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India's First 3D Chip Packaging Plant Launched in Odisha under Semiconductor Push

Published On: 24-04-2026



India has taken a major step toward semiconductor self-reliance with the foundation of its first 3D chip packaging plant in Bhubaneswar, Odisha. The project, approved under the India Semiconductor Mission (ISM), will use advanced 3D glass semiconductor technology to assemble and package high-performance chips. The initiative strengthens India's position in the global semiconductor value chain and supports the goal of building a domestic electronics manufacturing ecosystem.

India's First 3D Chip Packaging Plant:

The plant is being developed by 3D Glass Solutions (USA) through its Indian subsidiary and supported by global players like Intel. It involves an investment of about ₹1,934 crore and is located in Bhubaneswar, Odisha.

The facility is expected to produce:

~70,000 glass panels annually

~50 million assembled semiconductor units

~13,000 advanced 3D integrated modules

Significance:

Boost to India's semiconductor ecosystem

Reduces import dependency

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Enhances participation in global chip supply chains

What is 3D Glass Semiconductor Technology?:

3D chip packaging uses glass substrates to integrate electronic components in a three-dimensional structure, unlike traditional 2D silicon-based chips.

Advantages over traditional chips:

Better thermal stability

Lower electrical losses

Improved radio frequency performance

Higher efficiency due to vertical integration

Application Areas:

Telecommunications (5G/6G)

Artificial Intelligence

Defense and aerospace systems

High-performance computing

Importance of Semiconductors : Semiconductors are considered the “new oil” of the digital economy due to their critical role in:

Electronics and smartphones

Automobiles and EVs

Healthcare devices

Defense and communication systems

They enable data processing, storage, and transmission, forming the backbone of modern technology.

India’s Semiconductor Push:

The plant is part of the broader India Semiconductor Mission (ISM) launched in 2021 under the Ministry of Electronics and IT.

Key focus areas:

Semiconductor fabrication (fabs)

Display manufacturing

ATMP/OSAT (Assembly, Testing, Marking, Packaging)

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Design-linked incentives (DLI Scheme)

Additional Key Facts:

India Semiconductor Mission (ISM):

Launched: 2021

Nodal Ministry: Ministry of Electronics & IT (MeitY)

Aim: Build a complete semiconductor ecosystem

Types of Semiconductor Facilities:

Fab: Chip manufacturing

ATMP/OSAT: Assembly & packaging (like this plant)

India–US Semiconductor Partnership (2024): Focus on supply chain resilience and technology collaboration

Vikram 3201 Microprocessor:

India's first indigenous microprocessor developed by ISRO

Showcased at Semicon India 2025

Global Context:

Major semiconductor hubs: Taiwan, South Korea, USA