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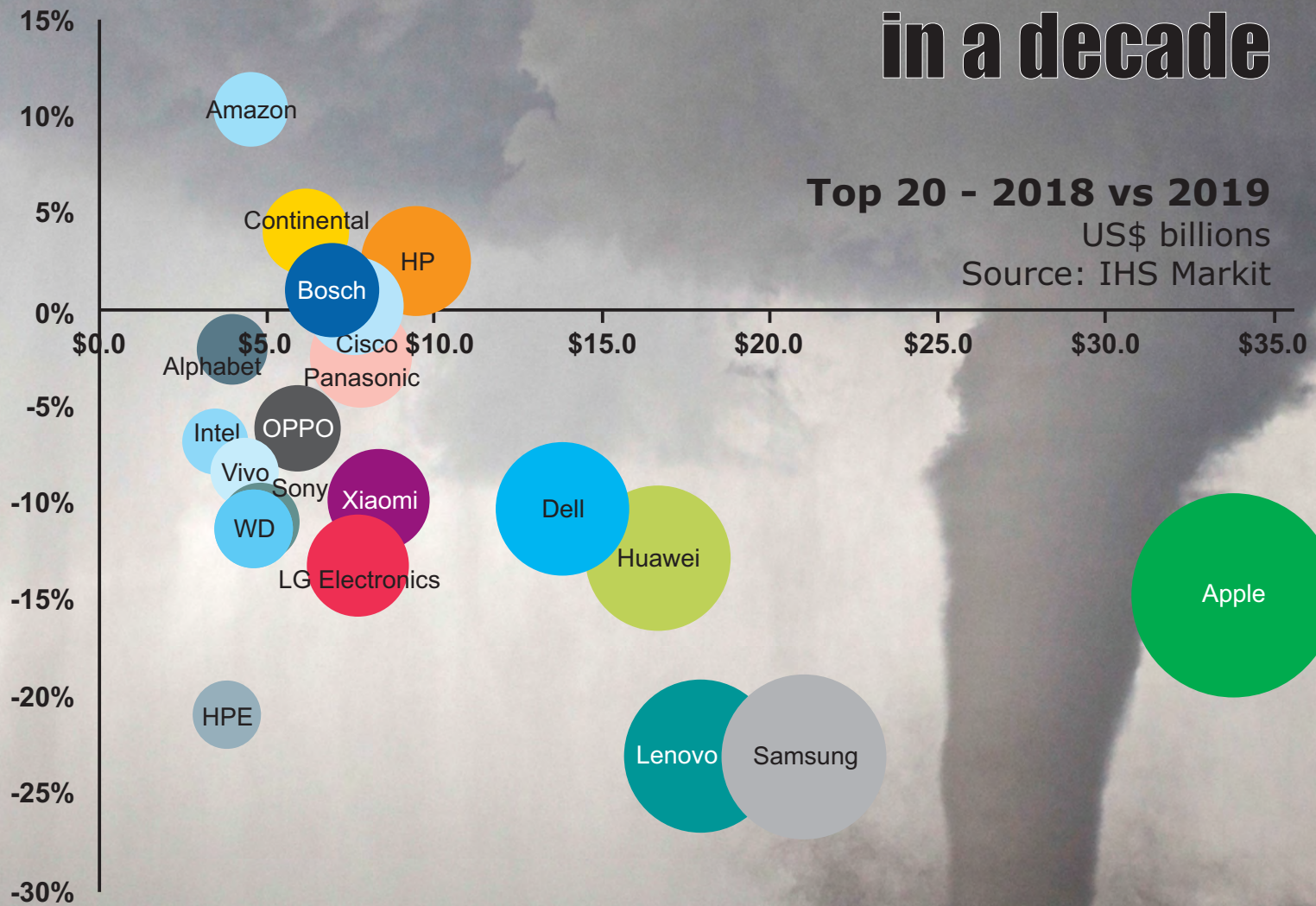
- China wants to produce 70% of chips used in China by 2025
- Deep Learning Chipset 2.9 Billion Units Annually by 2025
- Gallium oxide power MOSFETs far exceed GaN transistors
- TI Disengages with Global Distributor Avnet

Worldwide OEM semiconductor spending faces biggest decline in a decade



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Over 3 Decades Global Semiconductors & Computer Systems Market Expertise

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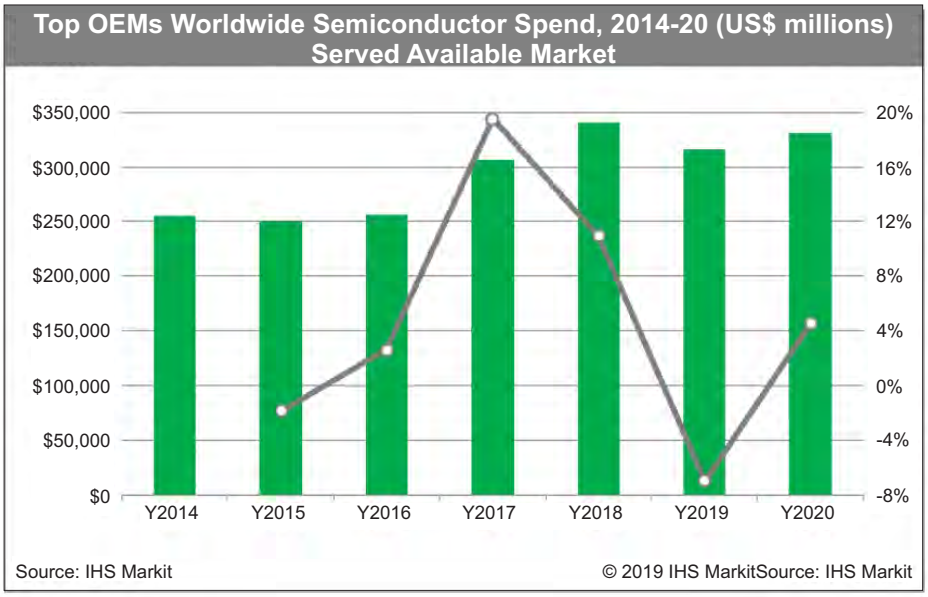
Worldwide OEM semiconductor spending faces biggest decline in a decade

August 26, 2019 | Myson Robles-Bruce, Chee Seng Tan | Omdia

Impacted by softening markets and rising uncertainty in global trade and economy, semiconductor spending of the world's top OEMs will face the steepest decline in a decade.

According to the latest report, OEM Semiconductor Spend Tracker - H1 2019, IHS Markit estimates that worldwide top OEMs semiconductor spending in 2019 will amount to $316.6 billion, down 7% from 2018. The decline came following two years of double-digit growth, which pushed the served available market (SAM) to its highest level ever at $340.2 billion last year. The semiconductor spend market is at an inflection point, where component demand is transitioning from being driven by mobile device being propelled by industrial and automotive applications.

The weak semiconductor spend projection for the year is broadly underpinned by memory IC pricing erosion, along with a number of end equipment market demand issues – sluggish OEMs revenue growth, global economy slowdown, escalating trade tensions, subdued consumer spending, excessive surplus of inventory, and lower growth in major applications like smartphones and data center servers. Although chip spending from industrial and automotive applications is on the rise, their combined spending dollar increase is insufficient to offset overall semiconductor spending market's decline.



Softness in key spending applications

Because of demand saturation in China, North America, and Western Europe, global smartphone shipment is expected to continue its decline in 2019. In addition to factors such as longer device replacement cycles, indifference and sluggish device innovation, and consumers holding off for 5G transition, intensified US-China trade and technology tensions are adding burden to the already softened smartphone market. Apple's iPhone shipments and market share in China have dropped consistently every quarter since the trade war kicked off last year.

As the biggest buyer of semiconductors, handset's decline has significant impact on worldwide semiconductor spend market - the chip spending contraction value of handset will make up about 74% of the total $23.7 billion semiconductor spend market decline this year. All top-five semiconductor buyers in handset – Apple, Samsung Electronics, Xiaomi, Huawei Technologies, and OPPO will significantly decrease semiconductor spending this year.

The rapid development of cloud based services has driven tremendous demand increase for data center servers over the past years. However, a slowdown in demand in the first half of the year will potentially weigh down on server's chip spending growth in 2020 as content service providers delay investments due to slow digestion of hyperscale servers and poor macroeconomic conditions in China. Data center servers make up about 29% of total DRAM revenue and IHS Markit expects with the shipments of server begin to pick up by end of the year, semiconductor spend market will slightly improve and progress strongly into 2020 with robust growth.

Top-20 OEMs spending contraction

For the first time since the beginning of the forecast period, the joint semiconductor spend of the top-20 OEMs will contract from $213.7 billion in 2018 to $191.2 billion this year – representing a spending share reduction from 62.8% to 60.4%. Most of the top semiconductor buyers are also top smartphone and server makers, whose chip spending are significantly impacted by softness in these markets. Market leader Apple will cut spending by 15%, while Samsung Electronics, Lenovo, Huawei Technologies, and Dell Technologies will reduce expenditure by 23%, 9%, 13%, and 10%, respectively. Conversely, only five out of the top-20 OEMs will maintain a positive chip spending growth.

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Worldwide OEM semiconductor spending faces biggest decline in a decade

