EARTH & BEYOND VENTURES

Deloitte CATALYST

DEEPTECH EXPLAINED

MAPPING ISRAEL'S DEEPTECH LANDSCAPE

REPORT #2

SEMI CONDUCTORS

SEPTEMBER 2025

EXECUTIVE SUMMARY

DeepTech refers to a new wave of science-driven innovation- technologies rooted in advanced research and engineering complexity, with the potential for long-term impact. DeepTech Explained is a joint initiative by Earth & Beyond Ventures and Deloitte Catalyst, aimed at making Israel's DeepTech landscape more accessible through concise, data-rich reports. Each edition examines a specific DeepTech domain, maps key participants, and outlines emerging activities.

This second edition explores semiconductors - the foundation of modern electronics - which enable processing, memory, sensing, power, and communications. It provides an overview of 70 Israeli semiconductor startups, alongside a review of semiconductor fundamentals, value chain, global and technological trends, and Israel's position within this mature and growing ecosystem.

Governments, corporations, and research institutions worldwide are increasing investment in semiconductors, recognizing them as a strategic industry at the heart of AI, energy, and national security. The U.S., EU, China, Taiwan, South Korea, and Japan have each launched national initiatives to strengthen supply chains and advance manufacturing capabilities, while global leaders such as Nvidia, TSMC, Samsung, and Intel continue to drive innovation across design and production.

Israel, while limited in large-scale manufacturing, is emerging as a global hub for metrology and inspection, chip design, and R&D. Around 200 companies and 45,000 employees are active in the sector, supported by multinational R&D centers, strong academic research, and a dynamic startup ecosystem. With strong capabilities and leading startups across the value chain, Israel's chip industry is positioned to shape the semiconductors of tomorrow.

DEEPTECH

Science-Backed. Market-Driven. Future-Focused.

"DEEPTECH EXPLAINED"

A strategic initiative designed to spotlight the Israeli DeepTech landscape through clear, data-driven mini-reports. Each report focuses on a specific DeepTech sector, aiming to break down complex technologies and dynamics while highlighting key players, opportunities, and Israel's potential as a global DeepTech hub.

WHAT IS DEEPTECH?

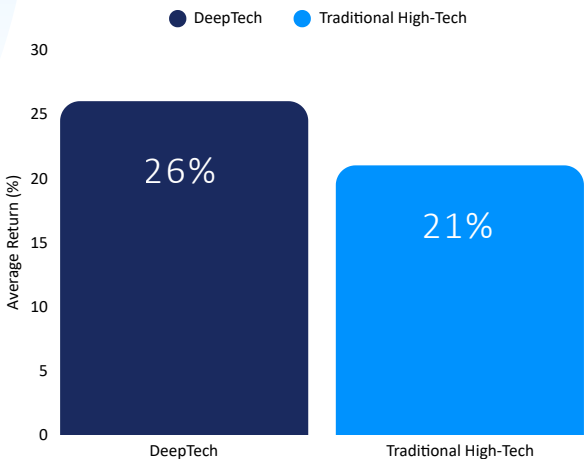
DeepTech refers to advanced technologies rooted in core scientific research. Unlike other technologies, DeepTech requires longer R&D cycles, capital to be front-loaded, and deep technical expertise - yet it holds the potential to change conventional industries across a variety of sectors and drive significant economic impact.

CORE BUILDING BLOCKS

DeepTech is driven by core technological fields that serve as the foundation for innovation, such as:

- ELECTRONICS & RF TECHNOLOGIES
- QUANTUM TECHNOLOGIES
- OPTICS & PHOTONICS
- MATERIALS & CHEMISTRY
- SEMI-CONDUCTORS
- BIOLOGICAL SYSTEMS
- ADVANCED ENGINEERING
- COMPUTING & PROCESSING

AVERAGE INVESTMENT RETURNS: DEEPTECH VS TRADITIONAL HIGH-TECH



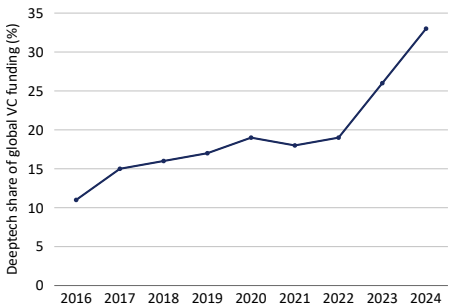
According to the Israel Innovation Authority, April 2025

