Vikram-32: India’s First Indigenous Space Chip

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At **Semicon India 2025**, Prime Minister **Narendra Modi** was presented with **Vikram-32**, India’s first fully **indigenously developed 32-bit processor chip**. It was developed by the **Semiconductor Laboratory (SCL) of ISRO** in Mohali, Punjab. This marks a huge step towards India’s dream of **semiconductor self-reliance**.

Key Highlights

- **First of its kind:** India’s first *indigenous* 32-bit processor.
- **Built for Space:** Specifically designed to survive the **harsh conditions of space missions**.
- **Tested in Space:** The first batch, called **Vikram 3201**, was successfully tested on the **PSLV-C60 mission**.
- **Made in India:** Fabricated and packaged at SCL’s **180nm CMOS facility** in Mohali.
- **Journey:** Introduced in March 2025; presented at Semicon India in September 2025.

Why is it Important?

- Shows **India’s shift** from just consuming chips to **creating advanced chips**.
- Supports India’s **Semiconductor Mission (2021)** goal of becoming self-reliant in chip-making.
- Critical for **space exploration, satellites, and launch vehicles**.

Technical Features (Simplified)

- **32-bit Design:** Can process data in chunks of 32 bits, making it powerful and efficient.
- **Handles Complex Numbers:** Works with numbers that have decimals (like 3.14), useful for space calculations.
- **Space-Grade Durability:** Built to withstand **extreme heat, cold, and radiation** in space.
- **Multi-Tasking Capability:** Can perform many operations at once, suitable for

rocket guidance and control systems.

FAQs

Q1. What is Vikram-32?
It is **India's first fully indigenous 32-bit microprocessor chip**, designed for space missions.

Q2. Who developed it?
The **Semiconductor Laboratory (SCL) of ISRO**, Mohali.

Q3. Where was it tested?
On the **PSLV-C60 mission**, where it was validated successfully in space.

Q4. Why is it special?
Because it is **completely designed and made in India**, proving India's progress in chip technology.

Q5. What makes it suitable for space?
It can withstand **extreme temperatures, radiation, and vibrations** in space.

Q6. Where is it made?
At SCL's **180nm CMOS facility** in **Mohali, Punjab**.

Q7. How does this help India?
It reduces dependence on foreign chips and boosts India's **Atmanirbhar Bharat (self-reliance)** in advanced technology.

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