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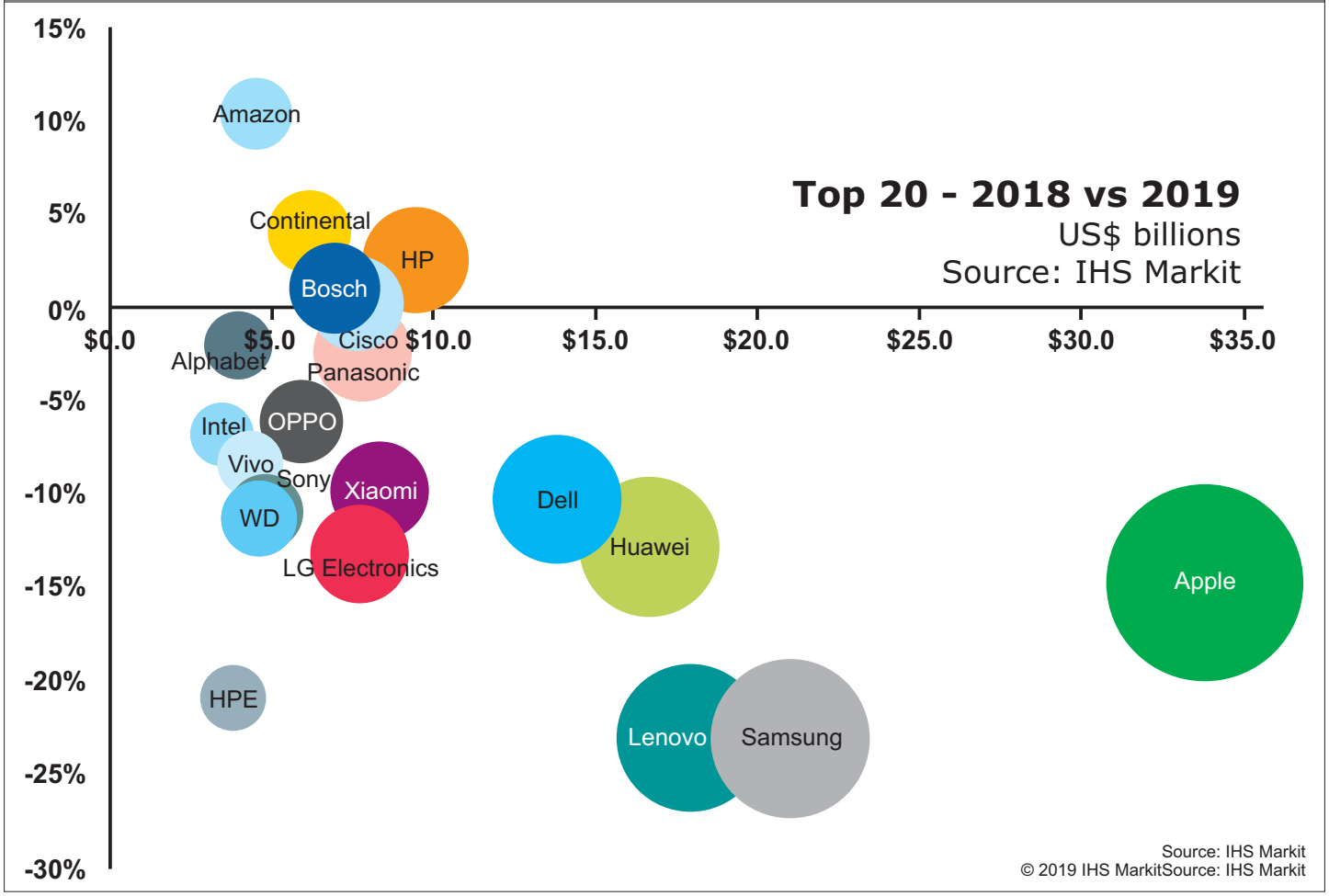
The influence of Chinese OEMs on the semiconductor spend market has increased significantly as there are now five major players from China such as Lenovo, Huawei Technologies, Xiaomi, OPPO, and Vivo joining the top-20 line up, together with a combined spending of $53 billion, up two-fold from just $25 billion in 2014. This massive demand expansion and rising trade uncertainty will accelerate China's domestic semiconductor industry development in order to improve self-reliance and boost its competitiveness in the lucrative semiconductor market which is poised to grow rapidly post 2020 as next wave of opportunities arrive.

Top-20 OEMs Semiconductor Spend and Growth, 2019 (US$ billions)



Recovery in 2020

The semiconductor spend market is expected to come out of the slump in 2020 as the key semiconductor demand drivers begin to recover and the supply and demand dynamics of memory IC stabilize. IHS Markit estimates that the semiconductor spend market will recover next year with a 4.5% growth to $331 billion.

Although new 5G infrastructure and 5G smartphones will generate demand for semiconductors, the semiconductor industry is expected to only rebound moderately next year as consumer adoption will take time to pace up. However, once economy of scale comes into effect, the devices and network service will become cheaper hence boosting adoption rates further.

With the vast amount of data generated from 5G related applications and the launch of a slew of new 5G services and contents, capital investments in data centers will increase in a move to support and monetize from the rapid growth of 5G service ecosystem. IHS Markit anticipates that demand will improve significantly for the top server OEMs, hence raising overall data center server semiconductor spend by 13% in 2020 while pushing its spending share up to 8.4% from 7.8% in 2019.

Even though the semiconductor market outlook for 2020 appears to be positive with the confidence of 5G emerging as the key growth driver, the risk of further escalation of trade dispute not just between the US and China but also Japan and South Korea will weigh down on the semiconductor market's recovery and push the manufacturing and semiconductor supply chain industry further into a quandary. Whether it's to relocate or diversify production out of China to Southeast Asia nations or to forage for new semiconductor materials sources, the afflicted parties in the supply chain must rethink and re-design their strategies in order to better manage the risk of being impacted by the new world order of semiconductor that is presently being shaken up. **MORE:** https://ihsmarkit.com/index.html

Top-15 Semiconductor Suppliers' Sales Fall by 18% in 1H19

Sony was the only top-15 semiconductor supplier to register year-over-year growth in 1H19.

IC Insights released its August Update to the 2019 McClean Report earlier this month. This Update included Part 1 of an in-depth analysis of the foundry industry, an updated forecast for semiconductor capital spending this year, and a ranking of the top-25 1H19 semiconductor suppliers and their 3Q19 sales outlook. The top-15 1H19 semiconductor suppliers are covered in this research bulletin.

The top-15 worldwide semiconductor (IC and O-S-D— optoelectronic, sensor, and discrete) sales ranking for 1H19 is shown in Figure 1. It includes six suppliers headquartered in the U.S., three in Europe, and two each in Taiwan, South Korea, and Japan.

1H19 Top 15 Semiconductor sales leaders ($M, including Foundries)

1H19 Rank	1H18 Rank	Company	Headquarters	1Q19 Total IC	1Q19 Total O-S-D	1Q19 Total Semi	2Q19 Total IC	2Q19 Total O-S-D	2Q19 Total Semi	2Q19/1Q19 % Change	1H19 Total Semi	1H18 Total Semi	1H19/1H18 % Change
1	2	Intel	U.S.	15,799	0	15,799	16,239	0	16,239	3%	32,038	32,585	-2%
2	1	Samsung	South Korea	11,992	875	12,867	12,839	965	13,804	7%	26,671	39,785	-33%
3	4	TSMC (1)	Taiwan	7,096	0	7,096	7,749	0	7,749	9%	14,845	16,312	-9%
4	3	SK Hynix	South Korea	5,903	120	6,023	5,397	138	5,535	-8%	11,558	17,754	-35%
5	5	Micron	U.S.	5,465	0	5,465	4,710	0	4,710	-14%	10,175	15,478	-34%
6	6	Broadcom Inc. (2)	U.S.	3,764	419	4,183	3,739	424	4,163	0%	8,346	9,020	-7%
7	7	Qualcomm (2)	U.S.	3,722	0	3,722	3,567	0	3,567	-4%	7,289	7,984	-9%
8	9	TI	U.S.	3,199	208	3,407	3,264	213	3,477	2%	6,884	7,346	-6%
9	8	Toshiba/Toshiba Memory	Japan	2,724	320	3,044	2,339	260	2,599	-15%	5,643	7,717	-27%
10	10	Nvidia (2)	U.S.	2,215	0	2,215	2,459	0	2,459	11%	4,674	6,259	-25%
11	11	Infineon	Europe	1,352	901	2,253	1,358	906	2,264	0%	4,517	4,581	-1%
12	12	NXP	Europe	1,885	209	2,094	1,995	222	2,217	6%	4,311	4,559	-5%
13	13	ST	Europe	1,581	485	2,066	1,657	508	2,165	5%	4,231	4,464	-5%
14	19	Sony	Japan	192	1,554	1,746	210	1,889	2,099	20%	3,845	3,389	13%
15	16	MediaTek (2)	Taiwan	1,711	0	1,711	1,980	0	1,980	16%	3,691	3,728	-1%
—	—	Top-15 Total	—	68,600	5,091	73,691	69,502	5,525	75,027	2%	148,718	180,961	-18%

(1) Foundry (2) Fabless

Source: Company reports, IC Insights ' *Strategic Reviews* database

Intel replaced Samsung as the number one quarterly semiconductor supplier in 4Q18 after losing the lead spot to Samsung in 2Q17. While Samsung held the full-year number one ranking in 2017 and 2018, Intel is forecast to easily recapture the number one ranking for the full year of 2019, a position it previously held from 1993 through 2016. With the collapse of the DRAM and NAND flash markets over the past year, a complete switch has occurred. In 1H18, Samsung had 22% more total semiconductor sales than Intel, but Intel had 20% more semiconductor sales than Samsung in 1H19!

In total, the top-15 semiconductor companies' sales dropped by 18% in 1H19 compared to 1H18, four points worse than the total worldwide semiconductor industry 1H19/1H18 decline of 14%. Illustrating the extremely volatile nature of the memory market, the Big 3 memory suppliers—Samsung, SK Hynix, and Micron—each registered year-over-year revenue declines of at least 33% in 1H19 after each company posted greater than 36% year-over-year growth one year earlier in 1H18. Nine of the top-15 companies had semiconductor sales of at least $5.0 billion in 1H19, one company less than in 1H18. As shown, it took about $3.7 billion in first half sales just to make it into the 1H19 top-15 semiconductor supplier list.

There were two new entrants into the top-15 ranking in 1H19 as compared to 1H18. Fabless IC supplier MediaTek moved up one spot from 16th to 15th and IDM Sony, which was the only top-15 supplier to register year-over-year growth, jumped up five positions to rank as the 14th largest semiconductor supplier in 1H19. As shown, 90% of Sony's total semiconductor sales are from O-S-D devices, primarily image sensor components for smartphones.

The 1H19 top-15 ranking includes one pure-play foundry (TSMC) and four fabless companies. If TSMC was excluded from the ranking, China-based fabless IC supplier HiSilicon ($3,500 million) would have been ranked 15th. HiSilicon's sales surged 25% in 1H19 as compared to 1H18. However, since over 90% of HiSilicon's IC sales are internal transfers to Huawei, Huawei's "blacklisting" by the U.S. government is likely to slow HiSilicon's sales growth rate in the second half of this year.

IC Insights includes foundries in the top-15 semiconductor supplier ranking since it has always viewed the ranking as a top supplier list, not a marketshare ranking, and realizes that in some cases the semiconductor sales are double counted. With many of our clients being vendors to the semiconductor industry (supplying equipment, chemicals, gases, etc.), excluding large IC manufacturers like the foundries would leave significant "holes" in the list of top semiconductor suppliers. As shown in the listing, the foundries and fabless companies are identified. In the April Update to The McClean Report, marketshare rankings of IC suppliers by product type were presented and foundries were excluded from these listings.

Overall, the top-15 list shown in Figure 1 is provided as a guideline to identify which companies are the leading semiconductor suppliers, whether they are IDMs, fabless companies, or foundries.

