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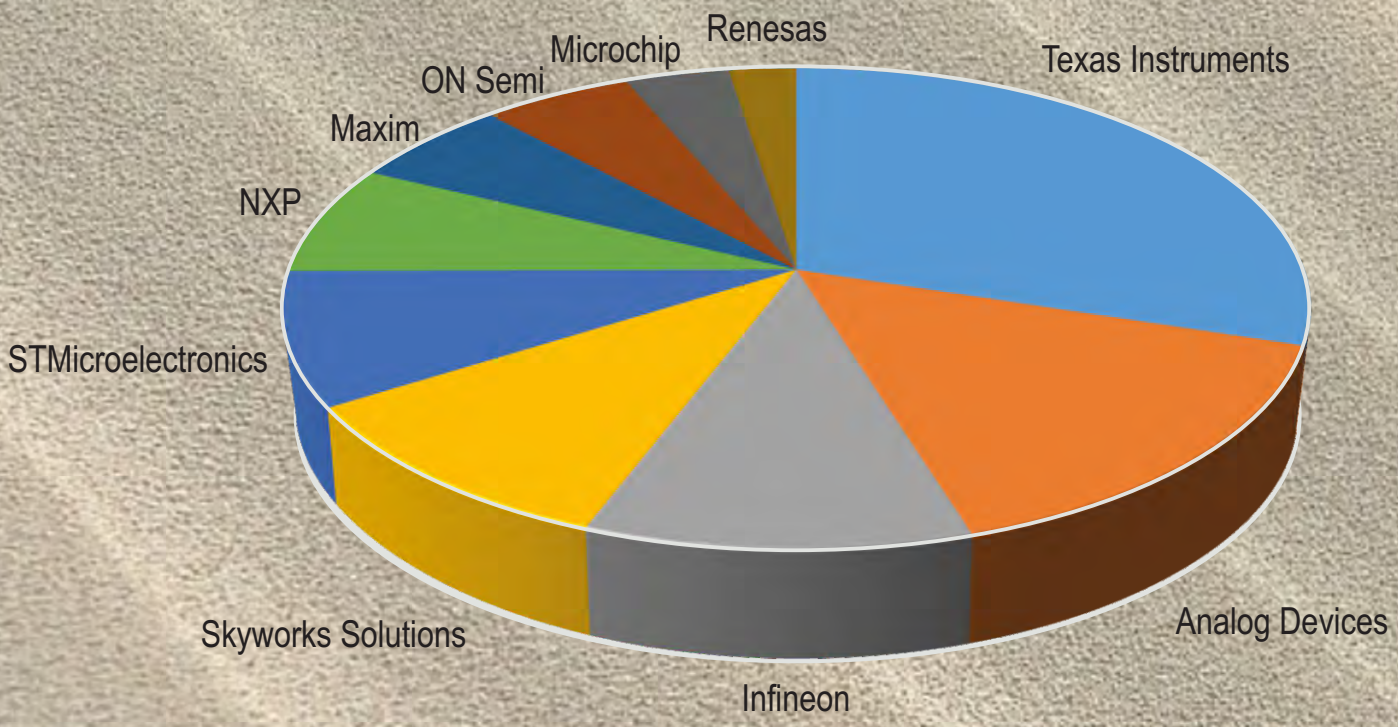
May-Jun 2019

Global Top 10 Analog IC Vendors

- TI remains top and rise to $10.8 billion
- Infineon moves into 3rd place
- ST posts strongest annual increase
- 3 European Vendors in the Top 6



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- SPARK Microsystems winner of the 6th annual Nokia Open Innovation
- Huawei's chipmaking ambitions at risk after Arm cuts ties
- Samsung Electronics' Leadership in Advanced Foundry Technology
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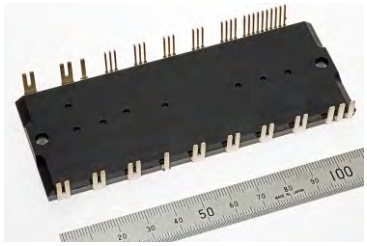
Global Top 10 Analog IC Vendors
TI remains top, Infineon moves to N°3, ST is big gainer

Headlines:



100A / 1200V IGBT Modules

Daniel Dierickx CEO & co-Founder
Acting Chief Editor at e2mos

30+ Years Chips & Embedded Systems
Business & Market Expertise
Together with my Partners we have built
a Global PREMIER Customer Database

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Global Top 10 Analog IC Vendors

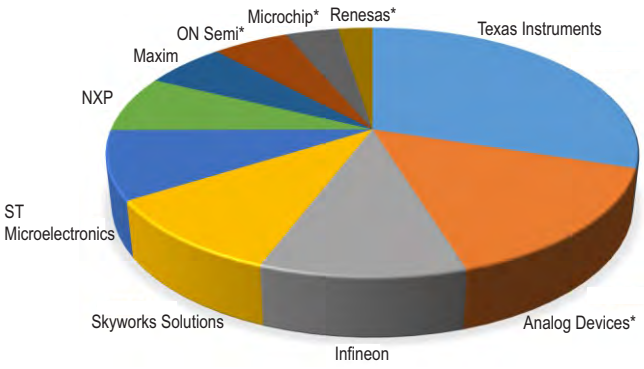
TI remains top, Infineon moves to N°3, ST is big gainer

TI's 2018 analog sales rise to $10.8 billion; Infineon moves into third position, ST posts strongest annual increase as top-10 collectively account for 60% of total analog market.

The 10 largest suppliers of analog ICs accounted for 60% of worldwide analog sales last year, or USD 36.1 billion, compared to nearly 61% in 2017, or about USD 33.0 billion, according to IC Insights' 2018 rankings of leading semiconductor companies.

With analog sales of USD 10.8 billion and 18% marketshare, Texas Instruments maintained its firm grip as the world's leading supplier of analog devices. TI's 2018 analog sales increased USD 0.9 billion and were nearly twice those of second-ranked Analog Devices and more than 10x those of tenth-ranked Renesas, one of two companies among the top 10 to experience a decline in analog sales. TI's 2018 analog revenue accounted for 78% of its USD 13.9 billion in IC sales and 72% of its USD 14.9 billion total semiconductor revenue, writes market researcher IC Insights in their latest report.

Leading Analog IC suppliers (USD million)



Rank 2018	Company	2017	2018	Change	Market share
1	Texas Instruments	9900	10801	9%	18%
2	Analog Devices*	5159	5505	7%	9%
3	Infineon	3355	3810	14%	6%
4	Skyworks Solutions	3710	3686	-1%	6%
5	ST	2551	3208	26%	5%
6	NXP	2415	2645	10%	4%
7	Maxim	2025	2125	5%	4%
8	ON Semi*	1800	1990	11%	3%
9	Microchip*	1140	1389	22%	2%
10	Renesas*	915	900	-2%	1%

* Figures include sales from acquired companies in 2017 and 2018.

TI primarily **targets industrial applications** (36% of 2018 revenue), personal electronics (23% of 2018 revenue), and automotive applications (20% of revenue) with its analog products. All three are highly profitable and afford it the best opportunities for future growth, the company said. It is worth noting that industrial and automotive applications represented 56% of TI's revenue in 2018, up from 42% just five years ago.

Maintaining second place in the analog ranking was ADI, which registered a 7% increase in analog IC sales to USD 5.5 billion in 2018. Revenue numbers shown for ADI include sales from **Linear Technology**, which ADI acquired in 1Q17 for USD 15.8 billion in cash and stock. No single customer accounted for more than 10% of ADI's 2018 sales. More recently, **ADI's largest customer was Apple, Inc.**, which accounted for 14% and 12% of total revenue in 2017 and 2016, respectively.

Each of Europe's three major IC suppliers was a top-10 analog supplier in 2018. Collectively, the three companies accounted for 15% of global analog marketshare. Climbing up one position into third place was Infineon, which grew its analog sales 14% to USD 3.8 billion and accounted for 6% marketshare. Infineon continues to expand its presence in automotive (43% of 2018 sales) and power management (31% of 2018 sales) applications. Industrial power control (17%) and chip card and security (9%) rounded out its other major end-use applications.

