

NEWS | TECHNOLOGY

BYD's Semiconductor Strategy Positions Automaker for China's Push Toward Automotive Chip Self-Reliance

Two decades of in-house chip development spanning power devices, SiC and smart-driving SoCs could give BYD a strategic edge as semiconductor localisation accelerates and automotive technologies converge with physical AI and robotics.

By **Ankit Kankar** | September 12, 2026



Picture Courtesy | Public Domain

The global automotive industry is entering a new phase in which semiconductors are becoming as strategically important as batteries, motors and manufacturing scale. As vehicles evolve into software-defined, AI-enabled platforms, chips increasingly determine everything from power management and cockpit functions to advanced driver-assistance systems. At the same time, geopolitical tensions and technology restrictions are pushing automakers to rethink where those chips come from — turning semiconductor supply into a strategic issue for the global auto industry.

China sits at the centre of that shift. U.S. and allied export controls introduced since 2022 were designed primarily to restrict China's access to advanced semiconductor technologies and manufacturing equipment. Yet the restrictions have also added urgency to Beijing's long-running localisation strategy. A March 2026 analysis by the Centre for Strategic and International Studies (CSIS) found that the controls have accelerated the adoption of domestic chips and equipment, while strengthening coordinated efforts across government and industry to localise semiconductor design and manufacturing.

The automotive sector is becoming one of the clearest testing grounds for that strategy. Chinese automakers are accelerating efforts to increase domestic chip sourcing as Beijing pushes for greater semiconductor self-reliance across strategic industries. The shift is especially significant because modern electric and intelligent vehicles depend on a broad range of semiconductors — from mature-node power devices and microcontrollers to increasingly sophisticated computing chips for smart-driving systems.

Against this backdrop, a new DIGITIMES Intelligence report identifies BYD as a particularly revealing case of what happens when policy-driven localisation meets years of prior corporate investment. Unlike automakers that are only now accelerating their semiconductor strategies, BYD began building in-house chip capabilities more than two decades ago, initially focusing on power-control semiconductors needed for electric vehicles.

That strategy has steadily moved up the semiconductor value chain. BYD's early work in IGBT and silicon carbide (SiC) power devices helped secure critical electronic-control components for its EV business. Its semiconductor roadmap has since expanded toward higher-compute smart-driving SoCs, culminating in the Xuanji A3, which the DIGITIMES Intelligence report identifies as entering scaled production on a 4nm automotive-grade process.

The difference is not simply chip design. DIGITIMES Intelligence finds that BYD has spent more than two decades building an integrated device manufacturer (IDM) model spanning chip design, wafer fabrication and mass-production deployment, supported by multiple in-house fabs and a dedicated semiconductor engineering organisation. That vertical integration gives BYD a different starting point from automakers now entering custom silicon primarily in response to supply-chain pressure.

The strategic value of that investment may ultimately extend beyond cars. DIGITIMES senior analyst Jessie Lin notes that intelligent vehicles and humanoid robots share many of the same foundational technologies, including AI processors, sensors, motors, batteries and control systems. BYD's accumulated expertise in smart-driving silicon and algorithms could therefore provide a foundation for expansion into robotics and other physical AI applications.

That possibility is becoming more relevant as China accelerates its push into embodied and physical AI. At the 2026 World Robot Conference in Beijing, more than 300 companies showcased over 2,000 robotics exhibits, with humanoid robots increasingly demonstrated in manufacturing, logistics and household applications rather than simply as prototypes. The growing overlap between China's EV and robotics ecosystems could make capabilities in batteries, motors, sensors, manufacturing and AI increasingly transferable across the two industries.

BYD's trajectory also illustrates why the long-term impact of semiconductor export controls is difficult to assess in simple terms. Restrictions can constrain access to frontier technology in the short term, while simultaneously strengthening incentives for domestic substitution and investment. CSIS has argued that although export controls have limited China's access to some leading-edge technologies, they have also added momentum to domestic semiconductor innovation and localisation.

The implications extend beyond BYD or even China's auto industry. As cars become more dependent on advanced computing, semiconductor capability is increasingly becoming part of automakers' competitive strategy — alongside software, batteries, manufacturing and supply-chain resilience. The rise of vertically integrated players such as BYD could therefore reshape not only automotive semiconductor sourcing, but also the boundaries between automakers, chipmakers and emerging physical AI companies.

The new DIGITIMES Intelligence report examines BYD's semiconductor evolution from power devices and SiC to smart-driving SoCs, the structural advantages created by its IDM model, and how those capabilities could position the company as China's automotive semiconductor localisation

accelerates and physical AI emerges as a new growth frontier.

Read online: <https://worldbusinesswatch.com/news/13/29/byds-semiconductor-strategy-positions-automaker-for-chinas-push-toward-automotive-chip-self-reliance.html>

© 2026 World Business Watch. All rights reserved.