Many of the major semiconductor companies have provided their sales guidance for 3Q19, which was discussed in more detail in the August Update. Overall, the 3Q19/2Q19 revenue growth expectations for the top-25 major semiconductor suppliers varies widely by company and currently spans a range of 23 percentage points, from +21% to -2%. **MORE:** please visit our website www.icinsights.com

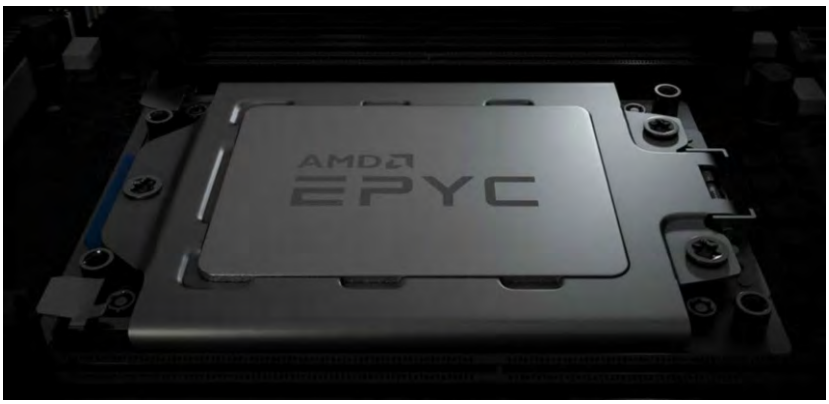
2nd Gen AMD EPYC™ Processors Set New Standard for the Modern Datacenter with Record-Breaking Performance and Significant TCO Savings

— AMD EPYC™ 7002 Series processors set 80 performance world records1, provide 2X the performance compared to the previous generation2 and deliver an estimated 25% to 50% lower TCO than competitive offerings —

— Google and Twitter join growing list of customers adopting AMD EPYC processors —

SANTA CLARA, Calif. 08/07/2019 | At a launch event today, AMD (NASDAQ: AMD) was joined by an expansive ecosystem of datacenter partners and customers to introduce the 2nd Generation AMD EPYC™ family of processors that deliver performance leadership across a broad number of enterprise, cloud and high-performance computing (HPC) workloads. 2nd Gen AMD EPYC™ processors feature up to 64 "Zen 2" cores in leading-edge 7nm process technology to deliver record-setting performance while helping reduce total cost of ownership (TCO) by up to 50% across numerous workloads4. At the event, Google and Twitter announced new 2nd Gen AMD EPYC processor deployments and HPE and Lenovo announced immediate availability of new platforms.

"Today, we set a new standard for the modern datacenter with the launch of our 2nd Gen AMD EPYC processors that deliver record-setting performance and significantly lower total cost of ownership across a broad set of workloads," said Dr. Lisa Su, president and CEO, AMD. "Adoption of our new leadership server processors is accelerating with multiple new enterprise, cloud and HPC customers choosing EPYC processors to meet their most demanding server computing needs.



2nd Gen EPYC Processors Expand the AMD Datacenter Customer and Partner Ecosystem

At the launch event,customers and partners joined AMD on stage to discuss new AMD EPYC processor offerings:

- Google announced it has deployed 2nd Gen AMD EPYC processors in its internal infrastructure production datacenter environment and in late 2019 will support new general-purpose machines powered by 2nd Gen AMD EPYC processors on Google Cloud Compute Engine as well;
- Twitter announced it will deploy 2nd Gen AMD EPYC processors across its datacenter infrastructure later this year, reducing TCO by 25%;
- Microsoft announced a limited preview of new Azure virtual machines for general purpose applications, as well as preview signup for cloud-based remote desktops and HPC workloads based on 2nd Gen AMD EPYC processors today;
- HPE announced continued support of the AMD EPYC processor family with plans to triple their AMD-based portfolio with a broad range of 2nd Gen AMD EPYC processor-based systems, including the HPE ProLiant DL385 and HPE ProLiant DL325 servers;
- Cray announced The Air Force Weather Agency will be using a Cray Shasta system with 2nd Gen AMD EPYC processors to provide comprehensive terrestrial and space weather information to the US Air Force and Army;
- Lenovo announced new solutions that are specifically built to take advantage of the full range of enhanced capabilities found in the 2nd Gen AMD EPYC processors. Available today, the ThinkSystem SR655 and SR635 are ideal solutions for use cases such as video infrastructure, virtualization, software-defined storage and more, with exceptional energy efficiency;
- Dell Technologies announced the upcoming availability of newly designed servers optimized for 2nd Gen AMD EPYC processors;
- VMware and AMD announced a close collaboration to deliver support for new security and other features of the high-performance 2nd Gen AMD EPYC processors within VMware vSphere.

"AMD 2nd Gen EPYC processors will help us continue to do what we do best in our datacenters: innovate," said Bart Sano, Google vice president of Engineering. "Its scalable compute, memory and I/O performance will expand our ability to drive innovation forward in our infrastructure and will give Google Cloud customers the flexibility to choose the best VM for their workloads."

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2nd Gen AMD EPYC™ Processors ... from previous page

Designed for Modern Workloads: Enterprise, Cloud and HPC

Second Gen AMD EPYC™ processors are specifically designed for modern datacenter workloads, providing customers an ideal combination of features to help unlock performance and redefine economics in virtualization, cloud, HPC and enterprise applications.

For the enterprise datacenter, 2nd Gen AMD EPYC processors offer up to 83% better Java application performance5, up to 43% better SAP SD 2 Tier performance6 than the competition and provide world record performance on Real Time Analytics with Hadoop7.

For modern cloud and virtualization workloads, 2nd Gen AMD EPYC processors deliver world record virtualization8 performance that redefines datacenter economics.

For HPC, 2nd Gen AMD EPYC processors offer an unmatched combination of record-setting floating point performance9 and the most DRAM memory10 and I/O bandwidth in its class to supercharge HPC workloads, including up to 2x better performance in computational fluid dynamics11 and up to 72% higher performance structural analysis12.

AMD Design Innovation Brings Breakthrough Architecture for the Datacenter

The 2nd Gen AMD EPYC processor combines leadership performance, architecture and security features to meet the most demanding challenges facing the datacenter. Highlights of the AMD EPYC 7002 generation processor family include:

- **Leadership Performance:** Featuring up to 64 "Zen 2" cores per SOC, 2nd Gen EPYC processors deliver up to 23% more instructions per clock (IPC) per core on server workloads13 and up to 4X more L3 Cache compared to the previous generation.
- **Leadership Architecture:** The next-generation AMD Infinity Architecture pushes the boundaries for x86 performance and compute capabilities, giving customers access to the most I/O14 and memory bandwidth15 in its class, including PCIe Generation 4, to unleash the very latest in server performance.
- **Leadership Security Features:** Delivering "hardened at the core" features based on a silicon embedded security subsystem and advanced security features like Secure Memory Encryption and Secure Encrypted Virtualization that help customers guard their most important assets and data.

A Growing Partner Ecosystem

The AMD EPYC ecosystem continues to grow with more than 60 partners supporting the launch on day one. The broad partner ecosystem including ODMs like Gigabyte and QCT, IHVs like Broadcom, Micron and Xilinx, and broad operating system support including Microsoft and multiple Linux distributions. For Linux Canonical, RedHat and SUSE collaborated with AMD to test and validate solutions based on the 2nd Gen AMD EPYC processors for a wide range of datacenter use cases. This validation helped the 2nd Gen AMD EPYC processor achieve more than 2X platforms in development compared to the 1st Gen EPYC processors.

Read more about the expanding AMD EPYC ecosystem and the 2nd Gen AMD EPYC processor here at the AMD blog.

The 2nd Gen AMD EPYC processor-based systems are available now from the AMD EPYC ecosystem partners. Learn more about where to purchase those systems here.

Supporting Partner and Customer Quotes

"Twitter is committed to reducing our environmental impact of our datacenters by finding innovative ways to increase efficiency. The 2nd Gen AMD EPYC processor provides us the sweet spot of performance and energy consumption that we need to honor that commitment, while supporting the high traffic volume on our platform," Jennifer Fraser, senior director of Engineering at Twitter. "Using the AMD EPYC 7702 processor we can scale out our compute clusters with more cores in less space using less power, which translates to a 25% lower TCO for Twitter."

"Customers today are asking for secure, workload-optimized servers that can drive new experiences and value for their customers," said Justin Hotard, senior vice president and general manager, Volume Global Business Unit at HPE. "With the addition of new 2nd Gen AMD EPYC™-equipped servers to our portfolio, HPE delivers an unprecedented number of world-record performance and efficiency results aligned to a wide range of cloud and datacenter workloads, and unmatched security capabilities. We will continue to deliver innovative products with AMD and look forward to building on our longstanding collaborative relationship."

"As we enter a new era of computing, the exascale era, we're seeing new workloads, new infrastructure, a new way of thinking – and this requires capabilities and performance like we get from our next-generation Shasta supercomputer combined with AMD EPYC processors," said Peter Ungaro, president and CEO at Cray. "Since Cray announced support for AMD processors in our systems over a year ago, we've booked almost $800 million in AMD EPYC-based systems. With the 2nd Gen AMD EPYC processors connected via our new Slingshot system interconnect, we're able to deliver the performance our customers require for the exascale era."

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2nd Gen AMD EPYC™ Processors ... from previous page

"Today, through our expanded relationship with AMD, we are pushing boundaries on performance and efficiency in ways that will accelerate our customers' intelligent transformation. Our new ThinkSystem solutions, powered by next-generation AMD EPYC™ 7002 Series processors, allow users to store and access huge amounts of data," said Doug Fisher, chief operating officer and senior vice president of Business Units, DCG Solutions, Lenovo. "The greater storage, processing and graphics capabilities unlock the potential of enhanced video security and other critical applications for edge and virtualized environments. A perfect example is video security in smart city, campus and mass transit environments where public safety organizations need that additional computing power in confined spaces using less energy so they can better monitor and analyze potential threats."

"As workloads become more demanding and complex, Dell Technologies is focused on helping organizations succeed in dynamic environments using innovative and industry-leading server designs," said Ravi Pendekanti, senior vice president of product management, Server & Infrastructure Systems, Dell Technologies. "Through close collaboration with AMD, we are addressing the demands of traditional, virtualized, hybrid and multi-cloud workloads with a broad portfolio of PowerEdge servers, including newly designed servers optimized for 2nd Generation AMD EPYC processors."

"Vmware and AMD's ongoing engineering collaboration is focused on delivering optimal application performance and security for our mutual customers," said Krish Prasad, senior vice president and general manager, Cloud Platform Business Unit, VMware. "We both see the value in driving security deeper into the infrastructure especially as modern IT infrastructure becomes more distributed. The Secure Encrypted Virtualization feature in the 2nd Gen AMD EPYC processor will help protect customers' critical data across the multi-site datacenter fabric. Combined with AMD's legendary processor performance, we expect our mutual customers will be able to gain efficiencies and security capabilities to power their workloads."