500+

ISRAELI DEEPTECH STARTUPS

According to Tracxn[1]

IN 2024, DEEPTECH STARTUPS CAPTURED 33% OF ALL GLOBAL VC INVESTMENTS



According to Dealroom

WHAT IS A SEMICONDUCTOR

A semiconductor is a material that can behave like a conductor, carrying electricity, or an insulator, blocking it, depending on how it is treated. This property enables precise control over voltage (electrical power), amplitude (signal strength), switching speed (how quickly it turns on/off), and frequency (how often it cycles). This versatile functionality forms the foundation for transistors, logic gates, and functional modules- the building blocks of modern electronics.

FROM MATERIALS TO WAFERS

Semiconductors rely on four main material types: *elemental* (ex., silicon) for balanced properties and low-cost manufacturing; *compound* (ex., GaAs) lets electrons move faster for high-speed applications; ***wide-bandgap*** (ex., GaN) tolerates high voltage and heat for power electronics; and *emerging* (ex., diamond) may offer advanced properties for future applications. These materials are grown into single-crystal ingots and sliced into **wafers** - thin, polished discs that provide the platform on which chips are built.

FROM WAFERS TO ACTIONS

1. P-N JUNCTIONS

A P-N junction is formed by introducing impurities into a wafer (a process called “Doping”), creating an electric field that lets current flow more easily in one direction than the other.

2. TRANSISTORS

A transistor utilizes P-N junctions and an electric field to control the current flow, allowing input currents to be switched on and off (0s and 1s), amplified, modulated, or otherwise shaped.

3. LOGIC GATES

A series of transistors together form logic gates in digital circuits and comparators in analog circuits. These, process signals with outputs like AND, OR, and NOT, or trigger - based on threshold levels.

4. FUNCTIONS

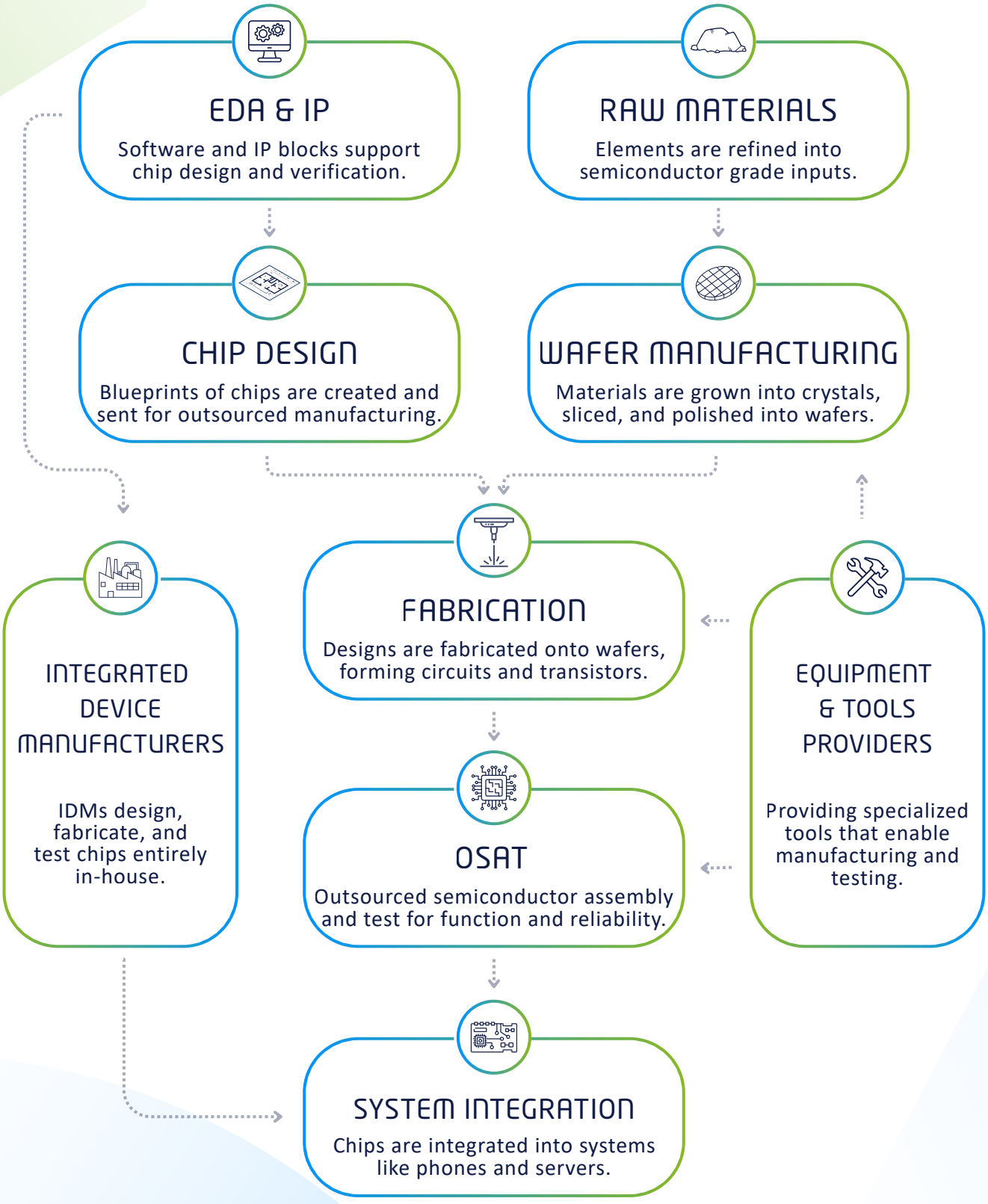
Functions are built by combining logic gates into larger circuits that perform operations from calculations to storing information, and even to outmatching humans at chess.

