FAST AE	V	X	X	X
Dehaze	V	X	X	X
Power Consumption	< 115 mW (w/ LTM & MIPI)	< 896mW	350mW	274mW
Package	CSP-48	iBGA-80	CSP5-77	BGA-112

---

# Thank You

Please kindly give us your recommend



 原盛科技

# *Part II*

## *PrimeSensor Product Introduction*



# PS5262

## Mainstream HDR+SMD 1080P Sensor



### SPEC

- Optical Format: 1/2.7"
- Pixel Size: 3.0um x 3.0um
- Resolution: 1920(H) x 1080(V),
- Sensitivity: 4700mV / lux-sec
- Frame Rate: HDR 1080p@30fps, 1080p@60fps
- Output Format: RAW10, HDR-RAW14, HDR-CRAW12, HDR-CRAW10
- Support MIPI CSI-2 2-lane (2 x 800Mbps) Output
- Support Multi-Sensor Synchronization, HDR Output

### Features

- SMD + PIR
  - PST Sensing tech
  - Support Day and night
  - Support motion detection subsystem
  - 90% False alarm decrease from market products
- DOL and DCG
  - Support DOL Dynamic range up to 96dB
  - Support DCG Dynamic range up to 85dB
  - Support Dual mode depends on Environment
- Fast AE
  - Good for IPCAM and Doorbell
  - Under 100ms
- Low Power Solution
  - ~ 100uW @standby mode
  - ~ 3mW @normal mode
  - ~75mW @warning mode

# Smart Motion Detection

Temperature Sensitivity

Solving the problem that Pyro-electric Infrared Detector(PIR) is susceptible to false alarms caused by ambient temperature change

Regular Movement Filter

Ignoring regular movement to reduce the probability of false alarms

Region of Interesting

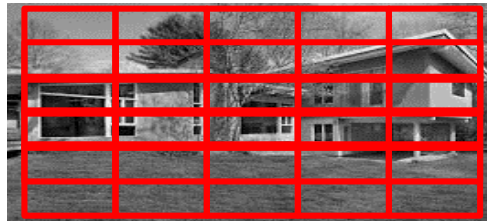
Setting the Region of Interesting(ROI) by customer to increase the use of flexibility

Fast AE Conversion

First frame will be AE stable, increase video streaming visibility.

Motion Detection Mode

- Low Power (< 100uW)
- Programmable ROI



Standby



Motion Event Detected

- Programmable Quiet Zone
- Programmable Motion Event Threshold



Normal (< 3mW)



Video Streaming Mode



Warning

- Full Resolution 1080p Image Output

# PS5420/PS5410

## HDR+LTM 4M (1:1 & 16:9) Sensor

### Key Features

- Optical Format: 1/2.9"
- Pixel Size: 2.2um x 2.2um
- Resolution: 1944(H) x 1944(V)
- Sensitivity: 2400mV / lux-sec
- Dynamic Range: 74dB(Typical), 85dB(HDR)
- Output Format: RAW10, HDR-RAW14, LTM HDR-RAW12
- Frame Rate(w/ HDR): 4MP@30fps, 2K2K@30fps, 1080p@45fps
- Support MIPI CSI-2 4-lane (4\*900Mbps) Output
- Support Multi-Sensor Synchronization, [LTM-HDR Output](#)
- [Power consumption : 215mW@4Mp30, w/ LTM HDR](#)
- Package: 39-ball CSP
- Availability: MP

### Applications

- IP Camera
- Doorbell
- Panoramic Camera



# PS5420

## Panorama LTM+HDR 4MP Image Sensor

**2K x 2K (1:1)**

**180°/360°/720° Panorama**

**Motion-Blur-Free HDR**

**Low Power Design**



### Non Mechanical Pan/Tilt



Automatic Pan



### High Dynamic Range



# PS5520

## HDR 5M Sensor

### Key Features

- Optical Format: 1/2.5"
- Pixel Size: 2.2um x 2.2um
- Resolution: 2592(H) x 1944(V)
- Sensitivity: 2400mV / lux-sec
- Dynamic Range: 74dB(Typical), 85dB(HDR)
- Output Format: RAW10, HDR-RAW14, LTM HDR-RAW12
- Frame Rate(w/ HDR): 5MP@30fps, 4MP@30fps, 2K2K@30fps, 1080p@45fps
- Support MIPI CSI-2 4-lane (4\*900Mbps) Output
- Support Multi-Sensor Synchronization, [LTM-HDR Output](#)
- [Power consumption : 215mW@5Mp30, w/ LTM HDR](#)
- Package: 39-ball CSP
- Availability: MP