ST's analog sales jumped 26%—highest among the top 10 analog suppliers—to USD 3.2 billion (5% marketshare). Much of **ST's analog IC sales target motion control** (motor driver ICs and high-voltage driver ICs), **automation** (intelligent power switches), and **energy management** (powerline communication ICs) applications.

NXP was the sixth-largest analog supplier in 2018 with sales that increased 10% to USD 2.6 billion (4% marketshare). NXP sells its analog devices into many system functions **but one of its key growth areas is automotive**, where its analog chips are essential components in emerging LiDAR, vehicle network, and 5G systems.

Analog sales at ON Semiconductor increased 11% to USD 2.0 billion, which represented 3% share of the market. ON's 11% increase followed analog sales gains of 35% in 2017 and a 16% rise in 2016. Three years of strong analog sales gains at **ON were partly the result of its acquisition of Fairchild Semiconductor** in September 2016, and partly due to strong sales of power management products into the automotive market, specifically for active safety, powertrain, body electronics, and lighting applications.

Analog IC sales at Microchip Technology increased 22% in 2018. In May 2018, **Microchip closed on its USD 8.35 billion acquisition of Microsemi**, which gave a boost to Microchip's analog business in computing and communications applications.
Source: IC Insights www.icinsights.com and publication Evertiq New Media AB https://evertiq.com

STMicroelectronics charts path to $12bn

May 14, 2019 | By Nick Flaherty, eeNews Europe | Source: Click here

The management team at STMicroelectronics has charted its path to reach its target of a $12bn in the next two years through power devices, 5G and the Internet of Things.

"Silicon carbide and soon gallium nitride will be a differentiator – but we are also developing on IGBT and expanding our offer on power modules," said Jean-Marc Chery, president and CEO of STMicroelectronics, as the company predicts a turnover of between $9.45 and $9.85bn this year.

But this comes as the industry faces a slowdown that is challenging to hit the advice that the previous CEO, Carlo Bozotti gave to Chery to hit $12bn.

ST'S BOZOTTI TO CHERY: GET TO $12 BILLION QUICKLY

"Since the second half of last year we have witnessed some weakness in the market, particularly a slowdown in China for our general purpose microcontrollers, and as a result inventory started to build up in our distribution channel. As we entered 2019 some economies started to deteriorate," said Lorenzo Grandi, chief financial officer of STMicroelectronics.

"After two strong years of revenue growth we see 2019 as a temporary pause," he said. "We expect improved market conditions in the second half of the year."

"The demand is there, but OEMs and distributors are in an inventory correction," Chery told analysts in London. "It's more a mood where people are cautious on overall inventory levels which makes us confident that the end demand is there and we will have the recovery of the market in H2."

ST has added new areas such as 5G radio front end chips, both at sub 6GHz and 24GHz for a wide range of applications. It has been offering its 28nm FD-SOI process to smatphone makers, and is looking at its own devices for automotive vehicle-to-X (V2X) links, sub-GHz 5G industrial wireless for the IoT and even 5G low earth orbit satellite systems at 24GHz. It has also added phase change memory to its automotive chips as domain controllers to replace numerous electronic control units.

The company is investing in capacity with a new 300mm fab at Agrate in Italy as well as a new production plant in Asia. It is also taking over the fab in Singapore formerly run by Micron, but is cutting production to reduce inventory. "5G is a particular game changer here and a great opportunity for ST across all the market we target," said Marco Cassis, vice president of sales for STMicroelectronics. "We are now in the soft part of the semiconductor market, but beyond 2019 automotive and industrial are forecast to grow 6 to 8% and are 60 % of revenues. Automotive electrification and digitalisation are driving much faster content growth than the growth in the market."

All of this will lead to the $12bn target. "If we assume the market grows 4 to 5% over the next years we believe we can achieve this by the second half of 2021 or 2022," said Grandi.

www.st.com

SPARK Microsystems winner of the 6th annual Nokia Open Innovation Challenge for its revolutionary ultra-low power and ultra-short latency wireless platform

See also NOKIA Press Release

Jean-Luc Beylat, Fares Mubarak, Frederic Nabki and Marcus Weldon.

Montreal, Canada – SPARK Microsystems has been named the winner of the Nokia Open Innovation Challenge (NOIC) 2018 for its ultra-low power and ultra-short latency wireless transceiver technology. In addition to the US$100,000 grand prize, SPARK Microsystems will have an opportunity to collaborate with Nokia and Nokia Bell Labs resources to deploy its unique wireless platform.

Marcus Weldon, President of Nokia Bell Labs and CTO of Nokia, said, "This year's NOIC brought together many innovative startups with impressive products, technologies and solutions that will shape the world of industrial automation. While competition was tight, SPARK Microsystems was selected as the winner for its low power wireless transceiver chipset that has the potential to help 'spark' the next industrial revolution."

Fares Mubarak, CEO of SPARK Microsystems, said, "SPARK is honored to be selected as the winner of this year's prestigious award. Nokia and Nokia Bell Labs are networking, communications and wireless technologies leaders, and we look forward to collaborating on delivering innovative solutions for edge devices, sensors and wearable applications. These applications are a great fit for our ultra-low power and ultra-short latency groundbreaking wireless technology and are aligned with Nokia's vision of the future."

Frederic Nabki, cofounder and CTO of SPARK Microsystems, said, "We are proud to have our innovative wireless technology recognized by Nokia Bell Labs, a staple of innovation, and by Nokia, a visionary player in the wireless and networking spaces, behind staple wireless technologies like Bluetooth Low Energy. We believe our technology to be a great fit for edge devices and sensors within Nokia's 5G network solutions, where short latency, connection robustness, density of connections and low power consumption are paramount."

Based in Montreal, SPARK Microsystems stood out from more than 300 startups from all over the world. This year's competition focused on products and solutions for industrial automation and the Internet of Things.

Participants went through two rounds of evaluations and the top six finalists were invited to present their technology to an international jury panel at Nokia Bell Labs. The jury was led by Dr. Weldon and comprised of leaders from across Nokia, Nokia Bell Labs and NGP Capital.

About SPARK Microsystems

SPARK Microsystems is a fabless semiconductor company that is leading the way towards ultra-low power wireless communications for the Internet of Things revolution. With its patented technologies, SPARK Microsystems will bring to market a high performance wireless transceiver that allows for orders of magnitude improved power consumption and latency while providing higher data rates than competing technologies. For more information, please visit www.sparkmicro.com.

NXP to acquire Marvell's WiFi and Bluetooth Connectivity Assets

☐ **NXP to pay $1.76 Billion in cash for Marvell's WiFi and Bluetooth/BLE combo solutions portfolio**

☐ **Expands NXP's Industrial & IoT, Automotive and Communication Infrastructure footprint**

EINDHOVEN, The Netherlands, May 29, 2019 (GLOBE NEWSWIRE) -- NXP Semiconductors N.V. (NASDAQ: NXPI) announces today that its wholly owned subsidiary has entered into a definitive agreement with Marvell (NASDAQ: MRVL) under which NXP will acquire Marvell's Wireless Connectivity portfolio in an all-cash, asset transaction valued at $1.76 billion. The acquisition encompasses Marvell's WiFi Connectivity Business Unit, Bluetooth technology portfolio and related assets.

The acquisition will enable NXP to deliver complete, scalable processing and connectivity solutions to its customers across its focus end markets. The acquisition includes approximately 550 people worldwide. NXP expects the acquisition to create new revenue opportunities in its target end markets. With approximately $300 million in revenue in Marvell's fiscal 2019, NXP anticipates revenue associated with the acquired assets to double by 2022. The acquisition is expected to be accretive to NXPs non-GAAP operating profit in the first full quarter after the transaction closes.

The transaction is expected to close by the first quarter of 2020, subject to customary closing conditions, including regulatory approvals.

Marvell's connectivity team has been a pioneer in providing innovative, secure and reliable Wi-Fi and Bluetooth combo solutions for nearly two decades. The acquisition enables NXP to offer its customers a full range of wireless connectivity solutions including WiFi 4, 5, 6 and Bluetooth/ BLE combo along with its flagship edge computing platforms including I.MX, Layerscape, Kinetis, LPC and the newly introduced RT Crossover Processors to provide comprehensive, turn-key solutions for the Industrial & IoT, Automotive and Communication Infrastructure markets that simplifies customers' supply chain logistics and improves time-to-market.