SCALING INTO POWERING THE WORLD

Semiconductors scale from simple building blocks to complex systems that run and power our world. Components are designed to provide functions such as computing, storage, and communication, combined into modules and integrated circuits, fabricated on wafers, sliced into dies, packaged as chips, and assembled in systems- driving everything from phones, EVs, data centers, and satellites.

SEMICONDUCTOR VALUE CHAIN

Semiconductor manufacturing is a complex industry, involving countless steps, technologies, and companies - with global leaders driving progress at each point along the value chain. Below is a simplification of this journey, from raw materials to the smart devices that power our world.



GLOBAL STATE OF SEMICONDUCTOR

Semiconductors are the foundation of modern computing, communications, and national security. They are also at the center of global competition, shaping economies, supply chains, and geopolitics. The story of this industry began with the invention of the transistor, which revolutionized electronics and set the stage for decades of innovation.

HISTORICAL DEVELOPMENTS[2, 3, 4]

1947
The Transistor

Invented at Bell Labs; transformed modern electronics by replacing vacuum tubes with a solid-state transistor.

1958
Integrated Circuit (IC)

Developed by Jack Kilby and Robert Noyce independently: Allowed complex circuits on a single silicon chip.

1965
Moore's Law

Articulated by Gordon Moore: Predicted exponential growth in transistor count and shrinking chip sizes, driving performance.

1970-80
Digital Revolution

Rapid advances by IBM, Intel, AMD, and Motorola* fueled the spread of personal computers, telecom, and automation.

MODERN SHIFTS AND IMPACTS

TECHNOLOGY LEAP
EUV LITHOGRAPHY ENABLES 3NM AND 2NM SCALING, BOOSTING PERFORMANCE

Recent decades have seen a relentless push to shrink transistors, now as small as three nanometers in leading chips. This miniaturization is enabled by extreme ultraviolet (EUV) lithography, pioneered by ASML and scaled by TSMC and Samsung. The move from micrometer chips to 3nm and emerging 2nm nodes has brought major gains in performance and energy efficiency.

GROWTH OF EAST ASIA INDUSTRY
TSMC AND SAMSUNG DOMINATE GLOBAL FOUNDRY CAPACITY

Semiconductor manufacturing has shifted to East Asia. TSMC makes over 90% of the world's most advanced chips, making Taiwan a vital asset and focal point of global competition, while Samsung's leadership reinforces East Asia's dominance. Both are expanding abroad, but their most advanced research and manufacturing remain mainly at home.[5]

COVID-19 SUPPLY CHAIN SHOCK
CHIP SHORTAGES EXPOSE VULNERABILITIES AND SPUR NATIONAL SECURITY AWARENESS

The COVID-19 pandemic exposed the semiconductor industry's critical role and vulnerabilities. Supply chain disruptions caused global chip shortages, hitting technology, manufacturing, national security, and the balance among major economies. Governments responded with major investments in domestic manufacturing, research, and workforce development to build resilience.

