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System Solution Guide - Preview

Security and Portable Cameras

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Full Guide Preview

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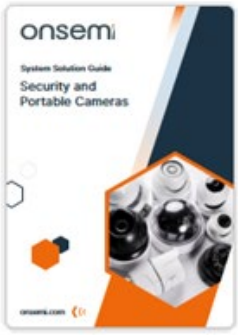

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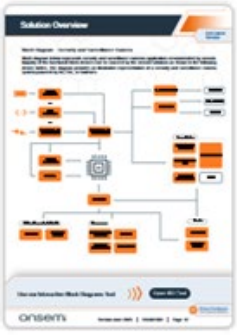

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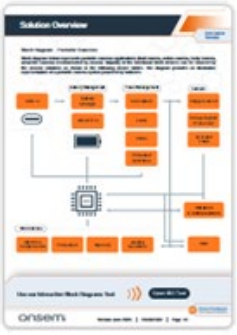

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Block Diagram

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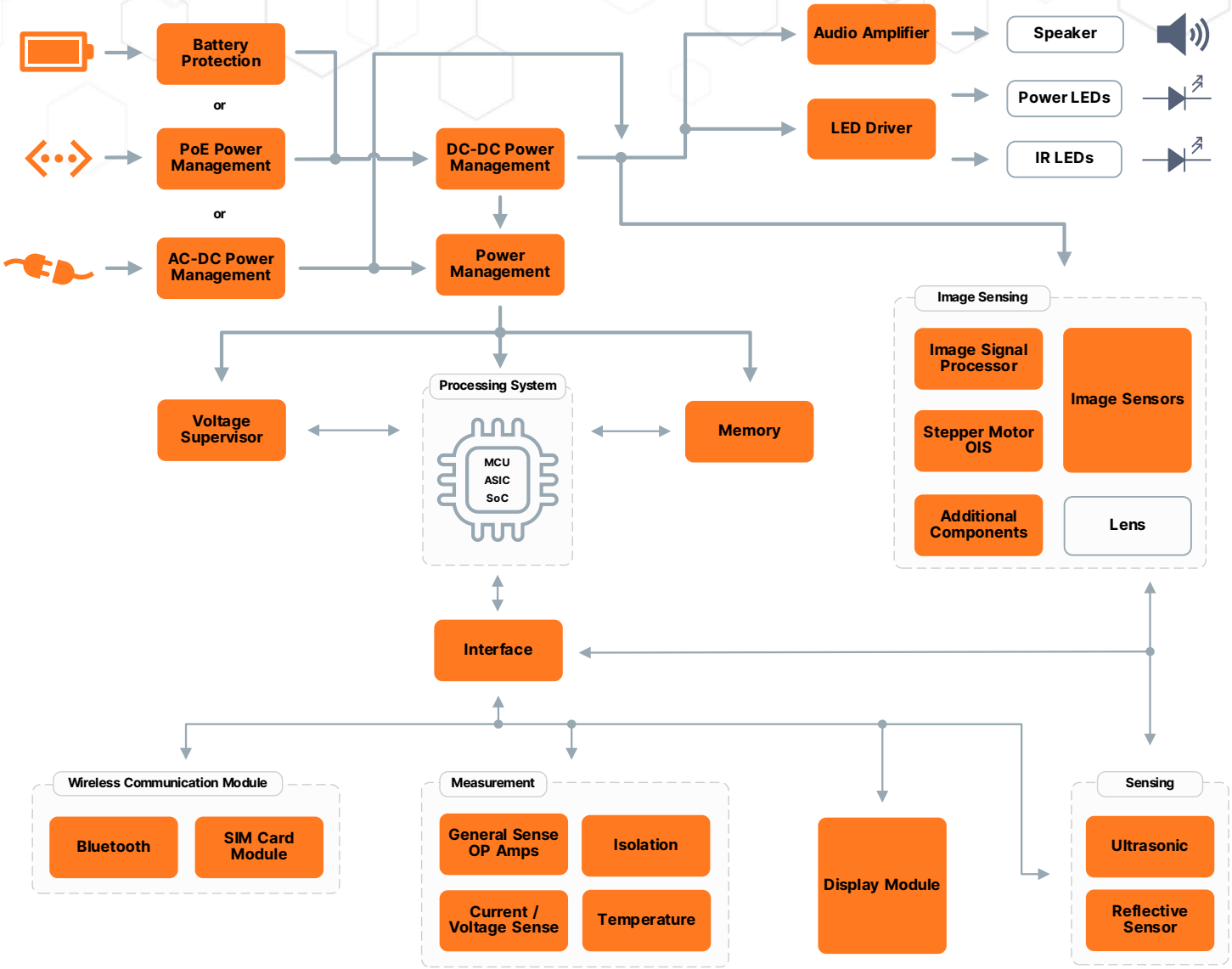
Block Diagram – Security and Surveillance Camera

Block diagram below represents security and surveillance cameras application recommended by onsemi. Majority of the functional block devices can be sourced by the onsemi solutions as shown in the following device tables. The diagram provides an illustrative representation of a security and surveillance camera system powered by AC, PoE, or batteries.