"We are excited to be able to combine Marvell's world-class connectivity with NXP's industry leading embedded processing, we can offer our customer base the broadest portfolio of Edge solutions which includes tailored security and a full suite of wireless connectivity spanning WiFi, Bluetooth, Bluetooth Low Energy, Zigbee, Thread and NFC," said Richard Clemmer, chief executive officer of NXP. "I am delighted this world-class team with the right set of complementary connectivity technologies is joining NXP, enabling us to deliver on our commitment to provide Secure Connections for the Smarter World."

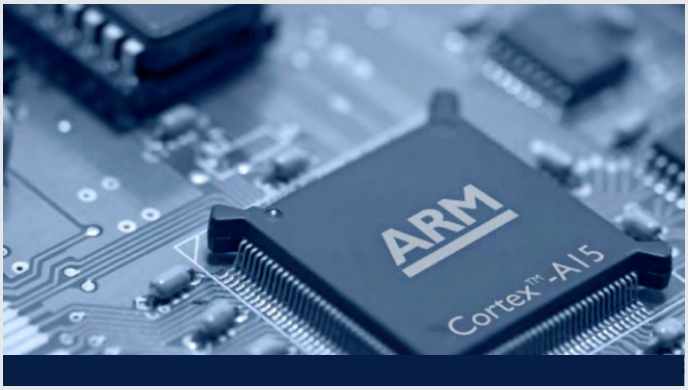
About NXP Semiconductors

NXP Semiconductors N.V. (NASDAQ: NXPI) enables secure connections and infrastructure for a smarter world, advancing solutions that make lives easier, better, and safer. As the world leader in secure connectivity solutions for embedded applications, NXP is driving innovation in the secure connected vehicle, end-to-end security & privacy, and smart connected solutions markets. Built on more than 60 years of combined experience and expertise, the company has approximately 30,000 employees in more than 30 countries and posted revenue of $9.41 billion in 2018.
Find out more at www.nxp.com.

Huawei's chipmaking ambitions at risk after Arm cuts ties

Move by key UK chip designer chokes off crucial intellectual property rights

CHENG TING-FANG and LAULY LI, Nikkei staff writers | May 23, 2019 04:12 JST



Arm's chip designs form a crucial part of the global mobile device supply chain. (Photo courtesy of Arm)

TAIPEI -- The decision by U.K.-based chip designer Arm Holdings, which provides intellectual property used in 90% of the world's mobile processors, to suspend business with Huawei Technologies raises a cloud of uncertainty over the Chinese company's long-term aim of becoming a bigger force in semiconductors. **MORE:** Click Here

Samsung Electronics' Leadership in Advanced Foundry Technology Showcased with Latest Silicon Innovations and Ecosystem Platform

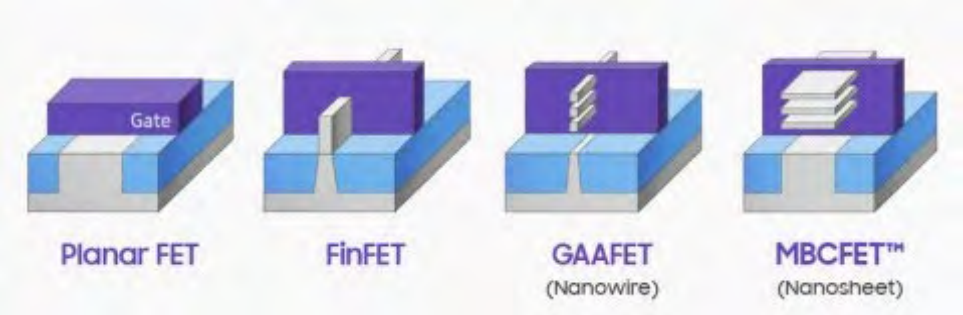
Korea -- May 15, 2019 -- Samsung Electronics, a world leader in advanced semiconductor technology, today announced its ongoing commitment to foundry innovation and service at the Samsung Foundry Forum 2019 USA, providing the silicon community with wide-ranging updates on technology advances that support the most demanding applications of today and tomorrow.

The event, held today in Santa Clara, California, features top Samsung executives and industry experts reviewing progress on semiconductor technologies and foundry platform solutions that enable developments in artificial intelligence (AI), machine learning, 5G networking, automotive, the Internet of Things (IoT), advanced data centers and many other domains.

"We stand at the verge of the Fourth Industrial Revolution, a new era of high-performance computing and connectivity that will advance the daily lives of everyone on the planet," said Dr. ES Jung, President and head of Foundry Business at Samsung Electronics.

"Samsung Electronics fully understands that achieving powerful and reliable silicon solutions requires not only the most advanced manufacturing and packaging processes as well as design solutions, but also collaborative foundry-customer relationships grounded on trust and shared vision. This year's Foundry Forum is filled with compelling evidence of our commitment to progress in all those areas, and we're honored to host and converse with our industry's best and brightest," Dr. Jung added.

Highlights from the U.S. Foundry Forum include:



The New 3nm GAE PDK Version 0.1 is Ready

Samsung's 3nm Gate-All-Around (GAA) process, 3GAE, development is on track. The company noted today that its Process Design Kit (PDK) version 0.1 for 3GAE has been released in April to help customers get an early start on the design work and enable improved design competitiveness along with reduced turnaround time (TAT).

Compared to 7nm technology, Samsung's 3GAE process is designed to provide up to a 45 percent reduction in chip area with 50 percent lower power consumption or 35 percent higher performance. The GAA-based process node is expected to be widely adopted in next-generation applications, such as mobile, network, automotive, Artificial Intelligence (AI) and IoT.

Conventional GAA based on nanowire requires a larger number of stacks due to its small effective channel width. On the other hand, Samsung's patented version of GAA, MBCFET™ (Multi-Bridge-Channel FET), uses a nanosheet architecture, enabling greater current per stack.

While FinFET structures must modulate the number of fins in a discrete way, MBCFET™ provides greater design flexibility by controlling the nanosheet width. In addition, MBCFET™'s compatibility with FinFET processes means the two can share the same manufacturing technology and equipment, which accelerates process development and production ramp-up.

Samsung recently taped out the 3GAE test vehicle design and will focus on improving its performance and power efficiency going forward.

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Samsung Electronics' Leadership in Advanced Foundry Technology

... from previous page

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The Launching of a New SAFE™–Cloud Program

As part of its ongoing efforts to support and enhance customers' entire design workflow, Samsung Electronics launched the Samsung Advanced Foundry Ecosystem Cloud (SAFE™-Cloud) program. It will provide customers with a more flexible design environment through collaboration with major public cloud service providers, such as Amazon Web Services (AWS) and Microsoft Azure, as well as leading Electronic Design Automation (EDA) companies, including Cadence and Synopsys.

To date, most foundry customers have built and managed design infrastructure on their own servers. The SAFE™-Cloud program reduces this burden and supports easier, faster and more efficient design efforts by providing an excellent turnkey design environment with extensive process information (PDK, design methodologies), EDA tools, design assets (IP, library) and design services.

Customers can be assured of as much server and storage space as they need, as well as a safe environment optimized for chip design, due to Samsung Electronics' verification of SAFE™-Cloud's security, applicability and expandability.

Utilizing the SAFE™-Cloud platform, Samsung was able to accelerate the development of its 7nm and 5nm cell libraries in collaboration with Synopsys. In addition, Samsung, Gaonchips – a fabless design company in Korea – and Cadence have successfully completed design verification based on the platform.

"Making up-front investments in high-performance computing (HPC) servers and systems can be a challenge for a company like us," said Kyu Dong Jung, CEO of Gaonchips. "SAFE™-Cloud offers us a very flexible design environment without requiring investment in additional infrastructure, as well as reduced design TAT. I expect this program to provide more tangible business and technical benefits to us and the entire fabless industry."

Process Technology Roadmap and Advanced Packaging Updates

Samsung's roadmap includes four FinFET-based processes from 7nm down to 4nm that leverage extreme ultraviolet (EUV) technology as well as 3nm GAA, or MBCFET™.

In the second half of this year, Samsung is scheduled to start the mass production of 6nm process devices and complete the development of 4nm process.