# PS5520

## High Sensitivity HDR+LTM 5MP Sensor

High Resolution

Build-In single-shot dual sensitivity HDR synthesis without motion artifact

High Sensitivity

Built-in LTM (Local Tone Mapping) reducing system loading and presenting excellent image quality

High Dynamic Range

Build-In single-shot dual sensitivity HDR synthesis without motion artifact

Local Tone Mapping

Built-in LTM (Local Tone Mapping) reducing system loading and presenting excellent image quality

Low Power

Very low power design toward HDR sensor, reduce thermal noise

Sensor	PS5520	OS05A10	OV4689	OV5658	AR0521
Power	210 mW (HDR 5MP@30)	210mW (5MP@30)	261mW (4MP@30)	325 mW (5MP@30fps)	~400mW (5MP@60fps)



# PS5260

## Mainstream HDR 1080p Sensor

### Key Features

- Optical Format: 1/2.7"
- Pixel Size: 3.0um x 3.0um
- Resolution: 1920(H) x 1080(V),
- Sensitivity: 4500mV / lux-sec
- Dynamic Range: 85dB (HDR)
- Frame Rate: HDR 1080p@30fps, 1080p@60fps
- Output Format: RAW10, HDR-RAW14, HDR-CRAW12, HDR-CRAW10
- Support MIPI CSI-2 2-lane (2 x 800Mbps) Output
- Support Multi-Sensor Synchronization, HDR Output
- Power Consumption:
  - 55mW @ 1080p30
  - 75mW @ 1080p30 HDR, I/O @ 1.8V
- Package: 48ball CSP
- Availability: MP

### Applications

- IP Camera
- DashCam
- Video Door Phone



# PS5260

## Mainstream HDR 1080p Sensor

### High Sensitivity

Enhanced low light sensitivity (4500mV/lux-sec ) and low fixed pattern noise

### High Dynamic Range

Build-In single-shot dual sensitivity HDR synthesis reducing motion blur

### Low Power

Very low power design toward HDR sensor, reduce thermal noise

Sensor	PS5250	PS5260	OV2718	OV2735	AR0237	IMX323
Power	<b>73mW</b> (1080p30)	<b>75mW</b> (HDR 1080p30)	350mW (HDR 1080p30)	200mW (1080p30)	300mW (Interleave HDR 1080p30)	143 mW (1080p30)

### Temperature durability for plastic housing



Batter-Powered Camera



Portable Camera



Security Camera



# PS5260

## HDR Effect



DCG  
( PS5260 )

DOL  
( IMX327 )

# PS5270

## Panorama HDR 2.36M Sensor

### Key Features

- Optical Format: 1/2.4"
- Pixel Size: 3.4um x 3.4um
- Resolution: 1536(H) x 1536(V), square pixel panoramic sensor
- Sensitivity: 6500mV / lux-sec
- Dynamic Range: 81dB (HDR)
- Output Format: RAW10, HDR-RAW14
- Frame Rate: 1.5Kx1.5K@30fps, 1440x1440@HDR 30fps
- Support MIPI CSI-2 2-lane (2 x 800Mbps) Output
- Support Multi-Sensor Synchronization, HDR Output
- Power Consumption:
  - 122mW @ 2.36Mp20 HDR
  - 122mW @ 2.36Mp30 Linear
- Package: 60ball CSP
- Availability: Mass Production

### Applications

- IP Camera
- Panorama Camera
- Video Door Phone



# PS5270

## Panorama HDR 2.36MP Image Sensor

1.5Kx1.5K (1:1)

