

SEMICON WEST 2024

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SPAIN PAVILION
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PERTE CHIP ↗

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PERTE Chip is the Spanish acronym for Strategic Project for Economic Recovery and Transformation of Microelectronics and semiconductors launched by the Spanish Government in 2022 aimed at bolstering the Spanish microelectronics and semiconductor industry value chain from an integrated perspective, spanning all the phases involved in the conception, design and fabrication of chips.

Under the Ministry for Digital Transformation and the Civil Service, PERTE Chip is part of the Recovery, Transformation and Resilience Plan launched by the Spanish Government, which articulates structural reforms of the country within the framework of the Next Generation EU Recovery Plan for Europe.

PERTE Chip is conceived as a strategic public investment project through multi-sector and multi-level partnerships in four strategic assets:

Research | Design | Fabrication | End-user Industries

The project has a budget envelope of EUR 12.25 billion channelled through different instruments:

- a) Strategic Investments (Front-end, back-end, substrates, equipment)
 - Grants: direct support under EU Chip Act's first-of-a-kind to cover up to 40% of total CAPEX.
 - Equity: potential equity participation by partners and/or Government.
- b) R&D projects, including Clean Rooms.
 - Grants: through competitive calls.
 - Direct investment in public infrastructure.
 - Cooperation agreements with third parties.
- c) Advanced manufacturing incentives.
 - Grants through competitive calls.
 - Loans or equity through Chip Financing Facility.
- d) Chip financing facility.

Spain seeks new investment opportunities for projects in different domains such as:

- Integrated photonics and RISC-V
- Equipment manufacturing
- New materials, critical supplies and raw materials
- Power electronics
- Mid-range and mature nodes (vehicle, telecom, industry)
- Advanced packaging
- Graphene, quantum
- New R&D lines

Further information at: www.pertechip.org



CANARYCHIP ↗

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CANARYCHIP

CanaryChip promotes the development and growth of the Canary Islands ecosystem of microelectronics and semiconductors.

To achieve this objective, the aim is to make the Canary Islands a global investment platform for the sector, develop production capacities on the islands throughout the entire value chain and promote the archipelago as a focus for development, attraction and retention of talent in the field of microelectronics.

To support CanaryChip's strategy and growth, **Canarias ZEC and PROEXCA** are two public institutions with the following vision:

Canarias ZEC is a public entity of the Spanish Government which helps through authorisation procedures needed to enjoy the taxation advantages approved by the European Union. To be highlighted the 4% Corporate Tax rate (the lowest in Europe), a 0% withholding tax in the distribution of dividends to the mother company and so on.

PROEXCA is a public company attached to the Presidency of the Government of the Canary Islands, Spain. Its main goal is to promote the internationalization of Canarian companies, as well as to attract investments of strategic interest to the archipelago.

Technological Capabilities

The semiconductor and microelectronics value chain covers different areas such as:

- Assembly, testing and packaging
- Assembly tools
- Manufacturing materials
- Manufacturing tools
- Design
- Basic blocks of intellectual property

BEST IN GRAN CANARIA ↗

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spegc
Secretaría de
Promoción Económica



ULPGC | IUMA

Discover BEST IN GRAN CANARIA, a consortium of entities located on the vibrant Island of Gran Canaria, Spain. Committed to driving forward the national, regional, and local semiconductor and microelectronics strategy, pioneering groundbreaking initiatives to foster innovation and economic growth.

Our multifaceted approach revolves around fostering dynamic R&D collaborations with top-tier technology centers, fostering meaningful engagement with ecosystem stakeholders, and providing expert guidance for investment initiatives.

Gran Canaria, with its rich diversity of resources and advantageous European fiscal policies, stands as an inviting environment for international investors seeking growth opportunities.

Noteworthy entities within our consortium include the Institute for Applied Microelectronics (IUMA) at the University of Las Palmas de Gran Canaria (ULPGC) and the Agency for Economic Promotion of Gran Canaria (SPEGC). Join us in shaping the future of semiconductor and microelectronics innovation in Gran Canaria and beyond.

Technological Capabilities

The Institute for Applied Microelectronics (IUMA) currently has 70 researchers and, over its more than 30-year history, has already taken part in drawing up the first Spanish Microelectronics Plan in 1985. IUMA has research laboratories for the design, characterisation, verification, packaging, inspection, and assembly and test of semiconductor wafers, integrated circuits (logic, RF, MMIC, sensors), printed boards, and electronic equipment, and is a partner in projects with various multinational companies in the sector.