The product design of Samsung's 5nm FinFET process, which was developed in April, is expected to be completed in the second half of this year and go under mass production in the first half of 2020.

Extensions of the company's FD-SOI (FDS) process and eMRAM together with an expanded set of state-of-the-art package solutions were also unveiled at this year's Foundry Forum. Development of the successor to the 28FDS process, 18FDS, and eMRAM with 1Gb capacity will be finished this year. Click here to read more ...

Temperature monitoring and protection

Design considerations for smarter, smaller and high-accuracy temperature sensors to enable enhanced system performance and control.

e-book from Texas Instruments - Introduction

In designing personal electronics, industrial or medical applications, engineers must address some of the same challenges: how to increase performance, add features and shrink form factors. Along with these considerations, they must carefully monitor temperature to ensure safety and protect systems and consumers from harm.
Another trend spanning numerous industries is the need to process more data from more sensors, further necessitating the importance of temperature measurement—not just to measure system or environmental conditions, but to compensate for other temperature-sensitive components in order to maintain both sensor and system accuracy. As an added benefit, accurate temperature monitoring can increase system performance and reduce costs by removing the need to overdesign systems to compensate for inaccurate temperature measurements.

Temperature design challenges fall into three categories:

- **Temperature monitoring:** Temperature sensors provide valuable data for continuously tracking thermal conditions, and provide feedback to control systems. This can be system temperature monitoring or environmental temperature monitoring. In several applications we can see design challenges where both are required to be implemented in the control loop. These include system temperature monitoring, ambient temperature monitoring and body or fluid temperature monitoring.

- **Temperature protection:** Several applications require action once the system goes above or below functional temperature thresholds. Temperature sensors provide output alerts upon the detection of defined conditions to prevent system damage. It is possible to enhance processor throughput without compromising system reliability. Systems often initiate a safe thermal shutdown too soon, effectively losing up to 5°C or even 10°C of performance. When the system goes above or below functional temperature thresholds, engineers can autonomously initiate actions for real-time protection.

- **Temperature compensation:** Temperature sensors can maximize the performance of a system as temperature changes during normal operations. Monitoring and correcting the drift of other critical components as they heat up and cool down reduces the risk of system failure.

This e-book features TI application briefs that present design considerations for various applications using different temperature-sensing technologies. The chapters first describe the main temperature challenges, followed by a focus on design considerations for applications, assessing trade-offs between temperature accuracy and application size while considering sensor placement. If you have feedback about the topics covered here or any other temperature monitoring and protection questions, please submit them to the Sensors forum on the TI E2E™ Community.

Download the e-book

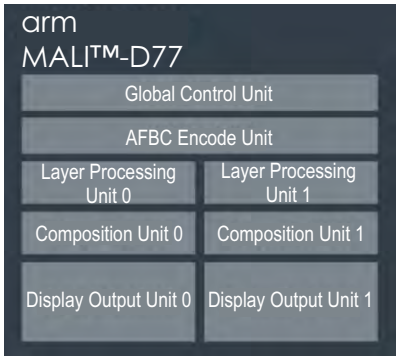
Making virtual more of a reality with the New Arm Mali-D77 Display Processor

By Nandan Nayampally, vice president and general manager, Client Line of Business, Arm

May 15, 2019 -- Considering that Arm-based chips power 99% of the world's smartphones today, I often get asked: with all the innovation, what's still holding the industry back from delivering a true virtual reality (VR) experience? As consumer interest in this space continues to grow, so do the demands on the technology. While desktop solutions have shown what is possible in terms of performance, it still delivers a constrained and tethered experience. Users want to see greater immersion and smoother performance, of course, but from untethered, lighter devices. Yet developing the hardware to meet the performance demand, while maintaining the required efficiency for an untethered experience that consumers crave remains a challenge. At the heart of this challenge is the display, which sets the tone for the VR on devices, from the quality of the visuals to latency.
Enabling VR to be a common part of the user experience on billions of devices worldwide is the long-term goal. Arm is meeting the challenge with the all new Arm® Mali™-D77 display processing unit (DPU) which will take VR to the next level by tackling display challenges head-on.

Less virtual, more reality with all new VR functionality
The brand-new VR acceleration functions we've added to Mali-D77 are what sets it apart from other display processors in market. For example, Mali-D77 enables offloading of specific compute functions from GPU to DPU leading to higher quality visuals and eliminating motion sickness, freeing up more GPU cycles and associated system bandwidth. Other Mali-D77 enhanced capabilities include:

- Lens Distortion Correction (LDC): pre-distorts the images to counter the effect of the lens so that when they are viewed through the lenses of any VR headset they appear correct and undistorted.
- Chromatic Aberration Correction (CAC): pre-separates the color channels in the opposite direction in order to counteract the blurring effect caused by the lenses of the VR headset.
- Asynchronous Timewarp (ATW): translates and re-projects the virtual scene based on the latest head pose and position of the headset in the 3D space.



Bandwidth and power savings for consumer-friendly devices
As I mentioned earlier, more consumer-friendly VR devices that are lighter, smaller, untethered, and comfortable will be enabled by the system bandwidth and power consumption savings from the Mali-D77:

- Up to 40 percent reduction in bandwidth, in typical VR use cases when VR processing and composition happens on Mali-D77.
- A no-compromise 12 percent power savings for VR workloads, enabling higher quality visuals while freeing up GPU cycles.

A versatile display technology
Beyond VR head-mounted displays (HMDs), the versatile Mali-D77 brings benefits to other devices, displays and use cases. For example, Mali-D77 can be integrated into a common SoC platform with existing developer ecosystems for switching across multiple devices such as a VR HMD to LCD/OLED large or small screens capable of displaying 4K HDR scenes. By doing this, VR devices can become more affordable and accessible to consumers.

A game-changing display technology for VR
Display is the proverbial last mile on the journey to truly untethered and immersive VR experiences. As such, we designed the Mali-D77 with the goal of accelerating this journey for both hardware and software developers to show consumers what's possible, and turn untethered VR from being a nice-to-have to a must-have.
For more in-depth technical details on Mali-D77, visit our blog.

Supplemental Quote Sheet:
"Panels designed for VR Headsets will be capable of displaying resolutions and frame rates of up to 2Kx2K @90Hz per eye by 2020. Through introducing new VR image processing functions in hardware, Arm Mali-D77 raises the bar in terms of resolution, frame rate and image quality that can be driven towards a VR panel. We are excited about the launch of Arm Mali-D77, and what we see as the start of a closer collaboration between us and Arm." - Philip Yuan from BOE Technology Group, a global leader in semiconductor display industry.
"The Mali-D77 DPU is exactly the product needed in the market to drive higher resolutions (over 1000ppi) VR displays. Arm and Synaptics are in an early collaboration phase to enable an optimal solution for foveated transport across Mali-GPU, Mali-D77 and **Synaptics'** R63455 VR display solution with the ultimate aim of driving higher resolution without increasing the overall cost for future VR devices." - Jeff Lukanc, senior director of Marketing, Synaptics, a leader in human interface hardware and software.

About Arm
Arm technology is at the heart of a computing and connectivity revolution that is transforming the way people live and businesses operate. Our advanced, energy-efficient processor designs have enabled intelligent computing in more than 130 billion chips and our technologies now securely power products from the sensor to the smartphone and the supercomputer. In combination with our IoT device, connectivity and data management platform, we are also enabling customers with powerful and actionable business insights that are generating new value from their connected devices and data. Together with 1,000+ technology partners we are at the forefront of designing, securing and managing all areas of compute from the chip to the cloud.

RapID Platform - TSN* Evaluation Kit

Network Interface Evaluation Kit Contents:

- 2-port TSN Ethernet Module
- Standard Ethernet Module
- Baseboard with Power Supply
- RJ-45 Ethernet Cable

The TSN Evaluation Kit is configured to provide TSN Gateway functionality in order to quickly assess TSN features and capabilities and better understand how TSN works. From there, it is possible to utilize fido5000 Real-time Ethernet Multi-protocol (REM) Switch chip to provide a TSN solution in your product's application. The figure below shows how the TSN Kit architecture relates to a "partitioned" communication architecture and to an "integrated" communications architecture.