*Motorola is currently doing business as Motorola Solutions

RECENT GEOPOLITICAL DYNAMICS

US-CHINA TENSIONS

The semiconductor industry is central to the US-China trade dynamics. In 2022, the U.S. restricted China's access to advanced chips and equipment; in 2023, China retaliated with limitations on exports of minerals critical to chip manufacturing. These moves influenced global supply chains, fueled trade tensions, and are reflected in the recent tariff deliberations between the countries.[6]

GLOBAL POLICY RESPONSES

Semiconductors' strategic value has spurred massive investment and policy action. Global chip sales reached $526.8B in 2023, with Asia accounting for over 60% of total sales. The US CHIPS and Science Act allocated $52.7B for research, manufacturing, and workforce development, while the EU and Japan launched similar programs to bolster supply chains and cut reliance on imports.[7]

GLOBAL SEMICONDUCTOR SUPPLY CHAIN[8]

RECENT HIGHLIGHTS IN THE INDUSTRY

CORPORATE DEALS

SoftBank Group announced a $6.5B acquisition of Ampere Computing, a U.S. semiconductor design company specializing in AI compute. The transaction is expected to close in late 2025.[9]

Fidelity is in talks to lead the latest private funding round for Cerebras Systems Inc., a California-based chip manufacturing company.[10]

FABRICATION FACILITY INVESTMENTS

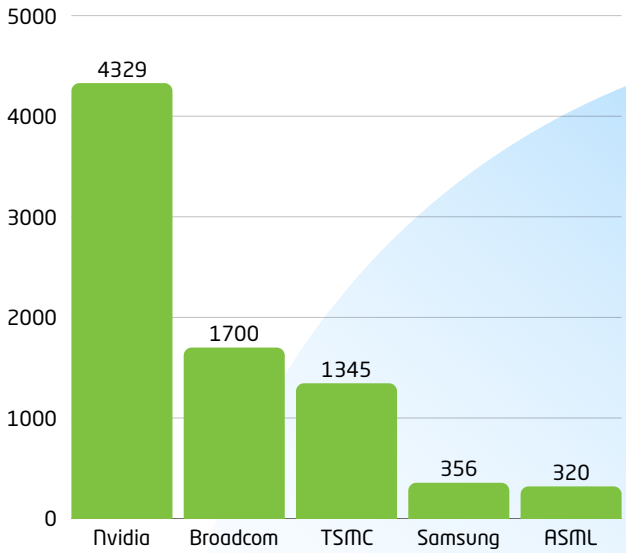
TSMC has committed over $65B to build and expand fabrication facilities in Arizona, including leading-edge 3nm and 2nm process nodes.[11]

Intel is investing over $100B in new fabs and expansions in Ohio, Arizona, and other U.S. sites.[12]

Texas Instruments plans to invest more than $60B on seven U.S. semiconductor fabs.[13]

MAJOR PUBLICLY TRADED COMPANIES

As of 2025, the world's top 10 semiconductor companies are worth about $9T, with the top 5 accounting for ~90% of that value[14]:



THE ISRAELI EDGE

Israel plays a leading role across nearly all segments of the semiconductor value chain with particular strengths in chip design, metrology & inspection, and manufacturing. Its rise was driven by Intel's catalytic presence; sustained R&D investment; a vibrant startup ecosystem and a skilled workforce - stemming both from its academia and military training, contributing to its world-class R&D capabilities which made it a magnet for multinationals in the semiconductor industry.