2nd Gen AMD EPYC™ Processor Stack

Model #	Cores	Threads	Base Freq (GHz)	Max Boost Freq (GHz)16	Default TDP (w)	L3 Cache (MB)	1Ku Pricing
7742	64	128	2.25	3.40	225w17	256	$6,950
7702	64	128	2.00	3.35	200w	256	$6,450
7702P	64	128	2.00	3.35	200w	256	$4,425
7642	48	96	2.30	3.30	225w18	256	$4,775
7552	48	96	2.20	3.30	200w	192	$4,025
7542	32	64	2.90	3.40	225w19	128	$3,400
7502	32	64	2.50	3.35	180w	128	$2,600
7502P	32	64	2.50	3.35	180w	128	$2,300
7452	32	64	2.35	3.35	155w	128	$2,025
7402	24	48	2.80	3.35	180w	128	$1,783
7402P	24	48	2.80	3.35	180w	128	$1,250
7352	24	48	2.30	3.20	155w	128	$1,350
7302	16	32	3.00	3.30	155w	128	$978
7302P	16	32	3.00	3.30	155w	128	$825
7282	16	32	2.80	3.20	120w	64	$650
7272	12	24	2.90	3.20	120w	64	$625
7262	8	16	3.20	3.40	155w	128	$575
7252	8	16	3.10	3.20	120w	64	$475
7232P	8	16	3.10	3.20	120w	32	$450

Supporting Resources: Learn more about 2nd Gen AMD EPYC™ Processors

About AMD

For 50 years, AMD has driven innovation in high-performance computing, graphics and visualization technologies - the building blocks for gaming, immersive platforms and the datacenter. Hundreds of millions of consumers, leading Fortune 500 businesses and cutting-edge scientific research facilities around the world rely on AMD technology daily to improve how they live, work and play. AMD employees around the world are focused on building great products that push the boundaries of what is possible.

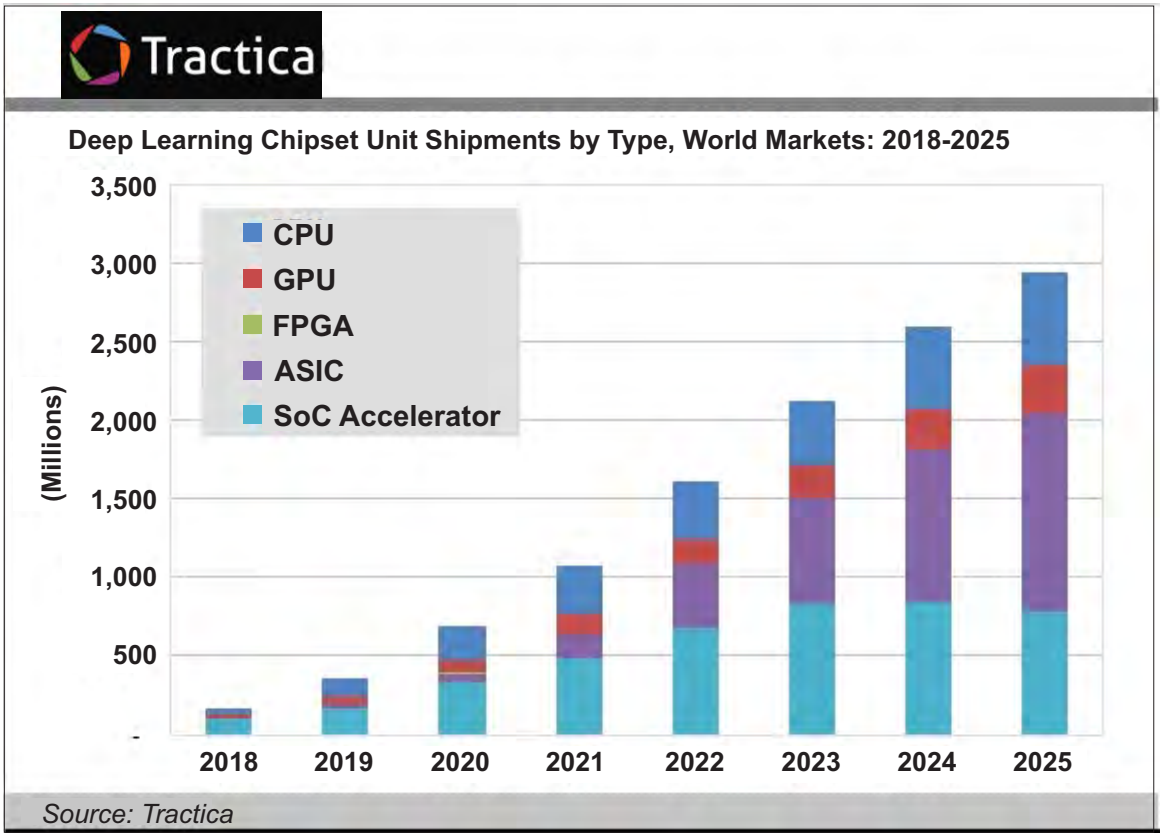
More about AMD, please visit the AMD (NASDAQ: AMD) website https://www.amd.com/en.

Deep Learning Chipset Shipments to Increase to 2.9 Billion Units Annually by 2025

GPUs and CPUs Currently Lead in Market Share, but ASICs will Capture the Lead by 2022, with Expanded Opportunities for SoC Accelerators and FPGAs

The rapid adoption of artificial intelligence (AI) for practical business applications has introduced a number of uncertainties and risk factors across virtually every industry, but one fact is certain: in today's AI market, hardware is the key to solving many of the sector's key challenges, and chipsets are at the heart of that hardware solution. Given the widespread availability of AI, it is almost certain that every application in the future will require some sort of acceleration using AI chipsets whether it is in the data center or at the edge. The acceleration could take a wide variety of forms, ranging from a simple AI library running on a CPU to more sophisticated custom hardware. According to a new report from Tractica, the potential for AI is best fulfilled when the chipsets are optimized to provide the appropriate amount of compute capacity at the right power budget for specific AI applications, a trend that is leading to increasing specialization and diversification in AI-optimized chipsets.

Tractica forecasts that this growth and evolution of the AI market will drive deep learning chipset unit shipments from 164.9 million units in 2018 to more than 2.9 billion units annually by 2025. By the end of that forecast period, the global market for deep learning chipsets will reach $72.6 billion. The market intelligence firm anticipates that application-specific integrated circuits (ASICs) will represent the largest share of total revenue by 2025, followed by graphics processing units (GPUs), central processing units (CPUs), system-on-chip (SoC) accelerators, and field programmable gate arrays (FPGAs).



Key Industry Players included in the report:

Amazon
AMD
ARM
Cerebras Systems
CEVA
Facebook
Google
Graphcore
Groq
Gyrfalcon Technologies
Huawei
IBM
Intel
Mobileye
NVIDIA
Qualcomm
Thinci
Wave Computing
Xilinx

"During the past 2 years, the deep learning chipset market has experienced a dramatic period of evolution, led by NVIDIA and Intel," says principal analyst Anand Joshi. "Yet, the upstart ASIC chip companies are somewhat behind in their delivery schedule. Smaller chips aimed at the edge (embedded) market are shipping, but larger chips aimed at the enterprise market are seeing delays. Meanwhile, market validation has already begun for the edge market and should begin for the enterprise market in 2019. A rapid ramp-up in deep learning chipset volumes will start in 2020, and the winners will begin to emerge during that timeframe."

Tractica's report, "Deep Learning Chipsets", assesses the industry dynamics, technology issues, and market opportunity surrounding deep learning chipsets, including CPUs, GPUs, FPGAs, ASICs, and SoC accelerators. The report provides market sizing and forecasts for the period from 2018 through 2025, with segmentation by chipset type, compute capacity, power consumption, market sector, and training versus inference. The study also includes 19 profiles of key industry players.

An Executive Summary of the report is available for free download on the firm's website.

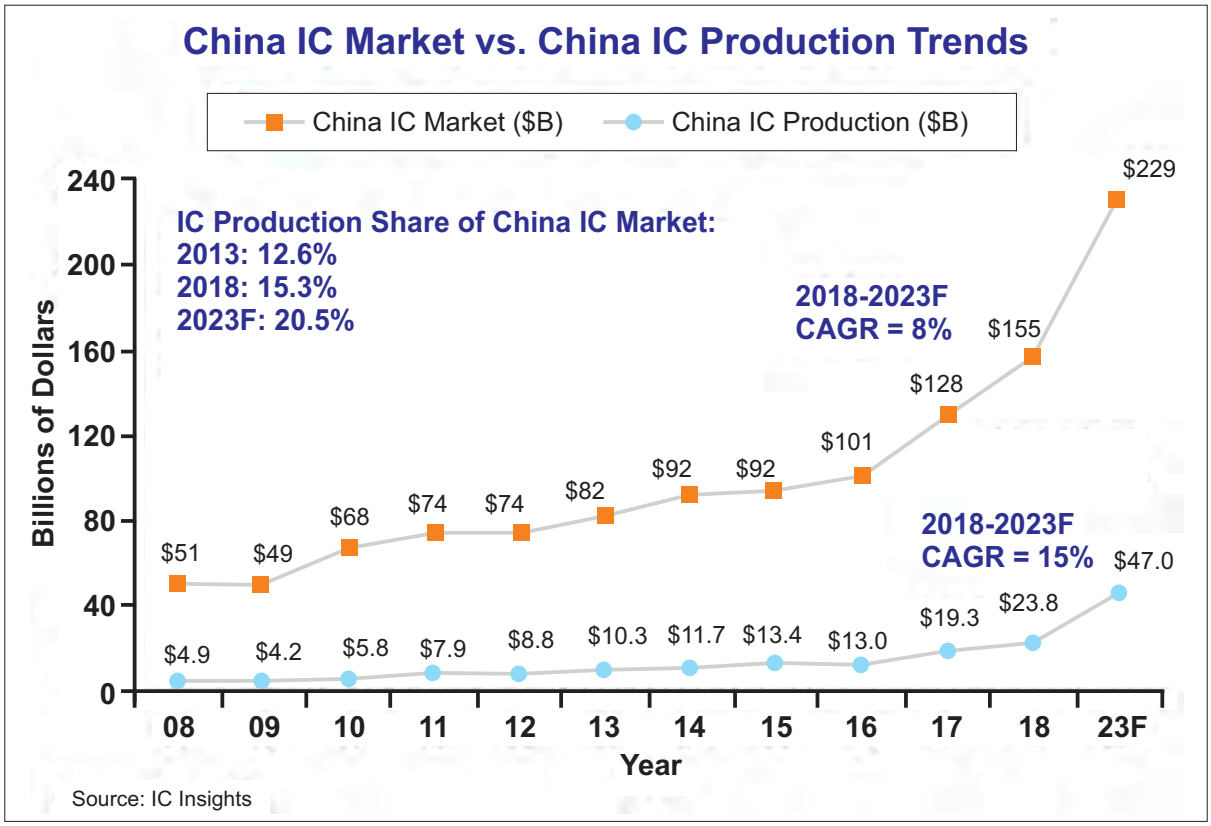
China self-sufficiency for IC's is just an illusion

■ China IC Production Forecast to Show a Strong 15% 2018-2023 CAGR

■ However, China's indigenous IC production is still likely to fall far short of government targets.