Using the TSN gateway functionality allows a non-TSN device to participate in a TSN network without implementing TSN-specific features natively. The TSN gateway has built-in features from the following IEEE specifications:

☐ 802.1AS, AS-REV – Time Synchronization
☐ 802.1Qbv – Scheduled Traffic
☐ 802.1Qci – Ingress Policing
☐ 802.1CB – Seamless Redundancy
☐ 802.1Qcc – Stream Reservation Protocol
☐ 802.1Qbu / 802.3br – Preemption

The TSN gateway comes pre-installed with software that supports 802.1AS, 802.1Qbv, 802.1Qcc, and stream translation. Software updates will be provided to add TSN features and correct any interoperability issues. 802.1Qcc is currently implemented using a webserver, but will ultimately be implemented so the gateway can be configured by a Central Network Controller (CNC).

MORE:

User Guides: TSN Evaluation Kit Quick Start Guide (PDF)
Evaluation Documentation: TSN Evaluation Kit (PDF)
Videos: Ethernet/IP Over Time Senstive Networking (TSN)

Click Here: https://www.analog.com/en/design-center/evaluation-hardware-and-software/evaluation-boards-kits/eval-rapid-tsnek.html#eb-overview

* TSN = Time Sensitive Networking

New Cadence Tensilica Vision Q7 DSP IP Doubles Vision and AI Performance for Automotive, AR/VR, Mobile & Surveillance Markets

Delivers up to 1.82TOPS with instruction set enhancements optimized for SLAM algorithms

SAN JOSE, Calif. -- May 15, 2019 -- Cadence Design Systems, Inc. (NASDAQ: CDNS) today expanded the high end of its popular Tensilica® Vision DSP product family with the introduction of the Cadence® Tensilica Vision Q7 DSP delivering up to 1.82 tera operations per second (TOPS). To address the increasing computational requirements for embedded vision and AI applications, the sixth-generation Vision Q7 DSP provides up to 2X greater AI and floating-point performance in the same area compared to its predecessor, the Vision Q6 DSP. The Vision Q7 DSP is specifically optimized for simultaneous localization and mapping (SLAM), a technique commonly used in the robotics, drone, mobile and automotive markets to automatically construct or update a map of an unknown environment, and in the AR/VR market for inside-out tracking. For more information, visit www.cadence.com/go/visionq7.

Escalating demand for image sensors in edge applications is driving growth of the embedded vision market. Today's vision use cases demand a mix of both vision and AI operations, and edge SoCs require highly flexible, high-performance vision and AI solutions operating at low power. In addition, edge applications that include an imaging camera demand a vision DSP capable of performing pre- or post-processing before any AI task. While performing SLAM, edge SoCs also require a computational offload engine to increase performance, reduce latency and further lower power for battery-operated devices. Because SLAM utilizes fixed- and floating-point arithmetic to achieve the necessary accuracy, any vision DSP employed for SLAM must provide higher performance for both data types.

With its low power and architectural and instruction set enhancements, the Vision Q7 DSP is ideally suited for the most demanding edge vision and AI processing requirements and boosts performance for a number of key metrics:

- Very long instruction word (VLIW) SIMD architecture delivers up to 1.7X higher TOPS compared to the Vision Q6 DSP in the same area
- An enhanced instruction set supporting 8/16/32-bit data types and optional VFPU support for single and half precision enables up to 2X faster performance on SLAM kernels compared to the Vision Q6 and Vision P6 DSPs
- Delivers up to 2X improvement in floating-point operations per mm2 (FLOPS/mm2) for both half precision (Fp16) and single precision (FP32) compared to the Vision Q6 and Vision P6 DSPs
- Up to 2X greater AI performance in the same area compared to the Vision Q6 DSP results in up to 2X improvement in GMAC/mm2 compared to the Vision Q6 DSP

For AI applications, the Vision Q7 DSP provides a flexible solution delivering 512 8-bit MACs, compared to 256 MACs for the Vision Q6 DSP. For greater AI performance, the Vision Q7 DSP can be paired with the Tensilica DNA 100 processor. In addition to computational performance, the Vision Q7 DSP boasts a number of iDMA enhancements including 3D DMA, compression and a 256-bit AXI interface. The Vision Q7 DSP is a superset of the Vision Q6 DSP, which preserves customers' existing software and enables an easy migration from the Vision Q6 or Vision P6 DSPs.

"The applications for visual AI are very diverse and are growing very fast, and these applications have huge appetites for computing performance. Achieving the required levels of performance with acceptable cost and power consumption is a common challenge, particularly as vision is increasingly deployed into cost-sensitive and battery-powered devices," said Jeff Bier, founder of the Embedded Vision Alliance. "I applaud Cadence for its commitment to address this challenge by developing a series of processing engines tuned for the needs of visual AI applications."

"We developed and deployed our AI and vision-based applications on the past two generations of Cadence Vision DSPs. The 2X increase in both vision and AI performance provided by the Tensilica Vision Q7 DSP will be particularly beneficial for SLAM, where low latency is key," said Frison Xu, marketing VP at ArcSoft. "This performance increase will allow us to develop new camera applications including products with multiple image sensors."

"Together with Cadence and our customers, we ported our face detection and vision technology for applications where high performance, low power and low latency are critical," said David Shen, senior product marketing director at Megvii. "Cadence offers one of the best vision and AI platforms, including the necessary software tools and libraries to showcase our technology.

"For edge computing in our target markets, offloading vision applications on a high-performance, low-power, highly flexible DSP is a must," noted Lazaar Louis, sr. director product management & marketing for Tensilica IP at Cadence. "Cadence has a long and successful track record spanning six generations of Vision DSPs, and the Vision Q7 DSP was designed to address the needs of our key customers deploying highly complex vision and AI algorithms, including SLAM for perception. The Vision Q7 DSP strengthens our very successful automotive portfolio, bringing leading-edge computation to the 'computer in the car' that can be compliant with safety requirements like ISO 26262."

The Vision Q7 DSP supports AI applications developed in the Caffe, TensorFlow and TensorFlowLite frameworks through the Tensilica Xtensa® Neural Network Compiler (XNNC), which maps neural networks into executable and highly optimized high-performance code for the Vision Q7 DSP. The Vision Q7 DSP also supports the Android Neural Network (ANN) API for on-device AI acceleration in Android-powered devices, and the software environment also features complete and optimized support for more than 1,700 OpenCV-based vision library functions, enabling fast, high-level migration of existing vision applications. In addition, development tools and libraries are all designed to enable SoC vendors to achieve ISO 26262 automotive safety integrity level D (ASIL D) certification.

About Cadence: www.cadence.com. **Note about Tensilica:** Cadence acquired Tansilica in March 2013 for $380Mio.

TI One-page Overview & Dashboard

Go Directly to TI Semiconductor Product Groups

Amplifiers	DLP® products	Motor drivers	Space & harsh
Audio	Interface	Power management	Switches & MUXs
Clock & timing	Isolation	Processors & DSPs	Wireless connectivity
Data converters	Logic	RF & microwave	
Die & wafer services	Microcontrollers	Sensors	

All Products Info by Group: Click Here at any time and select PRODUCT

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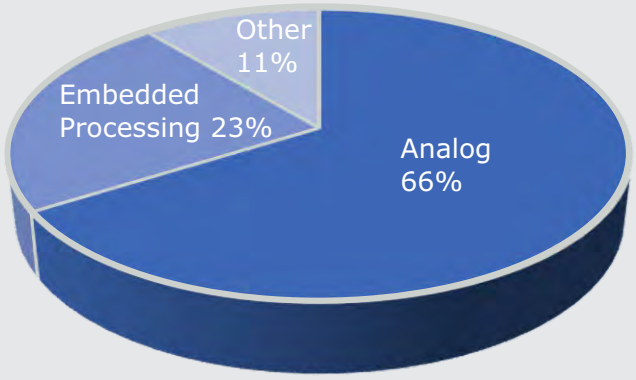
TI Major Markets