HOW ISRAEL BECAME A POWERHOUSE[15, 16]

1964 — Motorola: The first semiconductor R&D center in Israel

1972 — IBM: Establishes chip design center in Haifa

1974 — Intel: Opens its first R&D center in Israel

1979 — IBM: Develops the 8088 processor in Haifa

1984 — National Semiconductor / Tower Semiconductor: National Semiconductor establishes fab, later spawning Tower Semiconductor

1985 — Microsoft: Opens its first branch in Israel

1990 — Galileo Technology: First printer-on-chip, followed by controller & Ethernet switch

1992 — M-Systems Flash Disk Pioneers: First true flash filing system, followed by DiskOnChip & DiskOnKey

1999 — Mellanox Technologies: Founded to advance high-speed data interconnects

1999 — Intel: Establishes its first fab in Kiryat Gat

2000 — Broadcom: Opens its first branch in Israel

2008 — mobileye: Launches its first EyeQ1 processor for ADAS

2019 — Intel: Intel develops its first AI chip "Springhill" in Haifa

2023 — Microsoft: Develops a cloud-server chip in Israel

2025 — NVIDIA: Announces new facility & data center link breakthrough

2025 INDUSTRY SNAPSHOT[17]

200 COMPANIES — ~25% are R&D centers of multinational firms

2 FABS — Generate $10B+ p.a (>10% of high-tech exports, 5% national exports)

45,000 EMPLOYEES — R&D centers of multinationals employ ~70% of the workforce

72 EXITS — Which accumulates to more than $44B to date[18]

30% OF GLOBAL METROLOGY & INSPECTION

ESTABLISHED LOCAL PLAYERS[18]

CORPORATE	STATUS	TECHNOLOGY & INNOVATIONS
Tower Semiconductor	Public	Manufacture Analog ICs. One of Israel's first semiconductor companies.
Mellanox Technologies	Acquired by Nvidia	End-to-end InfiniBand and Ethernet networking solutions for HPC.
mobileye	Acquired by Intel	ADAS and autonomous driving using computer vision and machine learning.
annapurna labs	Acquired by Amazon	Communication controllers for telecom and cloud infrastructure.
SatixFy	Acquired by MDA	Advanced satellite communication systems with proprietary chipsets.
habana	Acquired by Intel	AI processors optimized for training and inference of deep neural networks.
Autotalks	Acquired by Qualcomm	Accident-prevention communications, including non-line-of-sight situations.
Celeno	Acquired by Renesas	Wi-Fi chipsets and Doppler imaging for connectivity in smart environments.
orbotech	Acquired by KLA	Imaging and optical inspection systems for electronics manufacturing.
leaba semiconductor	Acquired by Cisco	Silicon solutions linking memory, storage, and compute in data centers.
CEVA	Public	IP for power-efficient, intelligent devices across IoT and automotive.
NOVA	Public	Metrology & inspection solutions for precise chip manufacturing.
Camtek	Public	Metrology & Inspection solutions for packaging, memory, and sensors.

CHALLENGES AHEAD

HUMAN RESOURCES

Whether graduating from academia or relevant military unit, skilled talent has multiple options - from cybersecurity and fintech, or the rising quantum computing sector, to attractive multinational brands and enticing offers from abroad.[16]

GEOPOLITICS

US' export controls on microchips may limit access to advanced hardware and the ability to compete internationally[19], while local conflict can contribute to uncertainties for startups eyeing global markets.[20]

GLOBAL COMPETITION

Israel is competing with manufacturing leaders like Taiwan, South Korea, and India, over incentives for companies to establish their operations locally, in order to attract foreign investments and strengthen their positioning in the value chain.[16]

SUMMARY

Israel has become a semiconductor powerhouse, not just a startup nation. With two global fabs and a track record of impactful innovations, the country plays a strategic role in the global value chain. However, maintaining this position will depend on funding, talent retention, and global market access.

SEMICONDUCTOR MAP: EXPLAINED

The Israeli Semiconductor Map presents companies developing new chip types and manufacturing innovations. The map is a non-exhaustive list and includes firms identified through public information. The categorization was carried out based on research conducted by Earth & Beyond Ventures and Deloitte.

1. SEMICONDUCTOR USE CASES

This layer focuses on startups advancing chip functionality, enabling key semiconductor applications.

PROCESSING & COMPUTE

Chips that perform operations to execute instructions and manipulate data.

>> **Foundational Processing** - Chips designed for general-purpose logic, control, and arithmetic.

>> **AI Compute** - Chips optimized for AI workloads with parallel and efficient processing.

>> **Emerging Architectures** - Chips built on next-gen quantum, neuromorphic, or photonic models.

COMMUNICATIONS

Chips that enable the transfer and reception of data between devices, systems, or infrastructure.