IC Insights | February 07, 2019 | Source

China has been the largest consuming country for ICs since 2005, but large increases in IC production within China have not immediately followed, according to data presented in the new 500-page 2019 edition of IC Insights' McClean Report—A Complete Analysis and Forecast of the Integrated Circuit Industry (released in January 2019). As shown in Figure 1, IC production in China represented 15.3% of its $155 billion IC market in 2018, up from 12.6% five years earlier in 2013. Moreover, IC Insights forecasts that this share will increase by 5.2 percentage points from 2018 to 20.5% in 2023.



Currently, China-based IC production is forecast to exhibit a very strong 2018-2023 CAGR of 15%. However, considering that China-based IC production was only $23.8 billion in 2018, this growth is starting from a relatively small base. In 2018, SK Hynix, Samsung, Intel, and TSMC were the major foreign IC manufacturers that had significant IC production in China. In fact, SK Hynix's 300mm China fab had the most installed capacity of any of its fabs in 2018 at 200,000 wafers per month (full capacity).

Intel's 300mm fab in Dalian, China (Fab 68 that started MCU production in late October 2010), was idled in 3Q15 as the company switched the fab to 3D NAND flash manufacturing. This conversion was completed in late 2Q16. Intel's China fab had an installed capacity of 70,000 300mm wafers per month in December of 2018 (full capacity).

In early 2012, Samsung gained approval from the South Korean government to construct a 300mm IC fabrication facility to produce NAND flash memory in in Xian, China. Samsung started construction of the fab in September of 2012 and production began in 2Q14. The company invested $2.3 billion in the first phase of the fab with $7.0 billion budgeted in total. This facility was the primary fab for 3D NAND production for Samsung in 2017 with an installed capacity of 100,000 wafers per month as of December 2018 (the company plans to expand this facility to 200,000 wafers per month).

Significant increases in IC sales over the next five years are also expected from existing indigenous Chinese companies including pure-play foundries SMIC and Huahong Group and memory startups YMTC and ChangXin Memory Technologies (CXMT, formerly Innotron). DRAM startup JHICC is currently on hold pending the sanctions imposed on the company by the U.S. Moreover, there are likely to be new companies looking to establish IC production in China like Taiwan-based Foxconn, which announced in December of 2018 that it intended to build a $9.0 billion fab in China to offer foundry services as well as produce TV chipsets and image sensors.

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If China-based IC production rises to $47.0 billion in 2023 as IC Insights forecasts, it would still represent only 8.2% of the total forecasted 2023 worldwide IC market of $571.4 billion. Even after adding a significant "markup" to some of the Chinese producers' IC sales figures (since many of the Chinese IC producers are foundries that sell their ICs to companies that re-sell these products to the electronic system producers), China-based IC production would still likely represent only about 10% of the global IC market in 2023.

Even with new IC production being established by China-based startups such as YMTC and CXMT, IC Insights believes that foreign companies will continue to be a large part of the IC production base in China. As a result, IC Insights forecasts that at least 50% of IC production in China in 2023 will come from foreign companies with fabs in China such as SK Hynix, Samsung, Intel, TSMC, UMC, GlobalFoundries, and Foxconn.

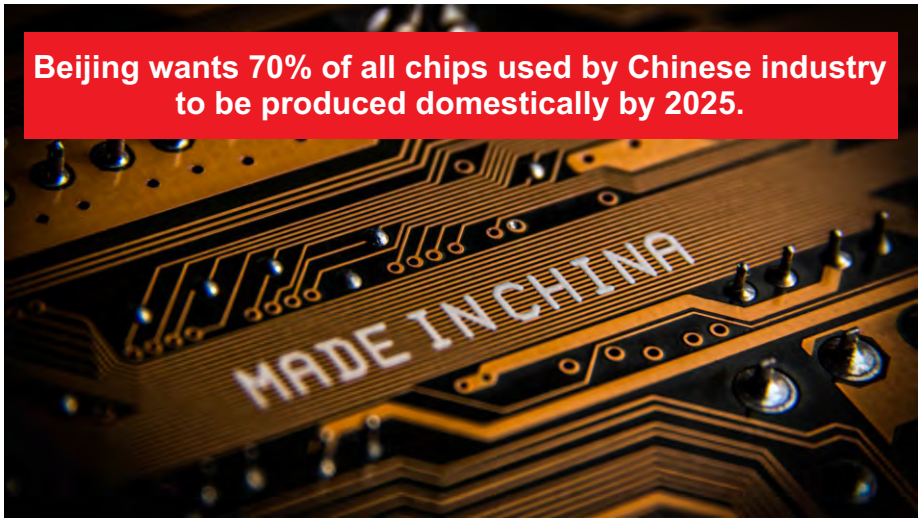
Given the sheer size of China's investment plans over the next five years, it is likely that China will achieve some level of success with their strategy to become less reliant on IC imports. However, given increased government scrutiny of Chinese attempts at purchasing foreign technology companies and the legal challenges that the Chinese startups are likely to face in the future, IC Insights believes that China's current strategy with regard to the IC industry will fall far short of the level of success that China's government has targeted with its "Made in China 2025" plan (i.e., 40% self-sufficiency by 2020 and 70% by 2025).

Report Details: The 2019 McClean Report
Additional details on China's IC market and other trends within the IC industry are provided in The McClean Report—A Complete Analysis and Forecast of the Integrated Circuit Industry (released in January 2019). A subscription to The McClean Report includes free monthly updates from March through November (including a 200+ page Mid-Year Update), and free access to subscriber-only webinars throughout the year. An individual-user license to the 2019 edition of The McClean Report is priced at $4,990 and includes an Internet access password. A multi-user worldwide corporate license is available for $7,990. **More:** Click Here

China chip designers say Beijing goals impossible without US tech

Semiconductor development will 'hit a wall,' AI developer warns

June 24, 2019 16:00 JST | COCO LIU, CHENG TING-FANG and LAULY LI, Nikkei staff writers | Source



HONG KONG/TAIPEI -- Chinese chip designers, whose business has flourished under Beijing's desire for a homegrown semiconductor industry, are warning it will be impossible to meet national targets for a viable, independent sector without access to U.S. technology.

"There are alternatives in China, but the gap in technology is too big," said an executive from one of China's leading artificial intelligence chipmakers, which relies on U.S. technology for chip design. "If we lose access to U.S. software or can no longer receive updates, our chip development will run into a dead end."

A senior executive from Shanghai-based NextVPU, an AI chipmaker founded by former Advanced Micro Devices engineers, echoed his concerns. "Without updates from American software providers, China's push to develop its own chips will hit a wall," he told the Nikkei Asian Review.

The executives, like others quoted in this article, spoke on the condition of anonymity due to fears of upsetting Beijing, which has set a target for 70% of all chips used by Chinese industry in 2025 to be domestically produced.

But their views were backed up by industry experts and suppliers.

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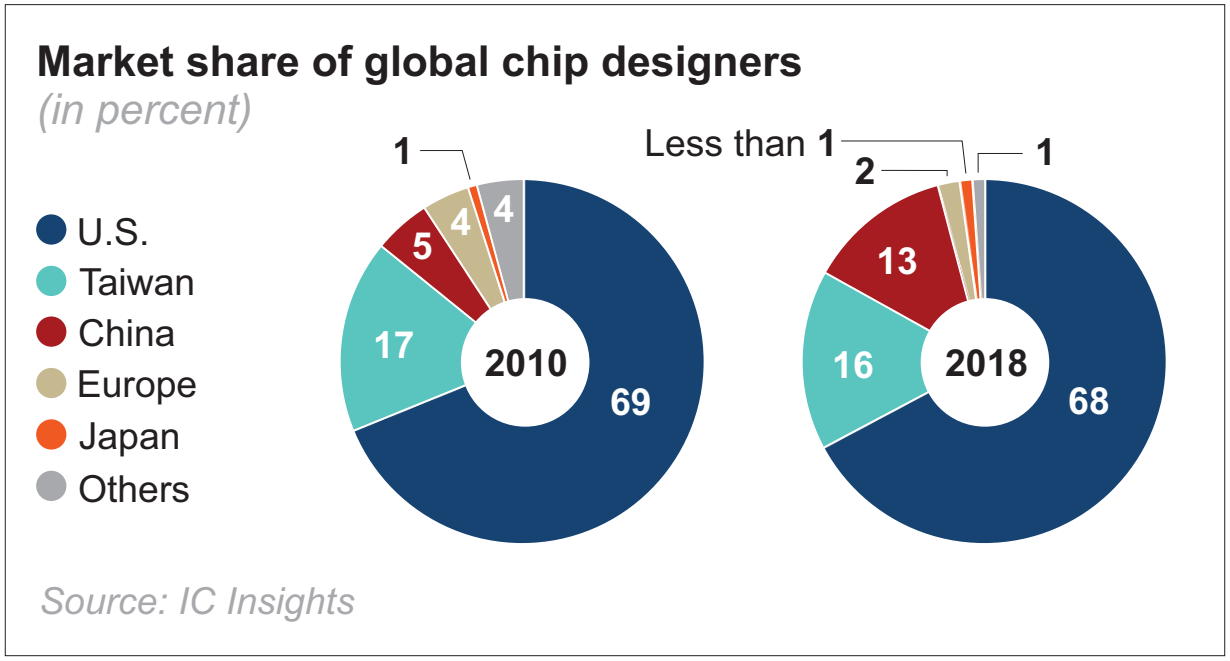
China chip designers say Beijing goals impossible without US tech

... from previous page

« We would use whatever chip equipment and materials we have locally if their performances were good enough," said a manager from Semiconductor Manufacturing International Co., China's top contract chipmaker. "But we still need [American] equipment, materials, IPs and chip design software. It's not likely for any of the chipmakers in the world... to get rid of American vendors soon."



Cici Zhang, an analyst with Taipei-based research firm TrendForce, was similarly downbeat. "The overall self-sufficiency rate in China's chip design sector was only 15% in 2018," Zhang said. "We don't expect China's push to quickly replace a lot of global semiconductor players will happen anytime soon as the world's supply chain is so interconnected."

The government has been locked in a bitter battle with Washington over the future of its tech sector after the U.S. moved to restrict the transfer of American technology. In May it barred sales of goods containing 25% American technology to Chinese tech giant Huawei Technologies. This weekend Washington broadened its assault on the country's tech industry, adding five more Chinese entities -- including supercomputer manufacturer Sugon and two Chinese joint ventures with American semiconductor company AMD -- to its export blacklist.