180°/360°/720° Panorama

Motion-Blur-Free HDR

Low Power Design



### Non Mechanical Pan/Tilt



Automatic Pan



### High Dynamic Range



# PS5280

## High Sensitivity HDR 1080p Sensor

### Key Features

- Optical Format: 1/2"
- Pixel Size: 4.0um x 4.0um
- Resolution: 1920(H) x 1080(V)
- Sensitivity: 10650mV/lux-sec
- Dynamic Range: 85dB (HDR)
- S/N Ratio: 39dB
- Output Format: RAW12, HDR-CRAW12
- Frame Rate: 1080p@60fps, 1080p HDR@30fps
- Built in Programmable Motion Detection
- Support multi-sensor synchronization
- Support Parallel (DVP) and MIPI (4 x 800Mbps) Interface
- Power Consumption:
  - 65mW @ 1080p30
  - 93mW @ 1080p30 HDR, I/O @ 1.8V DVP
- Package: CSP
- Availability: MP

### Applications

- Surveillance
- DashCam
- Automotive



# PS5280

## High Sensitivity HDR 1080p Sensor

### High Sensitivity

Large optical format introduce high sensitivity (10650mV/lux-sec) with 1080p output

### High Dynamic Range

Build-In single-shot dual sensitivity HDR synthesis reducing motion blur

### Low Power

Very low power design toward HDR sensor, reduce thermal noise

### Motion Detection

Build-In motion detection for battery powered product design



High Sensitivity  
1080p HDR Camera



Sensor	PS5280	OS02A	IMX307	IMX185
Power	<b>93mW</b> (HDR 1080p30)	200mW (staged 1080p30)	274 mW (DOL-HDR 1080p30)	406mW (1080p60)

---

# Thank You

Please kindly give us your recommend



 原盛科技

# PST Image Sensor Line Up (I)

Part Number	Optical Format	Pixel Size	Resolution	Frame Rate	Output Format	Interface	Package	Application	Status
PS5520	1/2.5"	2.2x2.2	2592x1944	5MP@30fps	RAW10 12/10-bit LTM HDR-RAW	MIPI	CSP-39	Surveillance Car-DVR	Production
PS5510	1/2.5"	2.25x2.25	2592x1944	5MP@30fps	RAW10	MIPI	CSP-53	Surveillance Car-DVR	Production
PS5280	1/2"	4.0x4.0	1920x1080	1080p:60fps HDR: 30fps	RAW12 HDR-CRAW12	Parallel MIPI	CSP-54	Surveillance	Production
PS5270	1/2.4"	3.4x3.4	1536x1536	2.38M:30fps HDR: 25fps	RAW10 HDR-RAW14	Parallel MIPI	CSP-60	Surveillance Consumer	Production
PS5268	1/2.7"	3.0x3.0	1920x1080	1080p:60fps HDR: 30fps	RAW10 HDR-LTM-RAW12	Parallel MIPI	CSP-46	Surveillance	Developing
PS5260	1/2.7"	3.0x3.0	1920x1080	1080p:60fps HDR: 30fps	RAW10 HDR-CRAW12	Parallel MIPI	CSP-46	Surveillance	Production
PS5250	1/2.7"	3.0x3.0	1920x1080	1080p:30fps	RAW10	Parallel MIPI	CSP-54	Surveillance Car-DVR	Production
PS5230	1/2.7"	3.0x3.0	1920x1080	1080p:30fps	RAW10	Parallel MIPI	CSP-60	Surveillance Car-DVR	Production
PS5220	1/2.7"	3.0x3.0	1920x1080	1080p:30fps	RAW10	Parallel MIPI	CSP-60	Surveillance Car-DVR	Production
PAS5130	1/3"	3.75x3.75	1280x960	SXGA:50fps 720p:60fps	RAW12	Parallel	CLCC-48 PLCC-48	Surveillance	Production
PS5150	1/3"	4.2x4.2	1280x720	720p:60fps	RAW12	Parallel	CSP-36	Surveillance Automotive	Production

