

Appraiser Blog

How Microchips Are Driving Automotive Innovation



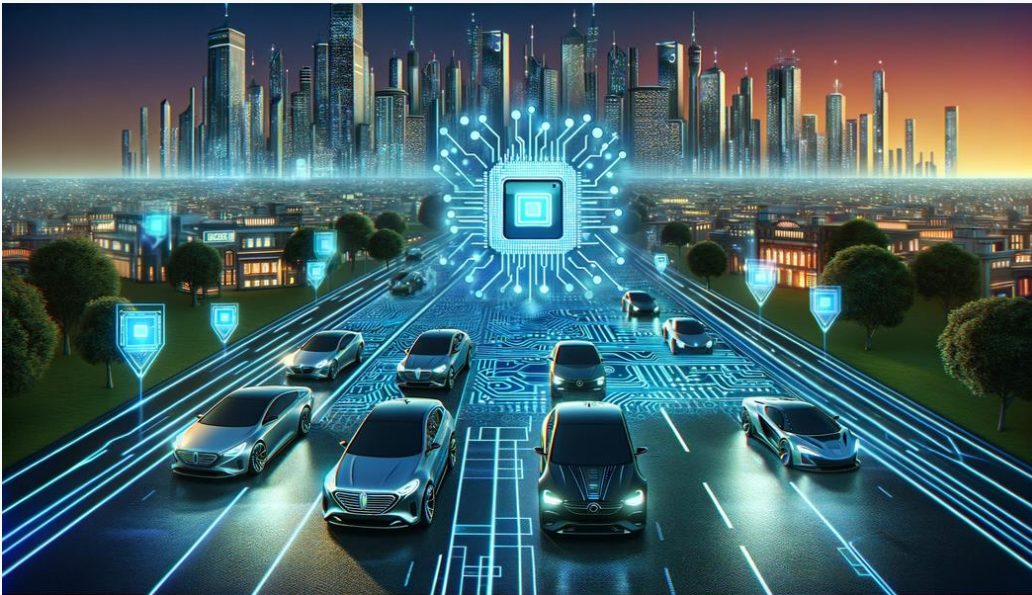
By Tony Rached

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Imagine a world where cars talk to each other, avoid accidents with a whisper of a command, and electric vehicles charge in the blink of an eye. This isn't the script of a sci-fi movie; it's the reality brewing in the world of automotive technology today, thanks to the microchip.

These tiny circuits, smaller than a postage stamp, are now the heartbeat of the modern vehicle, powering a transformation as significant as the first car rolling off Henry Ford's assembly line.



The Semiconductor Surge in the Auto Sector

Gone are the days when semiconductors were the exclusive darlings of computers and smartphones. The automotive industry, with its growing appetite for advanced electronics, is now a frontline contender in the semiconductor arena.

In a startling leap, the auto sector has claimed 17% of the global microchip market share, according to a recent survey by World Semiconductor Trade Statistics. This

1

surge underscores a pivotal shift: cars are no longer just about engines and gears; they're about chips and software.

Growing importance

Market segment	Share of total	
	2023	2022
Communications	32%	30%
PC/computer	25%	26%
Automotive	17%	14%
Industrial	14%	14%
Consumer electronics	11%	14%
Government	1%	2%

Electrification and Connectivity: The New Fuel

The ascent of electric vehicles (EVs) and the relentless march toward fully connected cars are the twin turbochargers behind this demand. Every electric car and smart vehicle rolls off the production line with a battalion of microchips, managing everything from battery life to navigation systems.

These chips are the unsung heroes in the dashboard and under the hood, making cars safer, more efficient, and smarter. The Semiconductor Industry Association notes that the number of chips per car is skyrocketing, predicting a steep rise in the semiconductor value per vehicle in the coming decade.

Navigating the Silicon Road

The semiconductor industry, sensing a golden opportunity, is racing to meet automotive demands. Innovators and manufacturers are diving deep into research

Appraiser Blog

and development, especially on silicon-carbide chips, which promise to revolutionize EV efficiency. Emmanuel Sabonnadière of Soitec points to the bright future of automotive semiconductors, forecasting a significant boost in business thanks to these advancements.

Challenges in the Fast Lane

However, the road to semiconductor dominance isn't without its potholes. The industry grapples with production delays and the challenge of aligning new manufacturing capacities with the auto industry's specific needs.

For instance, the postponement of a new plant by Taiwan Semiconductor Manufacturing Co. highlights the teething troubles in scaling up chip production. Plus, there's the ongoing issue of older semiconductor technologies still prevalent in the automotive sector, complicating the shift to more advanced chips.

The Road Ahead: A Tech-Driven Horizon

Yet, the promise of what's to come has the industry buzzing with anticipation. The collaboration between car manufacturers and chipmakers is tighter than ever, heralding the rise of software-defined vehicles and a new era of mobility.

These partnerships are crucial for integrating the latest semiconductor technologies into vehicles, making the dream of fully autonomous and connected driving experiences closer to reality.

Microchips are undeniably steering the future of the automotive industry, ushering in a revolution marked by electrification, connectivity, and unprecedented innovation. As we stand at the cusp of this transformation, the synergy between the automotive and semiconductor industries is more critical than ever.

With every chip and circuit, we're not just engineering smarter vehicles; we're crafting the future of transportation. But as we race towards this new horizon, one has to wonder: Are we truly prepared for the automotive renaissance that lies ahead?