

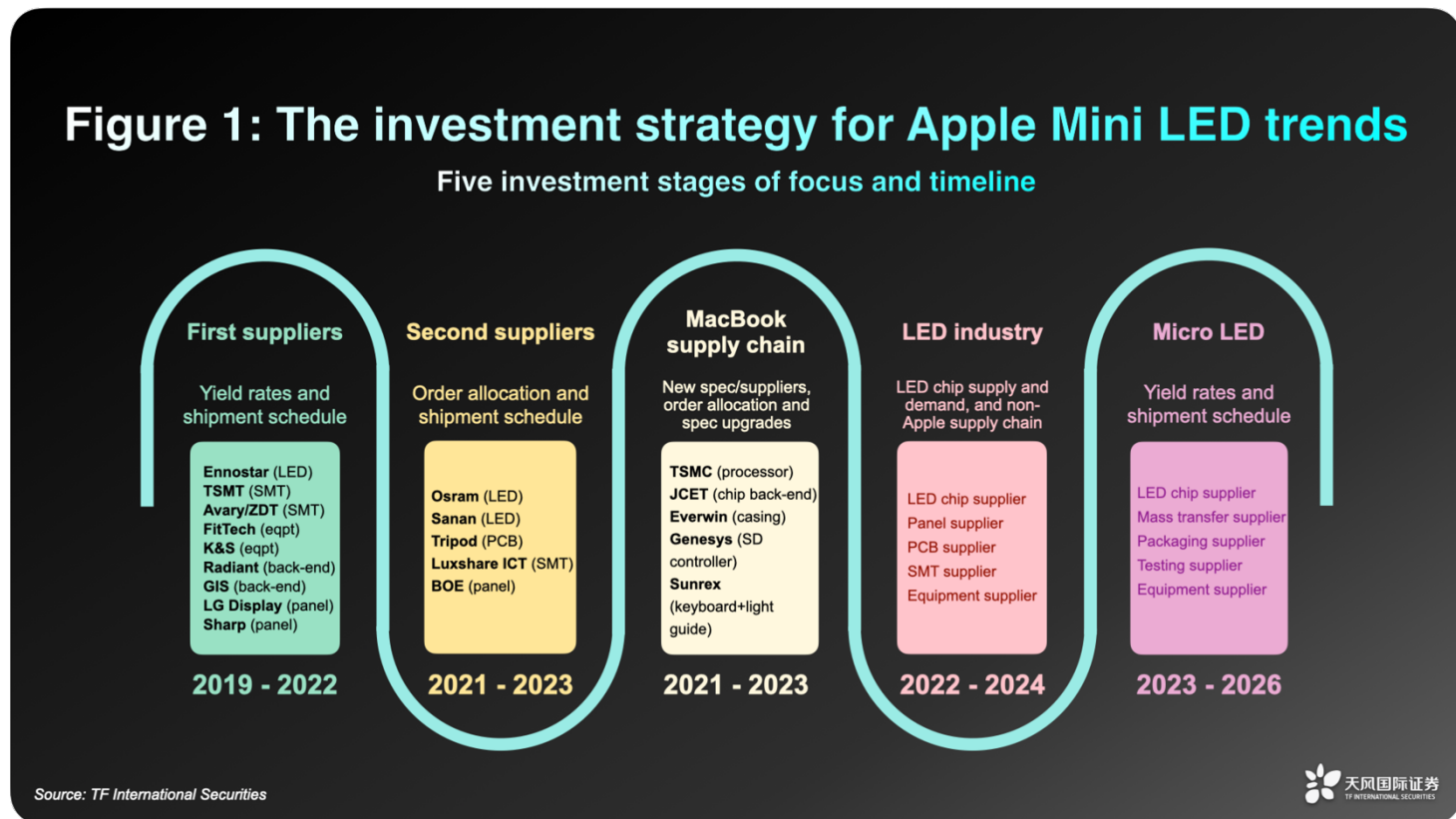


Apple Research

Apple Mini LED trend investment strategy; focus and timeline of the five investment stages

Updated forecast:
Apple Mini LED trend investment strategy

We are taking a positive view of the industry trend and investment opportunities related to Apple's adoption of Mini LED. Therefore, we divide the investment strategy for Apple's Mini LED trend into five stages (see Figure 1). The five investment stages are a first supplier (2019–2022), second supplier (2021–2023), MacBook supply chain (2021–2023), LED industry (2022–2024), and Micro LED (2023–2026). The five investment stages have different focus areas and investment opportunities. Therefore, we recommend that investors refer to it and plan short, medium, and long-term investment strategies for Apple Mini LED trends.