It is a member of Spanish Open Hardware Alliance SOHA, and the RISC-V network of centres with capabilities in that processor architecture, it is a recognised NVIDIA GPU Research Centre, and a member of the HiPEAC “High Performance, Edge And Cloud computing” European network of excellence. IUMA is also an academic member of AENEAS and as such linked to the Chips Joint Undertaking of the EU.

Other research groups and institutes are related to the synthesis of CVD thin film semiconductors, photo-catalysts, graphene and sensors. Looking ahead, the IUMA is poised to expand its expertise with a dedicated focus on 2D thin-film semiconductor device manufacturing, in particular in the innovative field of Thermoelectric Devices and Cells (semiconductor, metal, alloys) and in Microextrusion processes. Complementing this, the institute offers advanced capabilities in wafer and device characterization, testing, bonding and packaging (2D, 3D), ensuring the quality and reliability of semiconductor products. This future-oriented approach will enable the development of cutting-edge thin-film semiconductor technologies, further solidifying Gran Canaria’s position as a hub of innovation in the field in a complementary and additional way to the technological offer, our expert advisory services cover a wide spectrum, including tax optimization, investment guidance, public financing assistance, business support, R&D finance, and legal and regulatory advisory. With a team of seasoned professionals, we provide strategic insights and personalized solutions to navigate the complexities of today’s business environment.

In addition to advisory services, we offer extensive support for investments, including access to state-of-the-art technological spaces and partnerships with top-tier technology centers. Whether you’re seeking suitable space or land for new investments, we provide comprehensive assistance to ensure the success of your ventures.

Main Projects

H2Train: Enabling Digital technologies for Holistic Health-Lifestyle Motivational and Assisted Supervision Supported by Artificial Intelligence Networks (H2TRAIN), European Union HORIZON-KDT-JU (now Chips JU) 101140052/2023-2026

AGATE: Development of Advanced GaN Substrates & Technologies-AGATE, ENIAC EUROPEAN UNION JOINT UNDERTAKING (now Chips JU), ENIAC JU 325630/2014-2017

GaN Substrate and Device Characterization, Spain’s Ministry of Science PCIN-2013-073/2013-2016

Phased Array Antenna Integrated Circuits for LEO Constellations Base Stations, Spain’s Ministry of Science PID2021-127712OB-C21/2022-2025

Advanced Microelectronics Packaging, Spain’s Ministry of Science EQC2021-006798-P/2021-2024

Exploring Modern Integrated Circuits Design in Harsh Environments, Spain’s Ministry of Science RTI2018-099189-B-C22/2018-2022

Non-Battery Wireless Sensor MEMS, Spain’s Ministry of Science, TEC2011-29148-C02- 01/2011-2014

Substrate-Noise Tolerant RFICs for 5 GHz+ Communications, Spain’s Ministry of Science TEC2005-06784-C02-02/2005-2008

Helicoid: Hyperspectral Brain Cancer Detection, European Union FP7-ICT-2011.9.2-618080/2014-2016

AMETIC ↗

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AMETIC is the representative Association of the digital industry sector in Spain. AMETIC is backed by extensive experience of nearly 50 years in the sector, working for the competitiveness of its members and promoting the dialogue with Public Administrations (both at a national and international level), revaluing the digital industry of the country. AMETIC covers a wide range of sectors, with a special focus in DeepTech, fostering technologies such as Artificial Intelligence, semiconductors, cybersecurity or photonics.

AMETIC has been coordinating strategic actions for the Spanish microelectronics ecosystem since 2019. The association has set up a Microelectronics and Semiconductors Commission with the following objectives:

- Draw up and update the map of the Spanish microelectronics ecosystem to provide a general overview of the capacities and roles of the agents in the value chain and identify collaboration opportunities.
- Contribute to the definition of a national strategy for microelectronics and semiconductors focused on strengthening the industry.
- Positioning and aligning the reality of the Spanish ecosystem with PERTE Chip, IPCEI, Chips Act and the European Semiconductor Alliance.