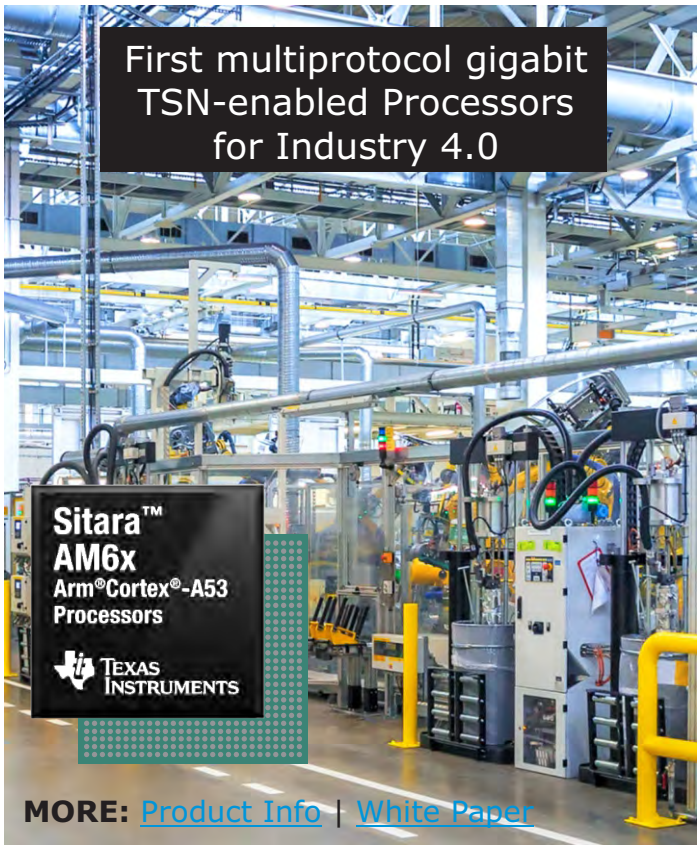
2018 Revenue: $15.78 billion



Analog and embedded processing products are pervasive technologies; they underpin most electronic products today and are the enablers of the electronics of tomorrow.

MORE: TI Company Presentation

Industry 4.0



MORE: Product Info | White Paper

STMicroelectronics Makes IoT Sensing Accessible with IoT Plug and Play, Ready to Connect to Microsoft Azure

- Multiple user modes make SensorTile.box adaptable and flexible
- Suitable for prototyping or as a module in commercial products
- Certified for out-of-the-box connection to Microsoft Azure IoT Central on Azure

Geneva / 07 May 2019 -- STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, is launching SensorTile.box to help everyone from young people to expert designers discover the power of IoT and quickly understand how they can easily collect and send sensor information to the cloud.

The flexible IoT Plug and Play module connects easily with Bluetooth® Low Energy to a smartphone, allowing users to watch the sensors function as a pedometer, asset tracker, environmental monitor, or as other instruments. For more experienced designers, SensorTile.box provides developer and expert modes that help build sophisticated applications using a graphical wizard or by writing custom embedded code.

Attracted by its ease of use and relevance to all users across its full range of customers from consumers and beginners to IoT professionals, SensorTile.box will be showcased as a new demonstration platform for Azure IoT Central, which simplifies connecting smart devices to the cloud for data capture and analysis.

Andrea Onetti, General Manager of ST's MEMS Sensor Division said, "SensorTile.box is uniquely flexible. It can be configured for users of any skill level to support learning, prototyping, or even as a module within a commercial end-product. Now IoT Plug and Play certified and compatible with IoT Central, it connects out-of-the-box with Azure IoT to further extend opportunities for learning and new-product development."

Tony Shakib, Principal Group PM Manager, Microsoft IoT Business Acceleration at Microsoft Corp. added, "SensorTile.box will be showcased as a demonstration platform for Azure IoT Central, which aims to help everyone understand the benefits of IoT and the cloud and show them how easy it is to connect."

SensorTile.box contains ST MEMS devices for motion, context, and environmental sensing housed in a robust 57mm x 38mm x 20mm IP54 plastic container, and is expected to be available from the beginning of June from www.st.com/sensortilebox or from ST's distributors.

The commercial module and associated services are provided by FAE Technology, an authorized ST Partner company. Please visit fae.technology/sensortilebox for further information.

Additional technical information:
SensorTile.box serves a wide range of sensing, tracking, and monitoring use cases and is delivered ready to use with a 500mAh lithium battery and 8GB microSD card already fitted. The on-board sensors leverage ST's broad portfolio of proven high-performance MEMS[1] devices and are managed using an ultra-low-power STM32L4R9* microcontroller.

They include:

- STTS751 high-accuracy temperature sensor
- LSM6DSOX low-power 6-axis inertial measurement unit (IMU) with Machine Learning Core (MLC)
- LIS3DHH and LIS2DW12 3-axis accelerometers
- LIS2MDL magnetometer
- LPS22HH pressure sensor/altimeter
- MP23ABS1 analog microphone
- HTS221 humidity sensor

Plug and Play module for learning and developing

In addition to pedometer, asset-tracking, and environmental-monitoring applications, beginners can also explore vibration monitoring, data recording, inclinometer/level-sensing, digital compass, and baby-monitoring applications.

Extra flexibility in developer mode lets users activate or shut down individual sensors to optimize power consumption, leverage sensor fusion by combining data from multiple sensors to improve overall accuracy, and individually calibrate sensors after final assembly using dedicated internal routines. In addition, the LSM6DSOX machine-learning core and AI extensions to the STM32Cube development ecosystem allow advanced users to run neural networks for sophisticated pattern recognition such as activity tracking and audio-scene classification.

Professional users can also develop powerful applications quickly and efficiently within the STM32 Open Development Environment (STM32 ODE), leveraging the STM32CubeMX configurator and code generator, and the STLink-V3 programmer and debugger.

You can also read our blogpost at https://blog.st.com/sensortile-box-sensor/

Infineon to acquire Cypress, strengthening and accelerating its path of profitable growth

Infineon CEO Ploss: "Landmark step in Infineon's strategic development. We will be able to offer our customers the most comprehensive portfolio for linking the real with the digital world."

- Combination of highly complementary technology portfolios opens up great potential in high-growth target markets automotive, industrial and Internet of Things (IoT)
- Infineon to pay US$23.85 per Cypress share, equivalent to a total enterprise value of €9.0 billion
- Transaction expected to yield €180 million in cost synergies per annum by 2022 and more than €1.5 billion annual revenue synergies in the long-term
- Transaction expected to be accretive to earnings beginning in the first full year after closing and to close by end of calendar year 2019 or early 2020
- Future target operating model after integration: 9+ percent revenue growth, 19 percent segment result margin and 13 percent investment-to-sales ratio

Munich, Germany, and San Jose, California – 3 and 2 June 2019 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) and Cypress Semiconductor Corporation (NASDAQ: CY) today announced that the companies have signed a definitive agreement under which Infineon will acquire Cypress for US$23.85 per share in cash, corresponding to an enterprise value of €9.0 billion.

Reinhard Ploss, CEO of Infineon, said: "The planned acquisition of Cypress is a landmark step in Infineon's strategic development. We will strengthen and accelerate our profitable growth and put our business on a broader basis. With this transaction, we will be able to offer our customers the most comprehensive portfolio for linking the real with the digital world. This will open up additional growth potential in the automotive, industrial and Internet of Things sectors. This transaction also makes our business model even more resilient. We look forward to welcoming our new colleagues from Cypress to Infineon. Together, we will continue our shared commitments to innovation and focused R&D investments to accelerate technology advancements."

Hassane El-Khoury, President and CEO of Cypress, said: "The Cypress team is excited to join forces with Infineon to capitalize on the multi-billion dollar opportunities from the massive rise in connectivity and computing requirements of the next technology waves. This announcement is not only a testament to the strength of our team in delivering industry-leading solutions worldwide, but also to what can be realized from uniting our two great companies. Jointly, we will enable more secure, seamless connections, and provide more complete hardware and software sets to strengthen our customers' products and technologies in their end markets. In addition, the strong fit of our two companies will bring enhanced opportunities for our customers and employees."

Steve Albrecht, Chairman of the Board of Directors of Cypress, said: "For the past three years, our Cypress 3.0 strategy has delivered tremendous results and restructured the entire organization to focus on markets that matter. After receiving interest from several companies, we entered into a transaction that is a testament to our team's strategy and hard work. For Cypress shareholders, the combination of continued dividends through closing plus the US$23.85 cash price represents significant value creation. This transaction will create product opportunities that are increasingly important in the competitive automotive, industrial, and consumer markets. As Board members, we are grateful for Cypress's outstanding management team, led by Hassane El-Khoury."