The first stage: First Supplier (2019–2022)

As Apple's Mini LED mass production plans became concrete starting in 2019, the first supplier becomes the focus of market attention. As first-supplier stocks react to this positive trend, changes in production yields and shipment schedules significantly affect the valuation of supplier stocks. We believe that the investment value at this stage will gradually end in 2021-2022, as supplier stocks largely reflect the positive and new competitors emerging in 2021. However, the first supplier has the advantage of building up its ability to design and produce Mini LED-related components earlier. We recommend that investors pay attention to whether the first supplier can leverage this advantage to secure more non-Apple orders to sustain growth.

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The second stage: Second Supplier (2021–2023)

To diversify supply risk and reduce cost, Apple is actively looking for second suppliers of key Mini LED components. We believe that second suppliers are the new focus of the market in this stage and expect it to continue through 2023. We believe that the proportion of orders and shipment schedules of the second supplier will be the market focus.

The third stage: MacBook Supply Chain (2021–2023)

We believe that MacBooks, not iPads, mainly drive Mini LED panel shipments. MacBook shipments have not grown much in the past few years. However, we expect MacBook shipments to grow significantly by 20% YoY, or more in 2021 and 2022, due to the adoption of Mini LED panels, Apple Silicon, and all-new designs. As Apple benefits from the rapid growth of MacBook shipments driven by Mini LED, we predict that the MacBook supply chain will become a renewed market focus. We are particularly optimistic about suppliers for new specifications, new entrants, significant market share gainers, and specification upgrade beneficiaries within the supply chain. We believe this stage will last until 2023.

The fourth stage: LED Industry (2022–2024)

We think that if the MacBook and iPad receive more positive feedback from the market for adopting Mini LED panels, more non-Apple companies will follow Apple's strategy of adopting and promoting Mini LEDs, which will consume a lot of LED chip capacity. If the LED chip capacity utilization rate can be significantly improved, there will be many investment opportunities in the LED industry. At this stage, the non-Apple supply chain will become the market focus.

The fifth stage: Micro LED (2023–2026)

We predict that the production cost of Micro LED will improve significantly starting in 2023–2024, so it will likely be a market focus from 2023 onwards. We believe Apple is developing Micro LED technology, but the production schedule is not yet confirmed. We also think that if the Mini LED is successful, it will help more companies invest in Micro LED design and R&D and help to realize Micro LED mass production. At this stage, we expect investment opportunities to come from LED chip suppliers, mass transfer suppliers, packaging suppliers, testing suppliers, and equipment manufacturers.

Stock for actions:

We divide the investment strategy for Apple's Mini LED trend into five stages and recommend that investors refer to it and plan short, medium, and long-term investment strategies for Apple Mini LED trends

Risk:

New product shipment delays; lower-than-expected demand due to COVID-19.

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| Category | Description | Ratings | System |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------|
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| | | Accumulate | Expected relative return over stock price between 10% and 20% |
| | | Neutral | Expected relative return over stock price between -10% and 10% |
| | | Sell | Expected relative return over stock price below -10% |
| Industry investment ratings | within 6 months from the report issuance date, increase or decrease relative to the Index of the jurisdiction of the Industry in the same period | Outperform | Expected increase of industry index over 5% |
| | | Neutral | Expected increase of industry index between -5% and 5% |
| | | Underperform | Expected increase of industry index below -5% |

| Jurisdictions | Index Used for Ratings Definitions |
|-----------------|------------------------------------|
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| China-Hong Kong | Hang Seng Index |
| China-Marco | Hang Seng Index |
| USA | Standard & Poor's 500 Index |

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