

## What is Sony Exmor T sensor

[Sony Exmor T sensor](#) is an innovative [CMOS sensor technology](#) launched by Sony, which represents another major breakthrough in the field of imaging technology.



### **New Exmor T for mobile sensor and 4K HDR OLED display**

The following is a detailed introduction to Sony Exmor T sensor:

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### Technical background and evolution

In the past few decades, Sony has been committed to the research and development and innovation of CMOS sensor technology. Starting with the Exmor sensor in 2007, Sony has continuously introduced new technologies to improve the performance of sensors.

In 2008, Sony launched the Exmor R back-illuminated sensor, which significantly improved the photosensitivity of the sensor by changing the way light enters.

In 2012, Sony further launched the Exmor RS stacked sensor, which realized the layering of pixel area and circuit area, providing the possibility of higher speed and better performance.

In 2015, Sony launched the Exmor RS sensor with integrated DRAM, which provided the hardware foundation for high-speed focusing, metering, continuous shooting and other functions.

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In 2021, Sony made another breakthrough and launched a stacked sensor with double-layer transistor technology, namely the Exmor T sensor.



### **Exmor T sensors for all cameras - sony 1-inch sensor camera phone**

Technical features and advantages

#### 1. Double-layer transistor pixel structure

The core of the Exmor T sensor lies in its double-layer transistor pixel structure. This structure arranges the photodiode and pixel

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transistor on different layers, so that the size of both can be enlarged. For the photodiode, the larger size means that more light signals can be received, thereby improving the photosensitivity of the sensor. For the pixel transistor, the larger space allows the use of larger amplification transistors, thereby improving the noise performance in low light.

### 2. Excellent low-light noise reduction capability

Due to the use of a double-layer transistor pixel structure, the noise reduction capability of the **Exmor T sensor** in low-light environments has been significantly improved. With the multi-frame synthesis noise reduction processing, the Exmor T sensor can effectively reduce the generation of noise while maintaining the details of the picture, making the photos taken clearer and purer.

### 3. Wide dynamic range

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Dynamic range is one of the important indicators to measure sensor performance. The Exmor T sensor achieves a wider dynamic range by optimizing the performance of the photodiode and pixel transistor. This means that the sensor can maintain more details between highlights and shadows, making the photos more vivid and three-dimensional.

### 4. Efficient energy management

In addition to excellent imaging performance, the Exmor T sensor also focuses on energy efficiency management. By optimizing circuit design and algorithm processing, the Exmor T sensor can reduce power consumption and extend the battery life of the device while ensuring image quality.

### Application and performance

The Exmor T sensor was first used on the Sony Xperia 1 V mobile phone. As Sony's first movie-like imaging mobile phone, the Xperia 1 V is equipped

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with a wide-angle main camera and a new generation of Exmor T sensors with double-layer transistor technology. This sensor not only has high pixels (about 52 million pixels, about 48 million effective pixels), but also has excellent low-light noise reduction capabilities and a wide dynamic range.



In actual shooting, the noise control level of the Xperia 1 V's main camera in low-light environments has increased by about 2 times compared with the previous generation, and the

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picture brightness is higher and the details are richer. At the same time, due to its wide dynamic range, Xperia 1 V can also retain more information when shooting highlights and dark details, making the photos more vivid and realistic.

In addition, according to online reports, Sony Xperia 1 VII mobile phones also plan to upgrade the Exmor T sensor across the board. This means that whether it is a wide-angle, ultra-wide-angle or telephoto lens, you will get a better shooting effect. It can be foreseen that with the widespread application of Exmor T sensors, Sony's leading position in the field of mobile imaging will be further consolidated.

## Technical Outlook and Challenges

Although the Exmor T sensor has demonstrated excellent imaging performance and energy efficiency management capabilities, it still faces some challenges and prospects.

### 1. Technical Challenges

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- **Balance between sensor size and pixel count:**  
As consumers' requirements for mobile phone photography quality continue to increase, how to increase the number of pixels while keeping the sensor size unchanged and ensuring image quality is one of the challenges that the Exmor T sensor needs to face.
- **Optimization of noise reduction algorithm:**  
Although the Exmor T sensor already has excellent noise reduction capabilities, there is still room for further optimization of the noise reduction algorithm under certain extreme light conditions.