The moves come as the government pushes Chinese industry to buy homegrown semiconductors in order to meet its goal of sourcing 40% of all supply domestically by 2020 and 70% by 2025. However, industry executives say this goal is out of reach, while many Chinese companies are also proving reluctant to switch to locally sourced semiconductors.

"To be honest, Chinese chips are still less efficient than Intel's," said a senior sales director from Inspur, the world's third-largest server maker and the No. 1 in China. Companies handling the most sensitive processes, such as financial transactions, are also reluctant to trust China's nascent chip industry.

"Our clients are banks, and having a stable system is their top priority," said an executive from Siecom, a Shenzhen-based software developer specializing in producing telecommunication terminals for Chinese banks. "Even if Huawei's chips function as well as Qualcomm chips, we feel Qualcomm is a safer bet because of its decades-long experience in chip making."

Chip production in China -- including by foreign companies -- accounted for just 15% of the country's $155 billion market last year, according to IC Insights. The market research group is forecasting in-country production of just 20.5% by 2023.

China's 2025 ambitions have already been hampered by the U.S. crackdown.

AMD has limited knowledge sharing with its Chinese joint venture partner, Tianjin Haiguang, in light of the moves and said it was "reviewing the specifics of the order to determine the next steps related to our joint ventures ... in China."

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China chip designers say Beijing goals impossible without US tech

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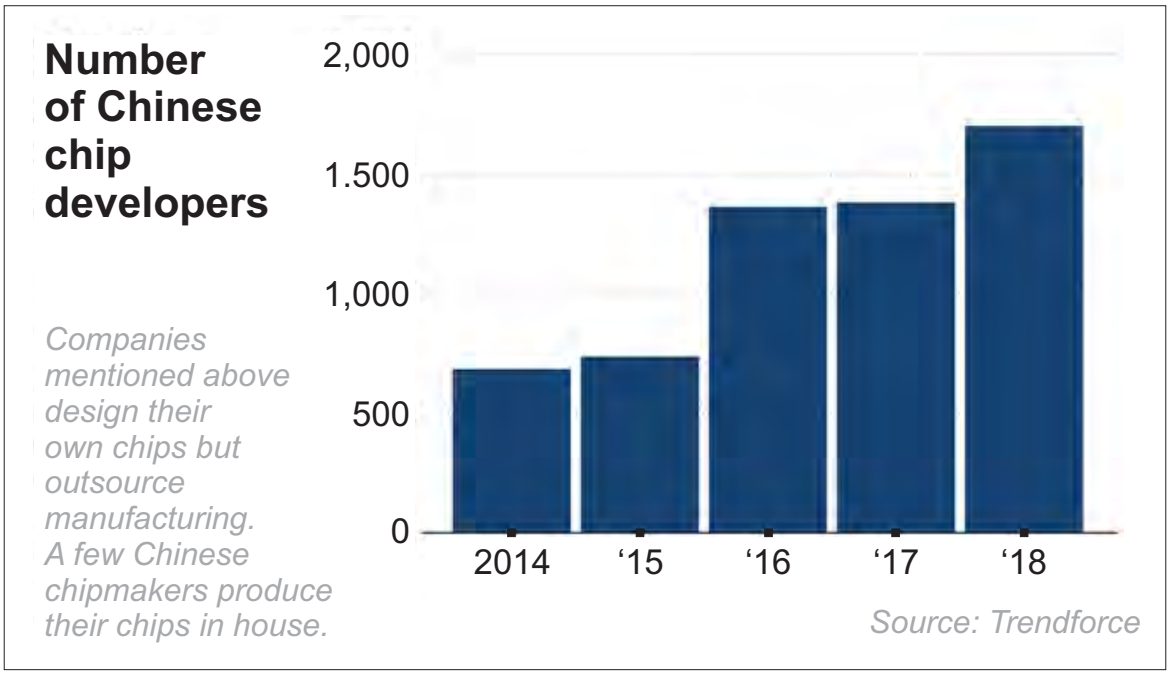
Intel, AMD's bigger rival, also ended its partnership with Beijing-backed mobile chipmaker Unisoc Communications earlier this year, Nikkei Asian Review reported. Previously, the two companies had planned to cooperate in 5G modem development.

"The push for [China's] self-reliance is not delivering results as quickly as expected and has really been hit by the U.S. clampdown," said Arisa Liu, a veteran chip analyst at the Taiwan Institute of Economic Research.

The chilled tech partnership has also weighed on Chinese chip designers' growing momentum, analysts say. Revenue from the sector is expected to grow 17.9% this year to roughly 296.5 billion yuan ($42.9 billion), the first time the rate has fallen below 20% since 2014, when Beijing introduced a multibillion-dollar fund to ramp up its semiconductor prowess, according to TrendForce.

Moreover, for high-end chips that are used for data centers and other sophisticated applications, Chinese companies still favor imported chips over domestic products. Not only do Chinese chips lag in performance but they cost significantly more -- sometimes as much as 50% more due to their limited production scale, said the executive of the leading AI chipmaker. This hesitation to use domestic chips made it difficult for Chinese developers to improve their technology.



"Small companies cannot absorb those [cost] differences," the executive said. "But deployment is vital for technology improvements. We can only know how our chip performs if someone is using it."

At an industry conference earlier this year in Shenzhen, Jiang Yijie, an executive of Shanghai-based chipmaker Montage LZ, said: "What Chinese chipmakers lack is not market potential but market confidence."

The Chinese government is trying to set an example. In June last year, the Central Government Procurement Center for the first time included Chinese-made chips in its purchase list. Inspur has begun using homegrown chips for government and military projects. "The government's action to adopt more Chinese chips is a positive demonstration to support homegrown efforts," said the Inspur sales director.

Michael Guo, a sales director at Zhejiang Shijing Sensor Technology, which produces chips for carmakers, also counts on Beijing for help. "If the government encourages the use of made-in-China chips in public procurements, companies will buy more," he said.

But even with much-anticipated support from Chinese leaders, Guo is still cautious about whether Beijing will meet its ambitious 2025 targets. "China's chip industry is on the rise, but it still lags far behind Western peers," he said. "It will probably take us another decade to catch up."

End

China needs 'five to 10 years' to catch up in semiconductors, Peking University professor Zhou Zhiping says

South China Morning Post Upload Date & Time Diterbitkan 11.09, 03/09/2019 | Source

Semiconductors represent the cornerstone technology of the information age. These tiny devices power the world's modern economies by serving as the data-processing brains in a wide range of products, from personal computers and smartphones to cars and spacecraft.

Growing trade tensions with the US, however, has exposed the soft underbelly of China's technological ambitions. Despite hefty investments in the semiconductor industry over the years, China remains dependent on the US for high-end integrated circuits. The country's annual chip imports have surpassed that of crude oil in recent years to reach US$312 billion in 2018.

Zhou Zhiping, a Peking University professor of microelectronics, spoke to the South China Morning Post on the sidelines of the Smart China Expo held last month in the southwestern city of Chongqing. Zhou was a founder and vice-president of production of the Hengnan Transistor Factory in China from 1971 to 1978 and a guest scientist at the National Institute of Standards and Technology in the US from 1987 to 1989. He is a fellow of SPIE, a professional society for optics and photonics technology, and senior member of the Institute of Electrical and Electronics Engineers, among his major affiliations.

From 2005 to 2008, Zhou was with Huazhong University of Science and Technology on a "Changjiang" special professorship appointed by China's Ministry of Education. He is now a "Changjiang" professor at Peking University and guest chief scientist of Chongqing-based semiconductor firm United Microelectronics Centre. He has spent almost 50 years in the field of semiconductors in both academia and industry.

See the edited interview with Zhou about the state of China's semiconductor industry: Click Here

Global Semiconductor Equipment Industry Report (2019-2025) with a Focus on the Chinese Market

Dublin, Nov. 13, 2019 (GLOBE NEWSWIRE) -- The "Global and China Semiconductor Equipment Industry Report, 2019-2025" report has been added to ResearchAndMarkets.com's offering.

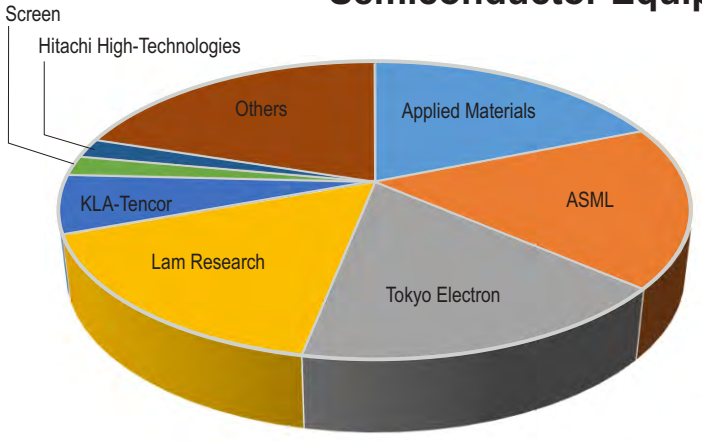
The Global Sales of New Semiconductor Manufacturing Equipment in 2018 Will Grow by 9.7% to $61.6 Billion, a Figure Projected to Hit $98.2 Billion by 2025, a CAGR of 6.9% Between 2018 and 2025

The semiconductor industry with a high technical threshold is advancing speedily.

Every generation of products requires unique processes and equipment. Characterizing a rather high concentration, semiconductor equipment manufacturing is a typical capital- and technology-intensive sector with high technical barriers and in want of huge capital and manpower. In 2018, the world's top ten semiconductor equipment vendors commanded a combined 71.4% market share, and the top five giants enjoyed 61.4% market shares together. Of the top ten, ASML comes from the Netherlands and the rest are based in the United States and Japan.

The localization rate of semiconductor equipment in Mainland China is merely 11.5%, and the China-made semiconductor equipment makes up roughly 2% of the global market. In 2018, the global sales of semiconductor equipment achieved $61.6 billion including $10.1 billion or 16.4% from Chinese Mainland which is the third largest market after Taiwan and South Korea. Yet, there is still a huge technical gap between the semiconductor equipment made in China and foreign peers. In a word, Chinese equipment with low brand awareness is less competitive and take small market shares. **MORE:** Click Here

Semiconductor Equipment Shares 2018



Vendor	Market Share (%)
Applied Materials - USA	18,8
ASML - Netherlands	17,6
Tokyo Electron - Japan	16,7
Lam Research - USA	16,3
KLA-Tencor - USA	6,4
Screen - Japan	2,1
Hitachi High-Tech. - Japan	2,1
Others	20,0

STRATEGIC PARTNERSHIP

Andes Technology and Silex Insight Announce Strategic Partnership for RISC-V Based Root-of-Trust IP Solutions

July 1, 2019

Andes Technology, Hsinchu, Taiwan

Silex Insight, Mont-Saint-Guibert, Belgium

Andes Technology, a leading Asia-based supplier of high-performance low-power compact 32/64-bit RISC-V CPU cores, and Silex Insight, a leading provider for flexible security IP cores, are announcing a strategic partnership to bring flexible and energy efficient Root-of-Trust security IP solution based on RISC-V to the industry.