# PST Image Sensor Line Up (II)

Part Number	Optical Format	Pixel Size	Resolution	Frame Rate	Output Format	Interface	Package	Application	Status
<b>PAS6366</b>	1/3"	5.6x5.6	768x576	D1:60fps	RAW10	Parallel	CSP-34	Surveillance	Production
<b>PAC7366</b>	1/3"	5.6x5.6	768x576	D1:60fps CVBS:30fps	NTSC / PAL RAW10, YUV422	CVBS Parallel	CLCC-48 PLCC-48	Automotive Surveillance	Production
<b>PAC7365</b>	1/4"	5.6x5.6	640x480	VGA:60fps CVBS:30fps	NTSC / PAL	CVBS	PLCC-48	Surveillance Consumer	Production
<b>PAC7375</b>	1/4"	5.6x5.6	640x480	VGA:60fps CVBS:30fps	NTSC / PAL	CVBS	CSP-46	Automotive (AEC_Q100)	Production
<b>PAC7376</b>	1/4"	5.6x5.6	640x480	VGA:60fps CVBS:30fps	NTSC / PAL	CVBS	CSP-46	Automotive	Production
<b>PAC7372</b>	1/4"	5.6x5.6	640x480	VGA:60fps	YUV422	Parallel	CSP-46	Consumer	Production
<b>PAS6376</b>	1/5"	4.2x4.2	640x480	VGA:60fps	RAW10, YUV422 RGB565/555/444	Parallel	CSP-35	IP-Cam	Production
<b>PAC7512</b>	1/7"	1.75x1.75	1280x720	720p:30fps	MJPEG, YUV422, RAW10	USB2.0	CSP-50	USB-Cam Consumer	Production
<b>PAS6329</b>	1/7"	3.2x3.2	640x480	VGA:30fps	YUV422 RGB565/555/444	Parallel	CSP-22	Appliance Consumer	Production
<b>PAC7352</b>	1/9"	2.5x2.5	640x480	VGA:30fps	YUV422	USB2.0	CSP-29	Endoscope USB Cam	Production
<b>PAS6180</b>	1/13"	3.2x3.2	240x320	QVGA:30fps	YUV422	Parallel SPI	CSP-16	Appliance	Production



		PS5260		SC22xx	
	Time (s)	Average Power Consumption (mW)	mWh/Day	Average Power Consumption (mW)	mWh/Day
Active	240	807.87	53.85	887.18	59.15
Stand-by	86160	0.86	20.58	0.86	20.58
		Total	74.43		79.73
		Total Battery Capacity (mWh)	17568		
		Battery Efficiency	80%		
		Est. Battery Life (days)	188.83	<b>12.56 days life</b>	176.27

Note: only change CMOS

- Arlo Pro 2 battery size
  - Battery, 2440mAh
    - $2440\text{mAh} * 7.2\text{V} = 17568 \text{ mWh}$
  - Assuming 80% efficiency
    - $17568\text{mWh} * 80\% = 14054.4 \text{ mWh}$
- Arlo Pro 2 Component
  - OV798, OV2376

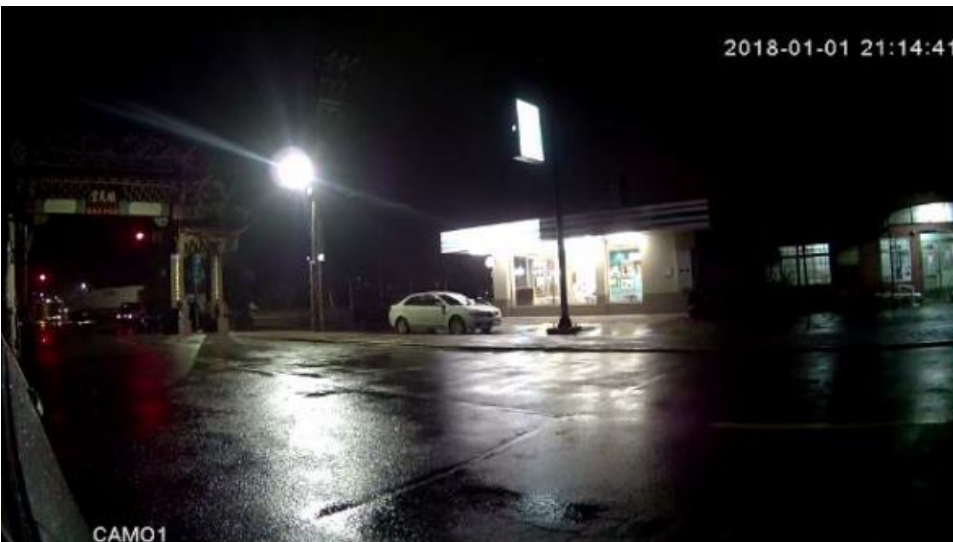
# HDR Performance



NON-HDR

HDR

# HDR Performance



NON-HDR

HDR

# Low Lux / High Temperature Resistance



PS5260

ox2735

## ■ Global Tone Mapping



The image will have white fog phenomenon

## ■ Local Tone Mapping