AMETIC's Microelectronics and Semiconductors Commission currently brings together more than 70 organisations, making it the most representative group of the microelectronics ecosystem in Spain.

Technological Capabilities

With more than 300 direct members and representing more than 10 thousand companies from different verticals of the digital industry, AMETIC has the highest representation of the agents involved in the microelectronics value chain, with great potential and capacity to drive the microchip and semiconductor ecosystem in Spain.



Main Projects

Mapping of the Spanish Microelectronics Ecosystem

The Mapping of the Microelectronics Sector in Spain analyses the business ecosystem of the entire semiconductor value chain, with a broad approach that includes the innovation side, academia, talent, and support institutions, as well as the financial instruments available to companies.

It aims to be the white paper of reference in the sector, analysing all the actors involved in the value chain of semiconductors in Spain and providing a first-hand approach to the Spanish ecosystem and its characteristics.

AMETIC's Industry-academia training strategy proposal for PERTE Chip

The proposal seeks to assure that the Training Strategy of the PERTE Chip meets the needs of the semiconductor industry in Spain, and to establish a stable cooperation between industry and academia to ensure high levels of employability. A two-phase time horizon is envisaged: 2023-2027 for the implementation of the PERTE Chip and 2027-2034 for the consolidation. The strategy has been designed collaboratively with business representatives to ensure that training is tailored to the needs of the sector.

NeoSiP Project

NeoSiP works in the research of SiP architectures and technologies, focusing on Heterogeneous SiP technology and the feasibility of its application in three industries of great relevance in the Spanish ecosystem (Healthcare, IoT and Automotive).

AESEMI ↗

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AESEMI is the Spanish Semiconductor Industry Association, an organization that represents companies, universities, and R&D centers in Spain dedicated to microelectronics and semiconductors. The objective of the association is to promote the ecosystem at a national and international level, promote knowledge of its capabilities, and serve as an interlocutor with the different public administrations to develop policies and instruments that serve the reality of the sector in Spain.



Main Projects

Development of a Directorium of Spanish companies, universities and R&D centers, to facilitate the finding of partners within the Spanish ecosystem.

Development of a Training Catalogue, to showcase the existing portfolio of educative programs related to semiconductors in Spain at different levels.

Organization of a CHIPNATION, the Spanish Semiconductor Industry Congress, an space dedicated to display the capabilities of the Spanish ecosystem, discuss its needs and challenges, and connect with the rest of the ecosystem's agents.

ALTER TECHNOLOGY TÜV NORD ↗

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ALTER is a leading engineering company which provides reliable and agile solutions in semiconductor engineering, procurement, assembly, and test to many of the world's most innovative technologies.

Our company is present in space, aeronautics, nuclear, automotive, medical and defense among many others.

Technological Capabilities

Focused in the OSAT (Outsourced Semiconductor Assembly and Test), we are integrated into the supply chain from wafer probing to standard and advanced packaging up to final testing, including product evaluation and qualification, as needed.

Full end to end semiconductor packaging design and assembly, including plastic and heterogeneous System in Package, as well as photonics and PICs.

From functional testing to full parametrical testing of produced parts, including all required mechanical and materials testing, environmental, reliability and very specific characteristics such as radiation tolerance as well as very extreme temperature testing.

State of the art production control software, allowing integration of the customer into the execution of the activities.

The ALTER logo consists of the word "ALTER" in white, bold, uppercase letters, centered within a solid blue square.

Main Projects

- Optical transceivers up to 56GB/s per channel
- Highly integrated entangle photon source
- Frequency stabilized <1MHz source
- High voltage, ultra high temperature SiC diodes for solar panels
- 14-bits ADC 80MSPS, 4 channels
- Ku-Ka band GaN low noise amplifier

DERIVADOS DEL FLÚOR, SAU (DDF) ↗

Nagore Bonilla, Commercial Business Unit Manager Ultrapure Chemicals

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DERIVADOS DEL FLUOR (DDF) is the main European producer and a key global player since 1947 in the manufacture, supply and distribution of Hydrofluoric Acid, from Aqueous HF to High Purity electronic grade, as well as a wide range of other inorganic fluorochemical acids and salts, which are used in different industrial applications essential for daily life.

Being part of MINERSA mining Group, one of the main fluorspar producers worldwide, with mines in Spain and South Africa, guarantees a secure and stable supply of this strategic raw material to DDF, for the production of a complete inorganic fluoride range.