## 2. Technology Outlook

- **Expansion of more application scenarios:**  
With the continuous development of technologies such as 5G and AI, the Exmor T sensor is expected to play its role in more application scenarios. For example, in the fields of video surveillance and autonomous



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driving, the high performance of the Exmor T sensor will provide it with more possibilities.

- **Integration with other technologies:** In the future, the Exmor T sensor is expected to be integrated with more advanced technologies, such as optical image stabilization and computational photography, to further improve imaging quality and user experience.

## [Sony Xperia 1 VII mobile phone rear camera is fully equipped with Exmor T sensor](#)

IOT cloud platform February 26, 2025 news, a few days ago @GXmmm918 published a blog post, revealing that the size of Sony Xperia 1 VII smartphone camera sensor may remain unchanged, but all sensors will be upgraded to the latest Exmor T for mobile, indicating that the imaging system of Xperia 1 VII mobile phone will usher in a major improvement.

Currently on sale Xperia 1 VI only uses 1/1.35-inch Exmor T sensor for the main camera (wide angle),

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and the ultra-wide-angle and telephoto cameras still use Exmor RS sensor.

Xperia 1 VII is likely to achieve that all rear cameras use double-layer transistor pixel stacked CMOS image sensors (Exmor T for mobile).

Exmor T for mobile sensor technology will significantly improve the shooting performance of ultra-wide-angle and telephoto lenses in low-light environments, reduce noise, and expand dynamic range, thereby greatly improving overall camera performance.

At present, other hardware information besides the camera is relatively limited, and it is rumored that the overall changes are not significant. As usual, the Xperia 1 VII is expected to be officially released in early May and will be available in June.

## Conclusion

In summary, Sony's Exmor T sensor is an innovative CMOS sensor technology. Its double-layer transistor pixel structure brings

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excellent low-light noise reduction capabilities, wide dynamic range and efficient energy management to the sensor.

Its application on mobile phones such as Sony Xperia 1 V has proved its excellent imaging performance and user experience. In the future, with the continuous development of technology and the continuous expansion of application scenarios, Exmor T sensors are expected to play their role in more fields and bring more surprises and convenience to consumers.

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## FAQs

The following are frequently asked questions and answers about Sony's Exmor T sensor:

What is Sony's Exmor T sensor?

Sony's Exmor T sensor is a new type of CMOS sensor produced by Sony. It uses double-layer transistor technology to achieve layered placement of photodiodes and pixel transistors. This structure increases the sensor's saturation

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signal by about 2 times, thereby achieving a wider dynamic range.

What are the technical advantages of Sony's Exmor T sensor?

The main technical advantages of Sony's Exmor T sensor include:

**Larger dynamic range:** Due to the increase in saturation signal, the sensor can capture a wider range of light, thereby taking clearer photos in low-light or high-contrast environments.

**Better noise control:** Since the pixel transistor has more space, the size of the amplification transistor can be increased, thereby improving the noise performance in low light.

**Stacked structure:** The sensor adopts a stacked structure, which layers the pixel area and the circuit area, allowing the circuit layer to use more advanced manufacturing processes, providing higher speed and better performance.

Which Sony products use Exmor T sensors?

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Currently, some products such as Sony's Xperia 1 V mobile phone use Exmor T sensors. These products excel in shooting quality, dynamic range, noise control, and other aspects.

How to determine whether the Sony Exmor T sensor is faulty?

To determine whether the Sony Exmor T sensor is faulty, you can observe the quality of the photos or videos taken. If the photos or videos are blurry, noisy, or have color distortion, the sensor may be faulty. In addition, sensor failure may also cause the camera to not work properly or not recognize the lens.

How to solve the problem of Sony Exmor T sensor failure?

If the Sony Exmor T sensor fails, it is recommended to try restarting the camera or mobile phone to see if the problem can be solved. If the problem persists, it is recommended to contact Sony's official after-sales service center for repair or

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replacement of the sensor. When repairing or replacing the sensor, please make sure to choose a regular repair channel and professional repair personnel to avoid further damage to the equipment due to improper repair.