Silex Insight's advanced eSecure IP module is a complete solution that enables security applications by shielding confidential information from non-secure applications running on main processor along with security boot, sensitive key materials and assets protection. AndesCore™ N22, a high-efficiency and low-power 2-stage pipeline RISC-V CPU core, is tightly integrated in the eSecure IP module to fully and robustly control the execution of security functions. eSecure module is highly configurable and thus provides a wide-range selection of security features, performance, area and energy consumption that is suitable for many applications such as IoT, storage, and communication.

"We are able to deliver a ready-to-go solution to SoC makers who need advanced security and efficiency", says Pieter Willems, Director Sales and Marketing Security Products at Silex Insight and he continues; "With Andes' N22 RISC-V CPU core integrated in our eSecure Root-of-Trust turnkey solution, customers who demand high security on their devices can easily prevent hostile attacks from the outside world."

"Root-of-Trust is now fundamental to many devices and connected services," answers Dr. Charlie Su, CTO and Executive VP of Andes Technology. "We are excited to be able to deliver configurable and efficient security turnkey solution to SoC design companies, thanks to our ultra-compact RISC-V compliant processor N22, included in Silex Insight eSecure IP module platform."

This robust secure solution is perfect for security-sensitive applications and it is available now from both Andes Technology and Silex Insight.

About Andes Technology

Andes Technology Corporation is a world class creator of innovative high-performance/low-power 32/64-bit processor cores and associated development environment to serve the rapidly growing global embedded system applications. The company delivers superior low power CPU cores, including the comprehensive RISC-V V5 family of processor cores, with integrated development environment and associated software/hardware solutions for efficient SoC design. Up to the end of 2018, the cumulative volume of Andes-Embedded™ SoCs has reached 3.5 billion with 2018 alone contributing over 1 billion. Andes Technology's comprehensive CPU line includes entry-level, mid-range, high-end, extensible and security families. For more information, please visit www.andestech.com

About Silex Insight

Founded in 1991, Silex Insight is a recognized market-leading independent supplier Security IP solutions for embedded systems. The security platforms and solutions from Silex Insight include flexible and high-performance crypto-engines which are easy to integrate and a eSecure IP module which provides a complete security solution for all platforms. Development and manufacturing take place at the headquarters near Brussels, Belgium. Local sales and support are handled by worldwide branch offices. For more information visit: www.silexinsight.com

EU AI will rely on Memories

By Nitin Dahad, European correspondent for EE Times | 02-Jul-2019

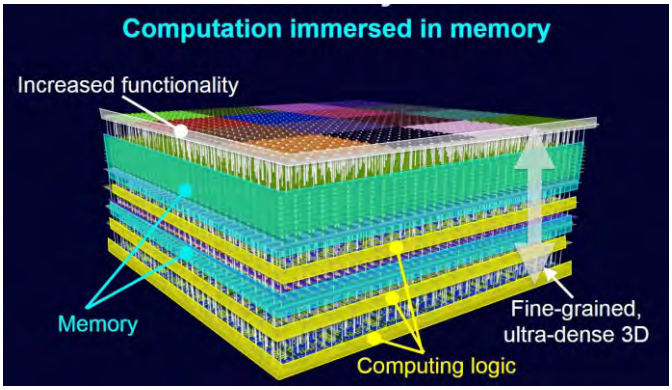
Imec, the Belgium-based nanoelectronics and digital technologies research center, is leading a European Union program to develop low-power edge artificial intelligence (AI) chips based on several emerging memory technologies.

The three-year program, called Tempo (Technology & hardware for nEuromorphic coMPuting), is a cross-border collaboration between 19 research and industrial partners, including CEA-Leti of France and the Fraunhofer Group of Germany. The joint effort aims to develop process technology and hardware platforms leveraging emerging memory technologies for neuromorphic computing. The goal is to develop a new way to support applications in mobile devices that need complex machine-learning algorithms.

Today, applications of this sort typically rely on shipping data to cloud-based server racks and then back. Complying with European data privacy regulations is difficult with a cloud-based approach however. Given those restrictions, the alternative is to perform AI on the edge — within battery-powered mobile devices such as cars and smartphones. The technology to do so doesn't exist, so Europe must create it.

The topic is relevant especially in Europe, but it's a concern across the industry. Edge AI and machine-learning algorithms are becoming increasingly necessary in day-to-day products and applications such as smart home assistants with natural-language processing, security systems that employ facial recognition, or autonomous vehicles. The demand for complex computational algorithms will only grow further. There are plenty of other reasons to avoid using the cloud beyond complying with data privacy rules. Sending data to the cloud costs energy and latency. The ultimate for edge AI applications is to enable intelligent energy-efficient local processing.

Tempo aims to evaluate current solutions at device, architecture and application level, and build and expand the technology roadmap for European AI hardware platforms. The project will leverage MRAM (imec), FeRAM (Fraunhofer) and RRAM (CEA-Leti) memory to implement both spiking neural network (SNN) and deep neural network (DNN) accelerators for eight different use cases, ranging from consumer to automotive and medical applications.



In-memory computing architecture as highlighted at CEA-Leti in 2018 by Prof. Subhasish Mitra, Departments of Electrical Engineering and Computer Science at Stanford University. (Source: Professor Subhasish Mitra / Stanford University).

The director of the Fraunhofer Institute for Photonic Microsystems (IPMS) and chairman of the board of directors of the Fraunhofer Group Microelectronics, Prof. Hubert Lakner, said a key enabler for machine learning and pattern recognition is the capability of the algorithms to browse through large datasets. In terms of hardware this means having rapid access to large memory blocks. Therefore, one of the key focal areas of Tempo are energy efficient nonvolatile emerging memory technologies and novel ways to design and process memory and processing blocks on chip.

Emmanuel Sabonnadiere, CEO at CEA-Leti said they aimed to sweep technology options covering emerging memories and attempt to pair them with contemporary (DNN) and exploratory (SNN) neuromorphic computing paradigms. The process and design compatibility of each technology option will be assessed with respect to established integration practices and industrial partner roadmaps and needs to prepare the future market of edge AI "where Europe is well positioned with multiple disruptive technologies."

Luc Van den hove, CEO at Imec, commented, "We are delighted to enter in such broad European collaboration effort on edge artificial intelligence, gathering the relevant stakeholders in Europe, including CEA-Leti and Fraunhofer, two of our most renowned colleague research centers in Europe. Thanks to our combined expertise, we can scan more potential routes forward than what would be possible by each of us individually, and as such, position Europe in the driver seat for R&D on AI." He added that behind the scenes, they are already defining more public and bilateral agreements with several of the partners involved.

Tempo is a European innovation project funded by the ECSEL Joint Undertaking (JU), a public-private partnership for electronic components and systems which funds research, development and innovation projects in key enabling technologies. The JU receives support from the European Union's Horizon 2020 research and innovation program, and from Belgium, France, Germany, the Netherlands, and Switzerland.

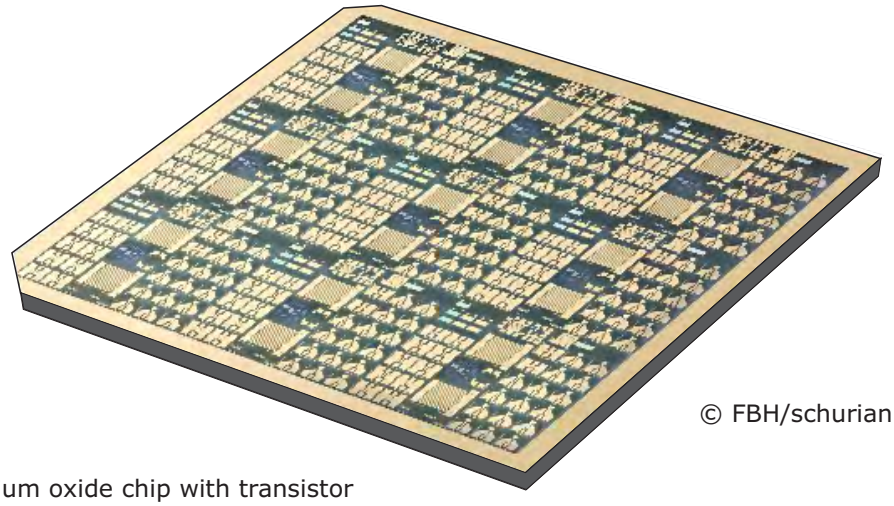
Tempo, which was officially kicked off in April 2019, will run for three years. The consortium consists of nineteen members, with Imec taking the lead as the sole Belgian consortium partner. The other consortium members are, for France: CEA-LETI, ST-Microelectronics Crolles, ST-Microelectronics Grenoble, Thales Alenia Space and Valeo. For Germany: Bosch, Fraunhofer EMFT, Fraunhofer IIS, Fraunhofer IPMS, Infineon, Innosent, TU Dresden and Videantis. For the Netherlands: imec the Netherlands, Philips Electronics and Philips Medical Systems. For Switzerland: aiCTX and the University of Zürich.

Gallium oxide power MOSFETs far exceed GaN transistors

Gallium-Oxide Power MOSFET Handles 155 MW/cm²

FBH Ferdinand Braun Institute, Berlin

30-Aug-2019 - Ralf Higgelke, elektroniknet International



© FBH/schurian.com

Gallium oxide chip with transistor
and measurement structures, manufactured at FBH by projection imaging.

The Ferdinand Braun Institute has developed a lateral power transistor that achieves a power density of 155 MW/cm² at a breakdown voltage of 1.8 kV. The breakdown field strength reaches 1.8 MV/cm to 2.2 MV/cm.

Main goal of power semiconductors is to increase the power density, in other words to generate less and less electrical losses in the smallest possible area. Conventional silicon components are encountering their limits here. Scientists all over the world are therefore investigating new materials and components that can meet these requirements. The Ferdinand Braun Institute (FBH) has now achieved a breakthrough with transistors based on gallium oxide (ß-Ga2O3).

The newly-developed lateral MOSFETs provide a breakdown voltage of 1.8 kV and a record power figure of merit of 155 MW per square centimeter, close to the theoretical material limit of gallium oxide. At the same time, the breakdown field strengths reach 1.8 MV/cm to 2.2 MV/cm for gate-drain spacings between 2 µm and 10 µm. This is significantly higher than those of established wide bandgap semiconductors such as silicon carbide or gallium nitride.

Optimized Layer Structure and Gate Topology

In order to achieve these improvements, the FBH team tackled the layer structure and gate topology. The basis was provided by substrates from the Leibniz Institute for Crystal Growth with an optimized epitaxial layer structure. As a result, the defect density could be reduced and electrical properties improved. This leads to lower on-state resistances.