DERIVADOS DEL FLUOR (DDF) has continuously evolved the quality of its product range, developing purer grades and more specifically, meeting the stringent requirements of the electronic industry. Our principles focus on expertise, quality, and service.

Technological Capabilities

- A dedicated team of chemical engineers work in close partnership with our customers to develop bespoke products, tailored to enhance the productivity and performance of their manufacturing processes.
- At present, we offer the widest range of concentrations on the market, from 20% to 60%. Being able to deliver our ultra-pure chemicals in the correct concentration and packaging solutions means less manipulation and, therefore, safer and lower costs for our customers.
- Our state-of-the art equipment, process management system and capabilities of in-house product analysis dedicated to ultra-pure chemicals, are the basis for our commitment to quality.



DERIVADOS DEL FLUOR
Minersa Group



Main Projects

- EU Chips Act partner.
- Expansion of capacity in order to meet the challenges of a growing worldwide demand.
- Broaden the product catalogue in the field of ultrapure chemicals.
- Circular economy, waste recovery and reduction of carbon print.



FAGOR ELECTRÓNICA, S. COOP. ↗

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We are specialists in electronic and digital solutions.

- Semiconductor manufacturer.
- EMS.

Technological Capabilities

Design and manufacturing of electronic components (diodes and thyristors).

Electronic Manufacturing Services.

TELEVÉS ↗

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Televes is a worldwide technology company specialized in the design, development and manufacture of telecommunication infrastructure solutions and service platforms for different niche markets.

Televes is the head of a Corporation formed by more than 20 industrial companies which all work to achieve the common objective of designing, developing and manufacturing high-quality solutions in Europe for the telecommunications industry by leveraging its expertise in integrated circuit design and advanced assembly and packaging technologies (SiP).

We are specialized in providing turn-key RF & antennas solutions completely tailored for mission critical applications.

Technological Capabilities

Our deep insight into manufacturing processes and RF design drive us to find best-in-class solutions in terms of product performance, repeatability and reliability through design optimization to facilitate manufacturing and provide cost-effective solutions.

The availability of in-house state-of-the-art manufacturing facilities allow us to innovate in the manufacturing processes to provide high added value solutions.

Our differential value is to act as a technology partner, helping in the development of advanced technologies completely tailored to our partner needs.

Miniaturization, integration and thermal management to solve new generation phased array systems challenges:

- Custom MMICs in III-V technologies

- Advanced assembly and packaging technologies

 - RF SiP: Copper pillar flip chip and heterogeneous integration.

 - Antenna in package solutions.

- High-density interconnect (HDI) multilayer-PCB technology

 - Laser Direct Imaging (LDI) for highest image precision.

 - Lamination through fusion bonding technology.

 - Buried vias, microvias, stacked microvias, filled vias...

 - Embedded resistor technology (resistive foil).

- Superior thermal management technologies

 - PCB solutions

- Embedded copper strips, copper coin, cavity filling and sintering.

 - Heatsinks based on innovative materials

- Polymer-based dissipation solutions aligned with industrialization and injection processes.

The Televes logo consists of the word "Televes" in a bold, black, sans-serif font, centered within a solid orange square.

Main Projects

Since its creation, Televes Corporation commitment with technological innovation is reflected in its strategy, towards miniaturization and integration as new generation product enablers.