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Block Diagram

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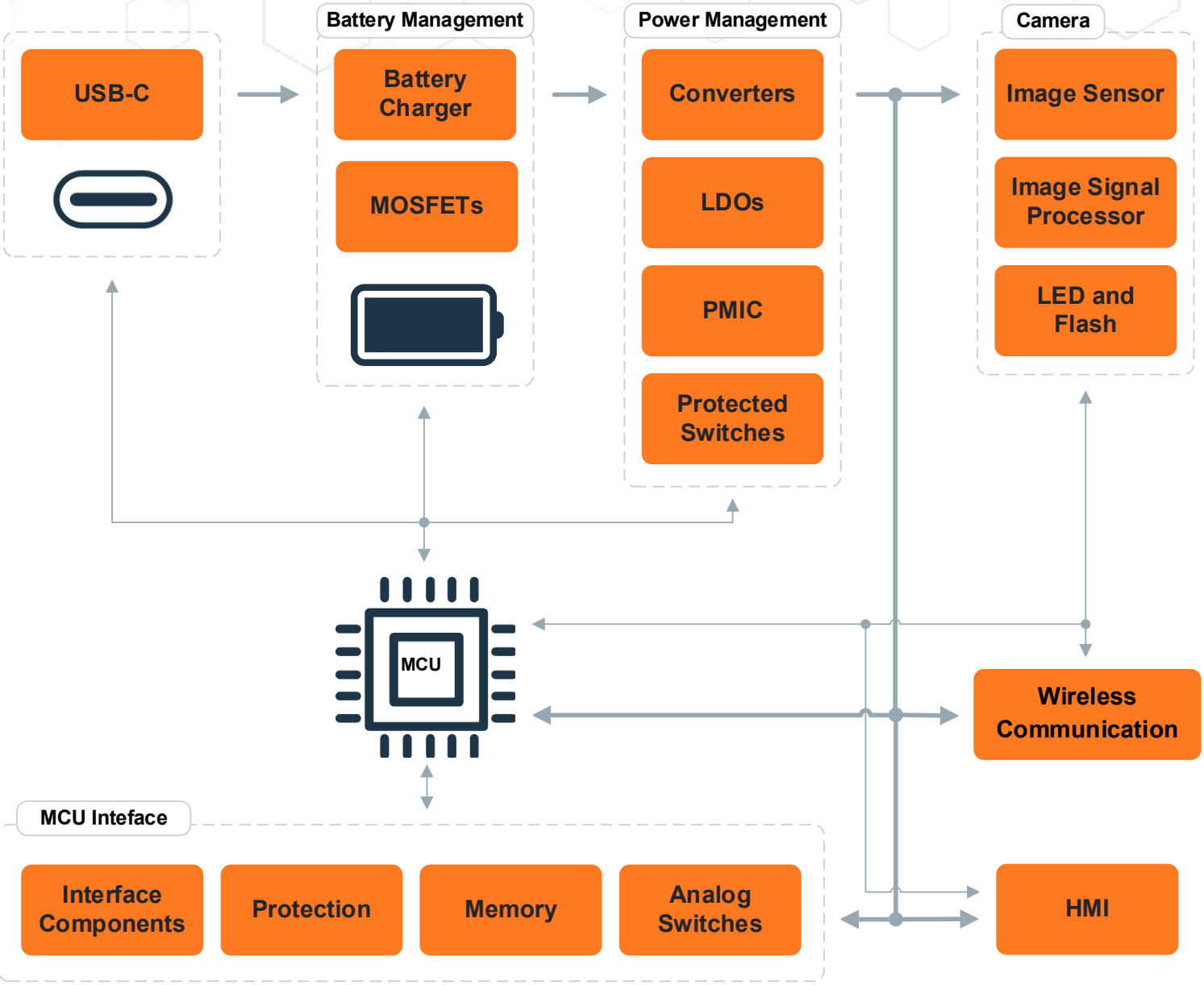
Block Diagram – Portable Cameras

Block diagram below represents portable cameras applications (trail camera, action camera, body camera, weareble camera) recommended by **onsemi**. Majority of the functional block devices can be sourced by the **onsemi** solutions as shown in the following device tables. The diagram provides an illustrative representation of a portable camera system powered by batteries.



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Solution Recommendations

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Hyperlux LP - Image Sensor Family

Recently, **onsemi** launched the Hyperlux™ LP series of image sensors. This series incorporates cutting-edge electronic rolling shutter technology and consists of three product variants: the AR0544 with a resolution of 5MP, the AR0830 with 8.3MP, and the AR2020 with 20MP. All sensors within the Hyperlux™ LP family feature identical pixel sizes and optical performance. The product lines provide a variety of options, including mono, RGB, and RGBIR variants, available in both packaged and die forms. This extensive selection allows vision system designers to optimize development efforts, reduce expenses, and accelerate time-to-market (TTM) by leveraging diverse solutions.

