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China Passenger Car ADAS Domain Controller, Master Chip Market Data and Supplier Research Report, 2023Q1

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Quarterly Report on ADAS Domain Controllers: L2+ and above ADAS Domain Controller Master Chip Market Structure

This report highlights the passenger car L2+ and above (including L2+, L2.5 and L2.9) ADAS domain controller market data, the ADAS domain controller master chip market data, the status quo and layout of major suppliers, the latest industry development trends, and the market size forecast for the next six quarters and the next five years.

L2+, L2.5, and L2.9 are defined as follows:

ADAS Level	Definition
L2+	Feature L2 functions, as well as automatic lane change or HD maps
L2.5	Feature L2 functions, as well as highway NOP
L2.9	Feature L2 functions, as well as city NOP

In 2023Q1, the sales of passenger cars (excluding imported ones) equipped with L2+ and above autonomous driving functions hit 360,000 units in China, a like-on-like upsurge of 68.2%. These 360,000 L2+ and above cars carried a total of 656,000 ADAS master chips, of which: Tesla's self-developed FSD chips swept 41.7%; Nvidia's chips, most of which offer high computing power, were about 190,000 pieces, taking a 29.0% share.

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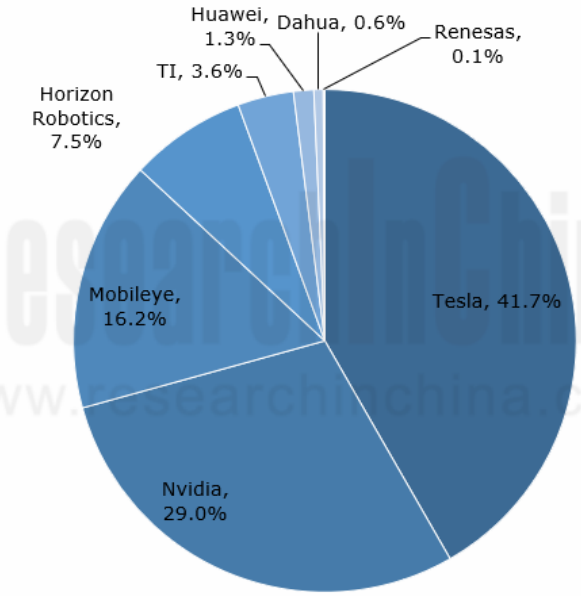

Source: ResearchInChina

According to expert interviews, this report also answers the following questions (1):

1. Currently what is the purchase price of a mainstream intelligent driving SoC and the domain controller based on this SoC?

	Purchase Price of the Chip (10,000 Pcs)	Purchase Price of the Domain Controller Based on This Chip (10,000 Sets)
Nvidia OrinX		
Nvidia Xavier		
Mobileye EyeQ4		
Mobileye EyeQ5		
TI TDA4 VM		
TI TDA4 VH		
Horizon Robotics J2		
Horizon Robotics J3		
Horizon Robotics J5		
Black Sesame A1000		
Black Sesame A1000L		
Huawei Ascend 610		
Qualcomm 8295		
Ambarella CV72AQ		

2. What are the advantages and disadvantages of the current mainstream ADAS SoCs?

	Advantages	Disadvantages
Nvidia OrinX		
Mobileye EyeQ4		
Mobileye EyeQ5		
TI TDA4 VM		
TI TDA4 VH		
Horizon Robotics J2		
Horizon Robotics J3		
Horizon Robotics J5		
Black Sesame A1000		
Black Sesame A1000L		
Huawei Ascend 610		
Qualcomm New Generation Snapdragon Ride		
Qualcomm 8295		
Ambarella CV72AQ		

According to expert interviews, this report also answers the following questions (2):

3. The average intelligent driving domain controller packs a functional safety chip. Examples include TC397 and TC497, and what is their respective approximate purchase price? Is there any Chinese product to replace the TC Family, and what is the approximate purchase price of the domestic product?
4. Currently what is the proportion of the intelligent driving domain controller to the entire intelligent driving system (including sensor and decision systems and excluding the execution system)? What is the average proportion of the intelligent driving system to the cost of a vehicle?
5. Tesla (as well as NIO, Huawei, etc.) insists on charging for the intelligent driving system, while the NOA system of Li Auto is free. Which one do you think represents the future trend?
6. We see that there are still increasing high-compute chip companies trying to enter the intelligent driving chip market, such as Cambricon Singgo, Chipletgo (chiplet technology), Rhino, and Houmo.AI (the first computing in memory chip). Do you think they still have a market opportunity? If so, who do you prefer, and why?
7. We have seen that leading high-compute chip companies like Qualcomm, Horizon Robotics and Nvidia have large software teams working on basic software and algorithms such as middleware, visual perception algorithm, driving and parking algorithms, and NOA algorithm, and they obviously squeeze the living space of conventional Tier 1 suppliers. ADAS Tier 1 suppliers also try to multiplex algorithms provided by mainstream chip companies in a bid to launch driving-parking integrated or NOA solutions as fast as they can. Will this blunt the competitive edges of ADAS Tier 1 suppliers?
8. NIO, Xpeng and Li Auto independently develop intelligent driving domain controllers. Competitive OEMs like SAIC, Geely, Great Wall Motor, BYD and Chery all build their own autonomous driving team to self-develop intelligent driving domain controllers. Will this narrow the living space of Tier 1 suppliers engaged in intelligent driving domain controllers? How should intelligent driving Tier 1 suppliers respond?
9. Which type of intelligent driving domain controller companies perform well at present, and what's the reason? Please give an example.
10. Which type of intelligent driving domain controller companies are unsuccessful in the business development, and what's the reason? Please give an example.
11. Some listed cockpit companies like ThunderSoft, Desay SV and Foryou have set up an autonomous driving department or branch, and also deploy cockpit-driving integration. What do you think of the intelligent driving domain controllers developed by them? Do you think they will gain an upper hand in the implementation of cockpit-driving integration?
12. In the development of driving-parking integrated domain controllers (or cockpit-driving integrated domain controllers), OEMs split the task into two or more to suppliers, or some outsource it to one supplier. Which model do you prefer, and why?
13. 13. Single-chip driving-parking integrated domain controllers that can bring a lower cost are becoming an important direction. Do you think they can become mainstream, and why?
14. Many driving-parking integrated domain controllers use the TDA4 and J3 combination. What is the purpose of this and what do they complement each other?
15. Now cutting-edge autonomous driving companies have switched to BEV algorithms. What impact will it have on the design of autonomous driving domain controllers?
16. It is said that quite a few start-ups have engineering difficulties in their driving-parking integrated domain controller projects. Although their products have been designated, they fail to achieve engineering implementation and mass production. What's the main reason? Does this mean that ADAS companies without a Tier 1 background will face big challenges in OEM mass production even if they are proficient in algorithms? How to solve this problem?

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