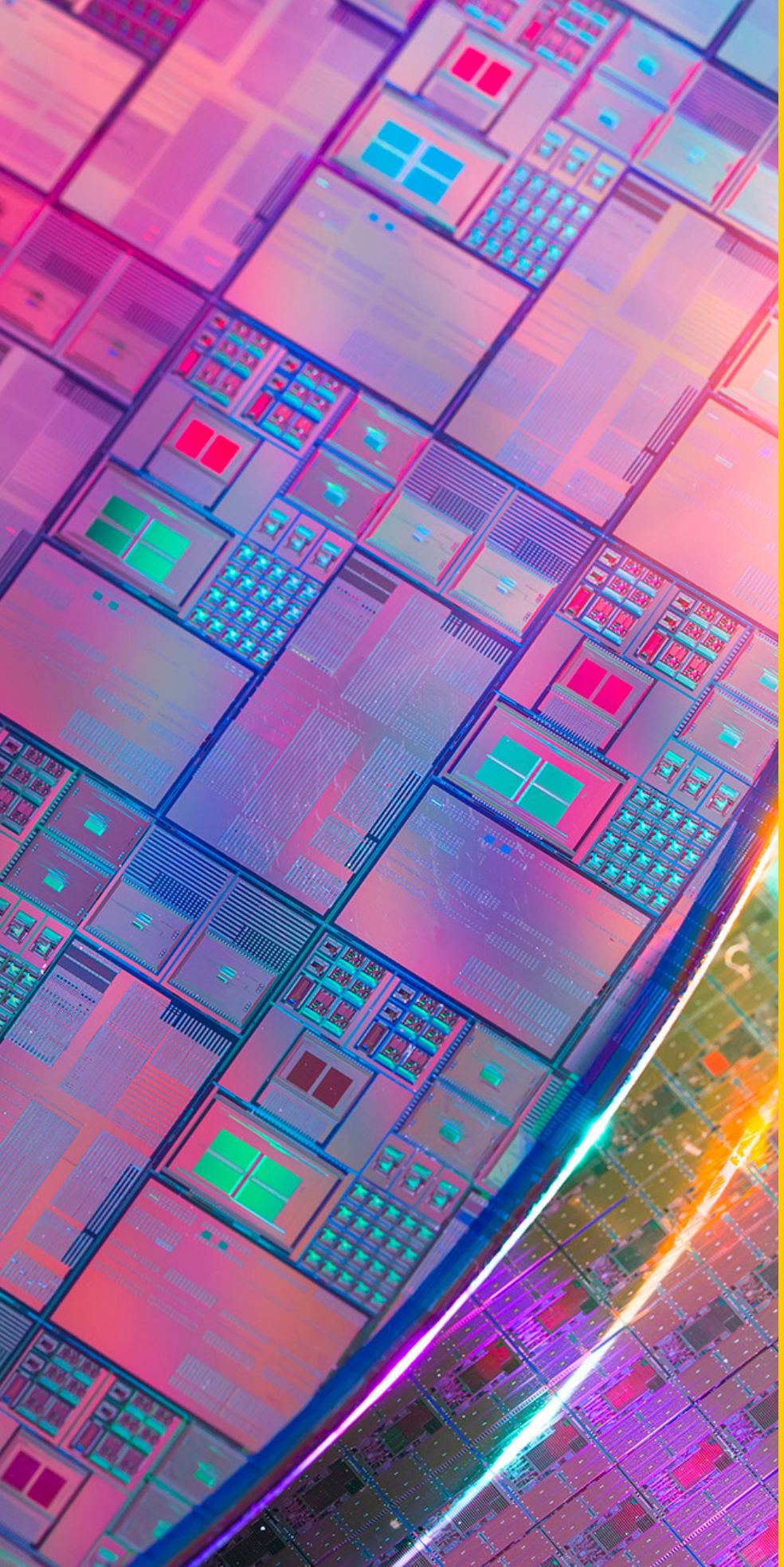
We were pioneers in the adoption of copper pillar flip chip technology for III-V compound semiconductors and RF applications, developing our own custom GaAs MMICs solutions and having successfully integrated over 5 million custom bare dies using flip chip technology in our products.

The advent of copper pillar bumping technology of compound semiconductors wafers in volume is also paving the way to multi-chip architectures and heterogeneous integration, enabling next-generation RF SiP (System in Package) solutions, a key element to solve the SWaP-C paradigm in multiple applications.

Our experience and know-how in highly automated manufacturing processes and advanced technologies such as flip chip integration positions us as a solid provider of highly innovative custom RF SiP solutions (e.g. top side cooling in III-V compound semiconductors).

Our aim of leveraging the development of new technologies capable of solving new generation phased array system challenges, where higher levels of miniaturization and integration are demanded to cope with space-constrained systems, is reflected in the following programs in which we are actively participating:

- ARTES ESA (Ka band LEO Satcom applications)
- GSTP ESA (Ka band LEO Earth Observation & scientific missions' applications)
- PTA CDTI (Ku band Aeronautical Satcom & Intra Flight Communications applications)
- MISIONES CDTI (Capability generation in Gallium Nitride manufacturing and advanced packaging technology -SiP-)



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