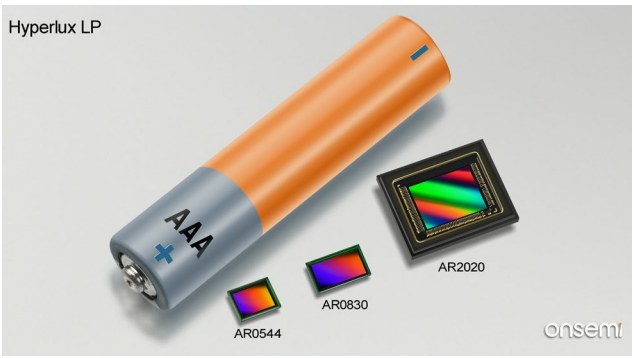
	AR0544	AR0830	AR2020
Resolution	5MP, 2592 x 1944	8 MP, 3840 x 2160	20 MP, 5120 x 3840
Pixel, Color Filter	1.4 µm BSI, RGB/Mono/RGB-IR	1.4 µm BSI, RGB/Mono/RGB-IR	1.4 µm BSI, RGB/Mono
Optical Format	1/4.2-inch (4:3)	1/2.9-inch (16:9)	1/1.8-inch (4:3)
SNR - Max	39.9 dB		
Dynamic Range	73 dB (eDR 1-exp)		
Subsampling Modes	Binning/Skipping/Summing		

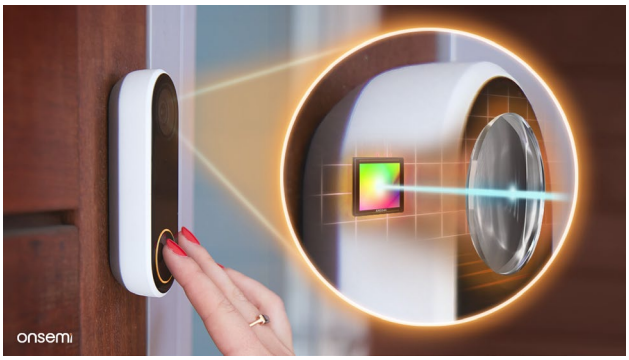
Power Consumption

- In the pre-detect state, Hyperlux™ LP image sensors consume less than 1/100th of the power consumed in the native mode. This results in substantial power savings and extends the operational cycle of vision systems that are sensitive to power consumption.

Table 2: Image sensor power consumption comparison in full resolution mode

	AR0544	AR0830	AR2020
Power Consumption (Full Resolution, Typical 25C)	< 170 mW @ 60 fps	190 mW @ 60 fps	~400 mW @ 60 fps





Ultra Low Power Operation

- Improves battery life by 2x over existing architectures
- Wake-on-Motion Mode < 2mW
- 2x battery life over competitors

High Performance Imaging

- Low-light: Superior 1.4 um BSI pixel
- NIR: 45% QE at 850 nm
- Speed: Up to 20 MP at 60 fps

Hyperlux LH - Image Sensor Family

The **onsemi Hyperlux LH** family of image sensors is engineered to deliver superior performance for security and surveillance cameras, ensuring high-quality imaging across diverse lighting conditions. These sensors feature an industry-leading 150dB ultra-high dynamic range (HDR), which allows them to capture detailed images even in extreme lighting contrasts. The enhanced near-infrared (NIR) sensitivity is optimized for low-light and night-time surveillance, providing clear visuals in conditions where traditional sensors might fail. Additionally, the advanced LED Flicker Mitigation (LFM) technology effectively eliminates the flickering effects caused by LED lighting, ensuring consistent image quality.

Supporting 4K video resolution, the Hyperlux LH sensors deliver ultra-high-definition images, which are crucial for identifying fine details in security footage. The sensors are designed with a 2.0 µm pixel size, contributing to their high sensitivity and image clarity. Furthermore, these sensors are built for low power consumption, making them ideal for battery-operated devices and reducing overall energy costs in surveillance systems.

The combination of these features ensures that security and surveillance cameras equipped with Hyperlux LH sensors can provide reliable, high-quality visual data essential for effective monitoring and security operations. **The onsemi Hyperlux LH** image sensor family is a standout in its category, particularly when it comes to power consumption and HDR capabilities. As highlighted in the comparison table 3, the Hyperlux LH sensors consume only 383W, which is significantly lower than competitors under the same conditions.

Table 3: Power consumption comparison

	onsemi AR0822	Competitor A	Competitor B
HDR @ 30 fps	eHDR 120dB/ Li-HDR/ eDR	DOL (LI-HDR)	LI-HDR 85dB
Power	383mW @ 60 fps	523mW	792mW @ 60 fps

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