More robust positioning in high-growth markets

With the addition of Cypress, Infineon will consequently strengthen its focus on structural growth drivers and serve a broader range of applications. This will accelerate the company's path of profitable growth of recent years. Cypress has a differentiated portfolio of microcontrollers as well as software and connectivity components that are highly complementary to Infineon's leading power semiconductors, sensors and security solutions. Combining these technology assets will enable comprehensive advanced solutions for high-growth applications such as electric drives, battery-powered devices and power supplies. The combination of Infineon's security expertise and Cypress's connectivity know-how will accelerate entry into new IoT applications in the industrial and consumer segments. In automotive semiconductors, the expanded portfolio of microcontrollers and NOR flash memories will offer great potential, especially in light of their growing importance for advanced driver assistance systems and new electronic architectures in vehicles.

With the addition of Cypress's strong R&D and geographical presence in the U.S, Infineon not only strengthens its capabilities for its major customers in North America, but also in other important geographical regions. The company adds to its R&D presence in Silicon Valley and gains presence, as well as market share, in the strategically important Japanese market. At the same time, Infineon aims to achieve significant economies of scale, making Infineon's business model even more resilient. Based on pro forma revenues of €10 billion in FY 2018, the transaction will make Infineon the number eight chip manufacturer in the world. In addition to its already leading position in power semiconductors and security controllers, Infineon will now also become the number one supplier of chips to the automotive market. https://www.infineon.com/cms/en/

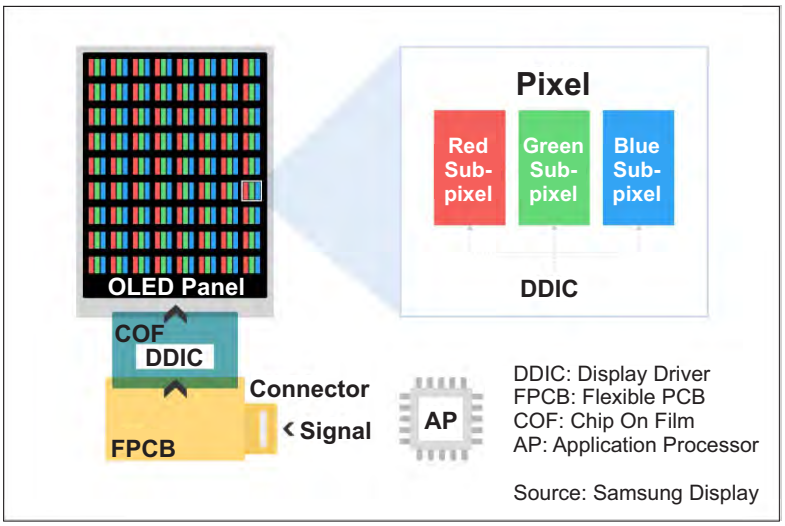
MagnaChip and ELAN Microelectronics Announce Partnership to Expand OLED Display Capabilities for Next-Generation Applications

MagnaChip's New Industry Initiative Targets Applications in Smartphones and Mobile Devices and Computing, Industrial and Automotive Segments

SEOUL, South Korea and SAN JOSE, Calif., April 9, 2019 /PRNewswire/ -- MagnaChip Semiconductor Corporation ("MagnaChip" or the "Company") (NYSE: MX), a designer and manufacturer of analog and mixed-signal semiconductor products, and ELAN Microelectronics Corp. (TWSE:ELAN), an industry leader in the development of Smart Human Machine Interface (HMI) applications, including capacitive touchscreen controllers, capacitive trackpads, and fingerprint sensors, today announced a partnership to expand the capabilities of OLED displays for a wide variety of next-generation consumer, communication, computing and industrial products, as well as for automotive displays.

The partnership seeks to build upon the recent growth and market penetration of OLED displays in areas such as smartphones, mobile devices, tablets and automotive applications, ranging from navigation and infotainment screens to brake light and interior lighting systems. OLED technology enables screens to display rich and highly saturated colors while emitting low power consumption. Flexible OLED display driver ICs (DDIC) enable curved screens for smartphones, tablets and other devices.

Further, customer demand for stylus input on screens continues to grow and MagnaChip, as the world's largest independent volume provider of OLED DDIC components, with more than 400 million units shipped, will collaborate in seeking to bring ELAN's stylus technologies to both rigid and flexible OLED Displays through this partnership. Currently, ELAN supports pen protocols defined by Microsoft, Wacom, and Huawei and has enabled stylus features on smartphones, tablets, and Notebook PCs for Out-Cell, On-Cell and In-Cell LCDs. MagnaChip believes it will enhance its leadership position in OLED DDIC by co-developing with ELAN new protocols with advanced features for the future.



Specifically, MagnaChip expects the collaboration with ELAN to improve its OLED DDIC technologies for next-generation applications by supporting ELAN's development of de facto industry standard stylus solutions optimized for its OLED display drivers.

"By working with MagnaChip we believe we can develop optimized OLED display solutions that can become de-facto industry standards," said I. H. Yeh, Chairman and CEO of ELAN Microelectronics. "OLED displays across multiple product sectors have shown impressive growth in recent years and we believe integrating our advanced fingerprint and touch IC technology with OLED DDIC technology will create compelling benefits for consumer and industrial product manufacturers. It is my honor that MagnaChip, the largest independent supplier of OLED DDIC, and ELAN, the leader in stylus touch controllers, can collaborate to bring advanced stylus features to the world of OLED."

"By working with industry leaders such as ELAN, our goal is to create combined hardware offerings that provide industry leading product features and benefits for our customers," said YJ Kim, CEO of MagnaChip Semiconductor. "And by collaborating with other industry leaders as part of our broader industry initiative, we believe MagnaChip can help accelerate product innovation, shorten time to market, and provide compelling OLED display solutions to the consumer, communications, computing, industrial and automotive markets."

About ELAN Microelectronics Corporation

ELAN Microelectronics Corporation is an IC design house founded in May of 1994 to embark in the R&D of integrated circuit and offers touchpad module solutions. ELAN's headquarters is located in Taiwan Hsinchu Science Park, and has its touchpad module factory located in Chung Ho City, Taipei County. It also has branch offices and customer service centers in the USA, Shenzhen (China), Shanghai, and Hong Kong. ELAN is listed in the Taiwan Stock Exchange since September 2001 and as of this date, its capital has accumulated to NTD 3039M.
For more information, please visit www.emc.com.tw.

About MagnaChip Semiconductor

MagnaChip is a designer and manufacturer of analog and mixed-signal semiconductor platform solutions for communications, IoT, consumer, industrial and automotive applications. The company's Standard Products Group and Foundry Services Group provide a broad range of standard products and manufacturing services to customers worldwide. MagnaChip, with about 40 years of operating history, owns a portfolio of approximately 3,000 registered patents and pending applications, and has extensive engineering, design and manufacturing process expertise.
For more information, please visit www.magnachip.com.

Hearables:
Bosch brings smart features to your ear

Enabling new user interactions and accurate activity tracking

- New BMA456 accelerometer variant with integrated hearable features

- Low power consumption for a longer battery life

- Broad portfolio of sensing solutions for the fast-growing hearables market

- Visit Bosch Sensortec at Sensors Expo & Conference: Booth 331

2 x 2 x 0.65 mm³

Bosch Sensortec announces a new variant of its high-performance BMA456 accelerometer at Sensors Expo & Conference in San Jose, California. The BMA456 hearable accelerometer is the industry's only accelerometer with optimized hearable features integrated in one sensor and complements the existing BMA456 wearable variant. Manufacturers can now design smaller and more accurate hearables with lower power consumption while increasing their performance. Hearables include devices such as standard or sports earbuds, hearing aids or high-end hearables like gaming headsets.

"Bosch Sensortec's many years of experience in the areas of signal processing and ultra-low power MEMS sensor design are key to helping manufacturers create the next generation of hearables," says Dr. Stefan Finkbeiner, CEO of Bosch Sensortec. "The new BMA456 is a great example of how Bosch leverages its experience and know-how, adapting proven wearable technologies for the developing hearables market."

