

iPhone optical module



Article Overview

The iPhone optical module is a compact, high-performance camera system integrating lenses, image sensors, variable apertures, and advanced thermal management to deliver professional-grade imaging in a smartphone.

Core Components

The iPhone optical module typically includes an optical assembly with multiple lenses, an image sensor, and mechanisms for autofocus (AF) and optical image stabilization (OIS). The lenses are designed to optimize light capture, reduce aberrations, and support features like digital and optical zoom, night mode, and 4K video recording (Amazon iPhone 14 Plus replacement module) .

Variable Aperture Technology

Apple has patented a soft-membrane variable aperture system, which replaces traditional mechanical iris blades with a flexible membrane that can adjust the aperture diameter via an internal actuator. This allows precise control over light intake and depth of field in a small form factor, enhancing low-light performance and cinematic capabilities . Analyst reports indicate that upcoming iPhone models, such as the iPhone 18 Pro, will feature this variable-aperture main camera, which is expected to increase component costs by around 50% compared to current fixed-aperture 7P lens systems .

Thermal Management Innovations...

Article Content

Apple iPhone 13 Face ID Module

This full reverse costing study has been conducted to provide insights into technology data, the manufacturing cost and selling price

Apple iPhone 14 Image Sensor

Apple introduced an upgraded main rear cam on the baseline model iPhone 14, a revised front camera module on the

How does the iPhone 15 Pro Max's "Tetraprism" 5x camera work

But if you look at their teardowns, you can notice that the periscope module is much larger than the one in the 15 Pro Max, despite

A Microscopic Journey: iPhone 15 Unveiled

If you opt to stabilize it optically (aka optical image stabilization or OIS), you can jiggle the lens elements or

Modeling Apple's iPhone Camera with COMSOL's Ray Tracing

Explore the detailed modeling of the Apple iPhone camera using COMSOL's Ray Tracing Module. Learn about lens

How to Use Optical Zoom on an iPhone Camera

Your iPhone, however, may offer "optical zoom" in some form or another, which can solve this problem. But do you

Original for iPhone 14 Plus Main Rear Camera Replacement OEM for

□Ultra high quality camera□:For iPhone 14 Plus main rear camera replacement, 12 MP dual cameras with support

Apple's iPhone 17 Face ID: First metasurface

In Yole Group's Apple iPhone 17 Face ID report, our analysts uncover a major inflection

Apple's camera supply chain will enter a two-year high-speed

The iPhone prism output value's YoY growth will reach 150–200% in 2024. Each periscope camera uses two prisms,

Camera Module Comparison 2022

Camera Module Comparison 2022 - Vol. 1 – Apple iPhone Evolution Evolution of the iPhone camera, from the iPhone 6S Plus to the

iPhone 17

Built-in accessibility features supporting vision, mobility, hearing, speech, and cognitive needs help you get

Designing Cell phone Camera Lenses Part 1: Optics

This article is part of a four-series articles that will discuss the challenge of smartphone lens modules, from

What Is an Optical Module and Its FAQs (V200)

Describes what an optical module is and FAQs, including the fundamentals, appearance and structure, key performance counters,

Understanding Optical Modules: Working Principles, Structures, and ...

Explore the working principles, structures, and performance metrics of optical modules, essential components of

Everything You Need to Know About Optical Modules

Optical modules are electronic devices used in communication systems to transmit optical

Camera Module Comparison 2021 Vol. 2 Apple iPhone Evolution

Continuing our series of camera module comparison reports, we summarize the results of detailed physical analyses and costing

Imaging, Camera, Sensor, Apple: Apple's novel Sensor-shift OIS in

With the iPhone 12 Pro Max, Apple has taken a different approach, and instead shifts the image sensor itself. Thus the name,

Apple is Working on Improving the iPhone's Camera With Optical

A recent patent application reveals that Apple is working on bettering the iPhone's camera with optical image

iPhone 18 Pro Camera Upgrades: One Confirmed, Two Still Rumors

Apple's supply chain is reportedly preparing parts and module production for an iPhone camera the company has

iPhone 7 Camera Module Confirms Optical Image Stabilization

A new leaked image of the iPhone 7's rear camera module has been posted online today (via Nowhereelse),

Apple Reinvents the Iris: New Patent Reveals Soft

Apple just patented a soft-membrane camera aperture that may replace traditional

Apple patent shows yet another design for an optically

The latest example of this is a new patent from Apple that details the schematics for a

iPhone 17 Pro Leaks: 48MP Lenses, 8× Optical Zoom,

8x optical zoom: The upgraded Telephoto lens on Apple's iPhone 17 Pro models may have

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