

Hybrid Vehicles Drive Auto Power Chip Market

Part one of two-part series

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Automotive is already one of the most important markets for semiconductors. The auto segment has been a growing and steady consumer of chips for decades, and electronic systems now account for about 15 percent of the average base cost of a motor vehicle.

However, as vast as the automotive chip market is today, it is poised to become an even larger consumer of semiconductors and electronic systems in the future. The automotive semiconductor market will grow to \$23 billion by 2009, up from slightly less than \$15 billion in 2005, iSuppli Corp. predicts.

Automotive Market Powers Up

Power management is projected to become an increasingly important component of those total semiconductor numbers. Power chips are projected to grow to account for 12 to 13 percent of total automotive semiconductor spend-



ing by 2009, up from 10 percent in 2005.

The figure below presents iSuppli's forecast of automotive semiconductor content growth broken down by power and non-power devices. One factor contributing to this rapid growth in power semiconductors in the automotive market will be hybrid drive trains. Purchases

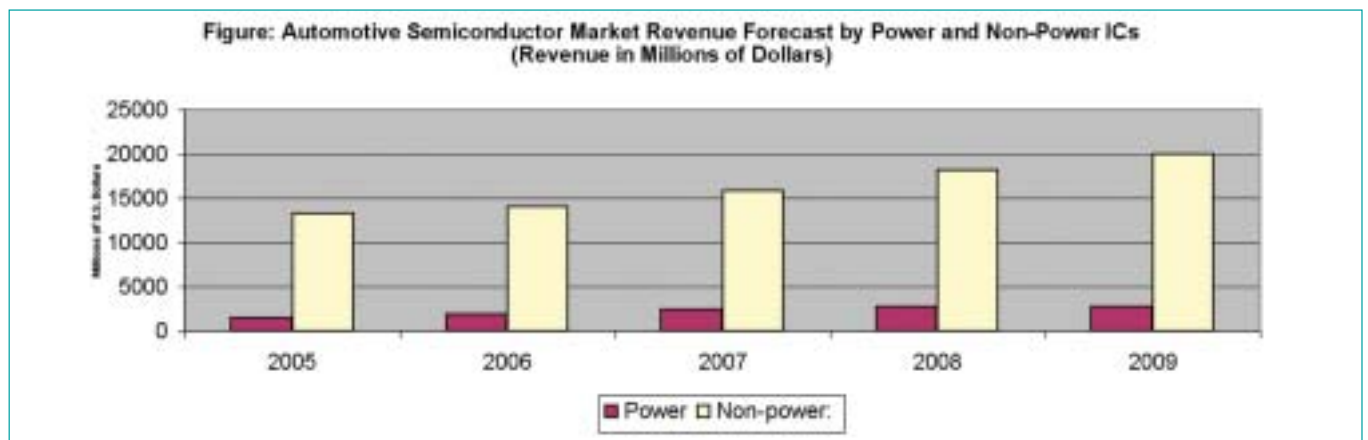
of hybrid vehicles are projected to grow rapidly in the next several years. Hybrid autos contain a much higher amount of power and control chips than non-hybrid vehicles.

Electronics amounts to 45 to 50 percent of the base cost of a hybrid vehicle, nearly three times that of non-hybrid vehicles. Much of that cost is power management. From a power management perspective, there are three fundamental challenges in hybrid drive trains: power, isolation and drive and control scheme. Each of these areas presents unique challenges.

Inverter Switching Issues

In hybrid drive trains, power refers to the main inverter switching function. The challenges in inverter switching reside in choosing which power transistors to use and determining how to package them. At present, Insulated Gate Bipolar Transistors (IGBTs) are the transistor of choice for this function and they are employed by every maker of hybrid vehicles.

	2005	2006	2007	2008	2009
Power	\$ 1,511	\$ 1,932	\$ 2,418	\$ 2,719	\$ 2,778
Non-power:	\$ 13,337	\$ 13,896	\$ 15,896	\$ 18,158	\$ 19,961



Source: iSuppli Corp. July 2005

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