Hearables are a fast-growing market segment, and a major growth driver in the wearables space. Based on data from SAR Insight & Consulting, the market for True Wireless Earbuds (TWE) is expected to grow to almost 180 million units by 2023.

"Accelerometers have played a pivotal role in extending the possibilities for hearables, enabling sensing for initiating voice assistant systems, head gesture control and body movement tracking and more," says Peter Cooney, Founder and Research Director, SAR Insight & Consulting, "As the TWS market continues to expand rapidly, there are many interesting opportunities for sensor vendors to enable interesting and innovative products offering substantial market potential".

A broad range of hearable features

The new BMA456 accelerometer variant integrates hearable-specific gestures for intuitive user interactions such as tap, double-tap and triple-tap. Thereby, the user can, for example, conveniently control playback, manage the volume, or accept and decline calls. All of these functions are carried out within the BMA456 itself, thus eliminating the need to wake up a power-hungry application processor. These features and its extremely low height of 0.65 mm make the BMA456 a perfect fit for Truly Wireless Stereo (TWS) headsets and midrange hearables used for entertainment and in everyday life.

Another feature is power management. To limit power consumption, the BMA456 accelerometer accurately distinguishes between motion and no-motion, switching itself and the device to a low-power mode. In addition, the sensor enables low-power in-ear and out-of-ear recognition that could, for example, instantly pause playback when the user removes the hearable from their ear and set the entire system to sleep mode.

The BMA456 also includes a low-power step counter and step detector that is specifically optimized for hearables. In combination with the sophisticated activity recognition feature that detects walking, running and standing still, the BMA456 hearable variant is a perfect fit for sports and activity-tracking hearables that operate with smartphones or stand-alone.

Manufacturers can flexibly configure the default parameter sets of these features to improve the performance of their devices. The sensor's low noise of 120 µg√Hz, low offset of ±20 mg and low TCO of 0.35 mg/K further improve the accuracy of the device. Users thereby benefit from an intuitive user experience, accurate activity tracking and an extended battery life.

Comprehensive product portfolio for hearables

Bosch Sensortec offers a comprehensive portfolio of sensing solutions for hearables, so manufacturers can find the optimal solution for any hearable application, whether it be for sports, hearing aids, standard earbuds or high-end hearables such as gaming headsets.

The product portfolio for hearables includes accelerometers (BMA456, BMA400), magnetometers (BMM150), inertial measurement units (BMI270), pressure sensors (BMP388) and smart sensors (BHA260, BHI260).

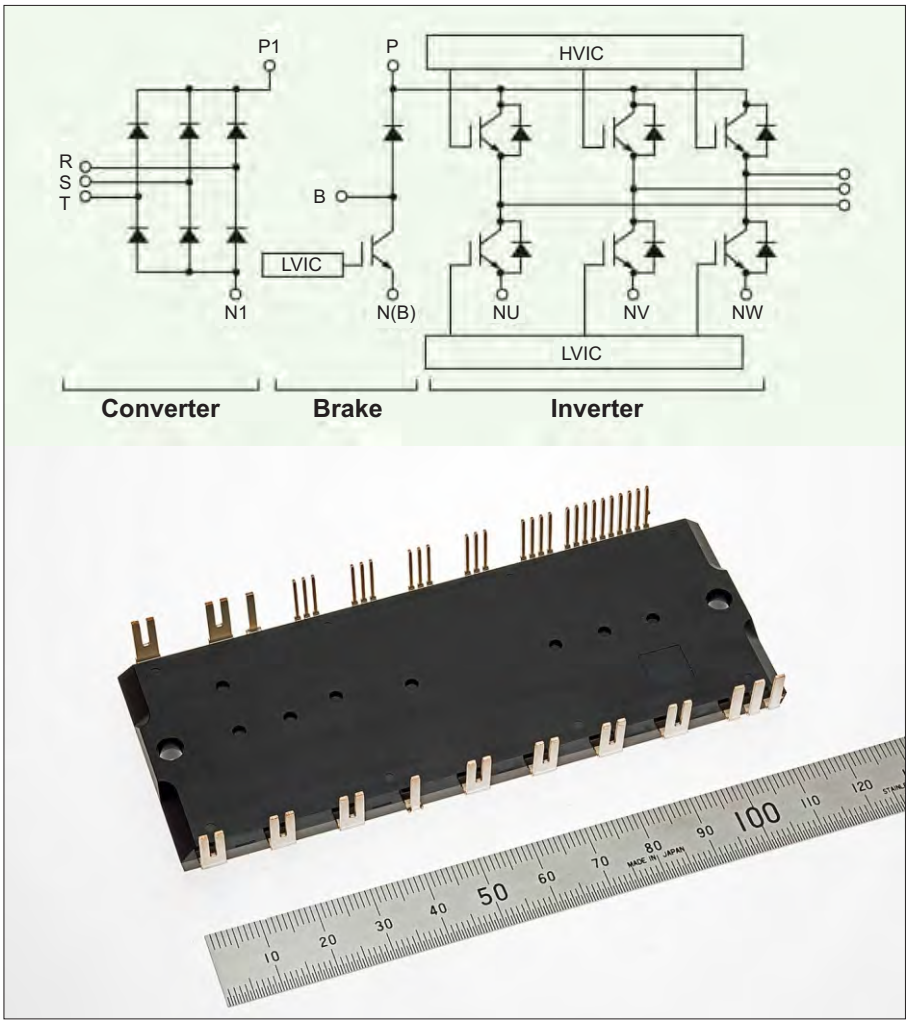
Package and availability

The BMA456 hearable variant comes in a tiny package measuring 2 x 2 x 0.65 mm³. This variant will be available via Bosch Sensortec's distributors in July 2019. Read more about BMA456.

Mitsubishi Electric to Launch Large DIPIPM+ Series Transfer-Molded Intelligent Power Modules Rated up to 100A/1200V for 56kW-Class Inverters

Simpler and more compact designs for inverter systems in air conditioners and industrial applications

TOKYO, May 7, 2019 - Mitsubishi Electric Corporation (TOKYO: 6503)announced today the launch of three new Large DIPIPM+TM transfer-mold intelligent power modules featuring loading-converter circuits that realize simpler and more compact designs for use in air-conditioner and industrial inverters. Of special note, one of the new modules achieves a world's first high-density output of 100A/1200V in its transfer-mold package. Sales of the new DIPIPM+ series will begin on May 29. Also, the modules will be exhibited at major trade shows, including Power Conversion Intelligent Motion (PCIM) Europe 2019 in Nuremberg, Germany from May 7 to 9 and PCIM-Asia 2019 in Shanghai, China from June 26 to 28.



Mitsubishi Electric has been contributing to the miniaturization and energy-efficiency of inverter systems since commercializing its first DIPIPMTM series in 1997.
The more compact and simpler-design DIPIPM+ series, which places the inverter and converter into one package, was introduced in 2015. In response to increasing demands for high-power compressors in package air conditioners, the company is now adding models of up to 100A/1200V for package (heat & cooling) air conditioners in the 56kW class.

Product Features

1 - World's leading high-density output in transfer-mold package

- PSS100NE1CT achieves a world's first high-density output of 100A/1200V in its transfer-mold package, suitable f or 56kW class package air conditioners.
- 100A/1200V model's small package and large capacity realized through Mitsubishi Electric's proprietary direct-wire-bonding technology
- Built-in analog temperature voltage output and protection functions

2 - Downsizing and simpler design for inverter systems

- Built-in inverter, converter and drive circuits enable inverter systems with fewer external components
- Simpler wiring pattern on board helps to downsize inverter systems

Model	PSS50NEICT	PSS75NEICT	PSS100NEICT
Specifications	50A / 1200V	75A / 1200V	100A / 1200V
Dimensions	43.0 x 114.5 x 7 mm		
Build-in-chips	Three-phase inverter bridge with built-in IGBT, FWD, HVIC and LVIC Three-phase converter circuit		
Functions	Short-circuit protection (by electrical current sense) Control power supply under-voltage (UV) protection Fo output on N-side protection Analog temperature voltage output (VOT)		

SOURCE: Mitsubishi Electric

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