The gate topology has been further optimized, allowing to reduce high field strengths at the gate edge. This in turn leads to higher breakdown voltages.

Original Publication

K. Tetzner, et al., Lateral 1.8 kV β -Ga2O3 MOSFET With 155 MW/cm² Power Figure of Merit, IEEE Electron Device Letters, vol. 40, no. 9, pp. 1503-1506, Sept. 2019. DOI: 10.1109/LED.2019.2930189

Avnet loses TI's $1.9bn distribution business

Texas Instruments Disengages with Global Distributor Avnet

By Barbara Jorgensen | Octobre 04, 2019

Texas Instruments, a longtime supplier to Avnet Inc., will discontinue its relationship with the global distributor as of

Dec. 31, 2020. TI's products account for roughly 10 percent of Avnet's sales, which reached $19.5 billion in fiscal 2019.

TI notified Avnet of its decision on Oct. 1, citing the evolution of its channel strategy. TI has drastically changed its relationship with distributors since 2017. One Wall Street analyst reported TI has sent termination letters to six distributors worldwide.

"Over the past several years, we have been evolving our distribution network to better align with our strategy to establish closer, **more direct relationships with our customers**," TI's spokeswoman told EPSNews. "As we build these direct relationships, we won't have as much business flowing through the distribution channel and will require fewer distributors."

"While Avnet and Texas Instruments have had a long-standing relationship, TI made changes to its distribution strategy and is moving toward selling directly to its customer base," said an Avnet spokesman. "As a result, Avnet and **TI will be ending their distribution relationship by December 31, 2020**. We respect TI's decision and we will continue to work together through this transition."

TI's most dramatic move in the channel was the discontinuation of distribution **"demand creation"** programs around 2017. Under such arrangements, suppliers reward distributors for assisting customers with product designs. TI's move rendered distributors solely as fulfillment partners – managing inventory, delivering products and providing other supply chain services.

Texas Instruments, global distributors

Demand creation rewards typically come in two forms. **If a distributor secures a socket in an OEM design, suppliers provide a higher profit margin on volume sales if the design reaches production**. Other programs pay distributors a straight fee for their design assistance.

Distributors have been increasing their **reliance** on demand creation as profit margins on component sales have steadily eroded.

Avnet, which carries hundreds of chip lines, will continue to pursue opportunities to support its current and future customers, reduce operating costs, and further strengthen its current and future supplier partnerships, according to its most recent 8-K filing.

Still, this is a blow to Avnet. EPSNews affiliate ESM China reported the possibility of the TI-Avnet breakup late last week. **Since 2017, Analog Devices, Cypress, Broadcom (except for Avnet EBV), Silicon Labs and other semiconductor manufacturers have discontinued relationships with Avnet.** Avnet has laid off employees in China and Avnet's progress in that market has been slower than expected, according to ESM China.

Avnet has just expanded its offerings in China by launching a super store on Alibaba Group's China-focused B2B purchasing and wholesale marketplace 1688.com. Through an alliance with Alibaba Cloud, the electronics distributor will also enable services such as IoT prototyping.

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Texas Instruments Disengages with Global Distributor Avnet

... from previous page

One of Avnet's senior managers has also left the company. EMS provider Flex named Lynn Torrel, former Avnet senior vice president for global customer and supplier management, as its chief supply chain and procurement officer. Torrel is responsible for Flex's direct and indirect materials, transportation and logistics, business operations, materials management, and strategic supply chain management. **Sources expect additional personnel changes at Avnet.**

The distribution channel overall is weathering a tough 2019. Following a year rife with component shortages and allocation, distributors have seen demand decrease in the first three quarters of the year. The industry's two largest global distributors reported sliding sales: Avnet's fiscal Q4 sales of $4.7 billion declined 7.5 percent from a year ago and 0.4 percent from the prior quarter. Arrow Electronics, Inc. reported second-quarter 2019 sales of $7.34 billion, a decrease of 1 percent from sales of $7.39 billion in the second quarter of 2018.

Profit margins on electronics components **have been eroding for years**, which has created **tension between suppliers and distributors**. To retain a higher portion of their profits, suppliers are **cutting back on demand-creation** and other incentive programs. Additionally, **M&A activity** within the supplier community often brings two separate distribution rosters together, so component makers have been paring back their channel relationships.

There's always been a tug-of-war between suppliers and distributors over "ownership" of customer relationships. While distributors sell components to end-customers, they do so on behalf of their suppliers. Component makers such as TI are now taking these relationships direct. TI is particularly well-equipped to manage direct customers, industry sources say, as it **has maintained a robust engineering and sales presence** around the world and offers a broad portfolio of products. Many of TI's competitors have split into specialty chip companies.

Texas Instruments has also historically carried a broad distribution roster. In the Americas, TI currently lists Arrow, Avnet, Digi-Key, Mouser and Rochester Electronics as its resellers; in Asia, TI sells through the same distributors plus World Peace Industrial Group (WPG) and WT Group. In EMEA, Eastronics, Compel, MT Systems and Telsys join TI's core global distribution roster.

Texas Instruments, global distributors

Editor Note about the TI & Avnet case

FIRST OF ALL: ... it is a pity to come to such an end between two very large companies after so many years, so something must be very wrong

We have selected this quite interesting article from Barbara Jorgensen as it includes a number of key items about the difficult relationship between « component manufacturers, distributors and the customer needs ».

In the article above we have highlighted (in bold) some interesting words for further discussions.

Here are some complementary comments:

The URGENT need for Experienced Business Professionals balancing commercial effectiveness with a strong technical skillset

The Technology is evolving very fast and is getting more complex, so we should adapt quickly.

In the Semiconductor Business every year up to 30% of the revenues are done with New Products and are addressing News Applications & New Markets. The Design-win efforts should be strongly started in an early stage.

TI is the World Leader in Analog IC 's with a huge number of special functions, it requires Technical Sales Expertise.

The Race to NEW CUSTOMERS Discovery has begun, but Vendors are NOT Ready, too little resources in house.
The Winners will be the Ones able to Adapt Quickly.

Finding New Customers and identifying the right Decisions Makers requires different skills and expertise.

_ Daniel Dierickx, e2mos

Top Distributors Exit ECIA to Form Global Association

August 27, 2019 | By Barbara Jorgensen | Source: https://epsnews.com

Three of the industry's biggest distributors – Arrow Electronics Inc., Avnet Inc. and Electrocomponents plc – have withdrawn from the Electronic Components Industry Association (ECIA), marking an historic, structural change in the 9-year-old trade organization. A new group, the **Global Electronics Distributor Association (GEDA)**, will be formed within the next 90 days, according to an Avnet spokeswoman. Aligned with current global industry needs and opportunities, the spokeswoman added, GEDA will provide its members with a cost-effective membership focused on what is important to the electronics components distribution industry today.

ECIA was formed in 2010 through the merger of two industry groups: The National Electronics Distributors Association (NEDA) and the Electronic Components Association (ECA). NEDA -- established in 1939 -- was comprised of distributors; ECA represented component manufacturers. Arrow and Avnet have been NEDA/ECIA members for decades as have Electrocomponents' Allied Electronics and RS Components brands.

ECIA's membership now includes distributors, manufacturers and independent reps of all sizes. The members tend to be concentrated in the Americas because many small firms don't engage in global commerce. ECIA has alliances with other trade groups in the EU and Asia. GEDA will include leaders from the electronic components distribution industry, according to Avnet, and its associated manufacturers who will be dedicated to advancing the interests of GEDA members. Arrow said it does not speculate on matters such as post-ECIA plans. Avnet confirmed its withdrawal from ECIA effective October 25.

The move is a blow to ECIA in several respects. Membership fees are scaled by size of the organization, and collectively, the three distributors represent $50 billion in global revenue. The distributors also post their inventory on ECIAauthorized, an exclusive aggregator for the authorized channel. Non-authorized distributors are considered at higher risk for counterfeit components.

Arrow and Avnet hold an expansive array of inventory based on customer forecasts; "on-hand" estimates; consignment; and opportunistic buys. Allied Electronics and RS Components are specialized, low-volume distributors; Electrocomponents is a fulfillment, or high-volume, business. This is a significant amount of stock that will no longer be listed on the ECIA site – Arrow and Avnet each reported inventory assets of roughly $3 billion in their recent earnings statements.

Bill Bradford, CEO of ECIA, said the association does not have any public comment relative to members disengaging from the association. "As of July 1, we were at record high numbers of members from all three categories – distributors, manufacturers, and manufacturer representatives," he said. "We continue to engage this active membership to promote and improve the authorized sale of electronic components and have several initiatives in the works toward that end."

Insiders say collaboration between two associations isn't out of the question. ECIA has key committees working on global industry practices, statistics, standards and marketing; and tackles issues such as anti-counterfeiting, tariffs, cybersecurity and conflict minerals. All are relevant to the global supply chain.
The separation is time-sensitive: ECIA memberships and fees are renewed in the month of October. The ECIA Executive Conference, the organization's flagship convention, begins on October 20. Sources said conference sponsorships and attendance from Arrow, Avnet and Electrocomponents have been revised.

The new Arrow/Avnet/Electrocomponents consortium reportedly will be more distributor-centric than ECIA. Although the fate of suppliers and distributors are inextricably linked, the two groups are often at odds with one another. Component makers have been cutting back on demand-creation programs in which distributors are rewarded for pursuing OEM designs. Without such incentives, suppliers retain a higher profit margin. There are also various arrangements between suppliers and distributors that are problematic for the partners. Distributors are required to get approval from suppliers if they increase or decrease component prices beyond a certain point. Those price differences are managed through a debit and credit system that is complicated and inefficient. Customer "ownership" is often in contention because distributors "touch" customers on their suppliers' behalf. Suppliers have moved customers out of the channel to manage them directly.

Other suppliers are deeply involved with distribution, channeling more than half of their volume through their partners. Global component makers face unique challenges in the supply chain: prices differ across regions; franchises may not apply to every country; and the U.S.-China trade war has added expense and complexity to logistics. Distributors, which manage many thousands of international customers, are well equipped to handle these issues. Working through such challenges is a large part of ECIA's charter. The association recently reorganized its board of directors with equal representation from distributors and suppliers and to include manufacturers reps. The board consists of four distribution council members; four supplier council members; and one from the council of manufacturers reps. The councils are made up of 12 executives from member companies with responsibility for suggesting association priorities, while setting and overseeing their council's specific agenda and initiatives.

The Distributor Council, the Manufacturer Council, and the Independent Manufacturer Representative Council were launched at the ECIA's fall 2018 Joint Council Meeting. This structure "provides a venue for each of the constituent groups to discuss their specific challenges relating to our industry and the authorized channel," said ECIA. "More importantly, it provides the joint forum to bring the groups together to address the important issues that can only truly be solved by bringing all components of the supply chain together."