>> **Core** - Chips with high-speed, low-latency for datacenters, switches, and telecom infrastructure.

>> **Transmission** - Chips that generate, encode, and drive signals across wired or optical links.

>> **Edge** - Low-power chips for short-range connectivity in IoT and consumer electronics.

SENSING

Chips that detect real-world signals and convert them into digital data.

>> **Imaging** - Sensors that generate structured representations of space, depth, or visuals.

>> **Signature** - Sensors that respond to changes in energy, motion, and other physical characteristics.

MEMORY

Chips that store or retrieve digital data during computation for near or long-term use.

POWER

Chips that regulate, convert, or manage electrical energy for stable and efficient system operation.

2. SEMICONDUCTOR INFRASTRUCTURE

This layer includes companies innovating across the semiconductor manufacturing supply chain. These companies advance design and verification tools, manufacturing, equipment, metrology, packaging, and testing - by developing new materials, tools, and fabrication processes.

ISRAEL'S SEMICONDUCTOR STARTUPS: 2025 SNAPSHOT

EARTH & BEYOND VENTURES | Deloitte CATALYST

ISRAEL'S SEMICONDUCTOR STARTUP LANDSCAPE

70 STARTUPS INNOVATING ACROSS THE VALUE CHAIN

SEMICONDUCTOR USE CASES

PROCESSING

FOUNDATIONAL COMPUTE

NEXTSILICON | SPEEDATA | CHAIN REACTION | INGONYAMA | RAMON.SPACE | NavonaTech

AI ACCELERATION

HAILO | INUITIVE | NeuroBlade | NeuReality | bearmz AI | SpinEdge

EMERGING COMPUTE

QUANTUM MACHINES | QUANTUM SOURCE | Quantum Art | QuamCore | Quantum Transistors | QARAKAL | LightSolver | POLYN TECHNOLOGY | COGNIFIBER | Atlantis

COMMUNICATIONS

CORE

Xsight | Retym | dustphotonics | Teramount | Newphotonics

TRANSMISSION

Valens | beam | Terafence

EDGE

CoreTigo | MORF

SENSING

IMAGING

INNOVIZ TECHNOLOGIES | vayyar | arbe | TRIEYE | ADASKY Driven to save lives | LIDWAVE | unispectral | BRIGHT WAY VISION | NEWSIGHT IMAGING

SIGNATURE

wiliot | neteera | genopore | emmasensing | TODOS | vocai | Fost Sense | SONIC EDGE

POWER

VisIC | SOLCHIP | DBNT | DIAMOND ELECTRONICS

MEMORY

PLIOPS | Weebitnano | RAAM | Unifabrix | eidetica

SEMICONDUCTOR INFRASTRUCTURE

DESIGN & VERIFICATION TOOLS

proteanTecs | vtool | hiveware | OPTIMA | CAESAREA LABS | Veriest

MANUFACTURING & EQUIPMENT

Phononics | L2X | iNPACK | DiamiC | Rellips

PRODUCT TYPE: IP BLOCKS | CHIP | COMPLETE SYSTEM

JOIN THE MAP

EARTH & BEYOND VENTURES | Deloitte CATALYST

THE MAP IN NUMBERS*

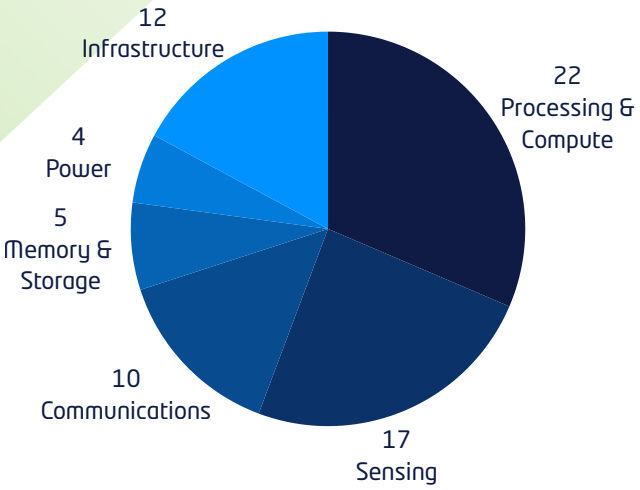
70

Israeli Semiconductor Startups

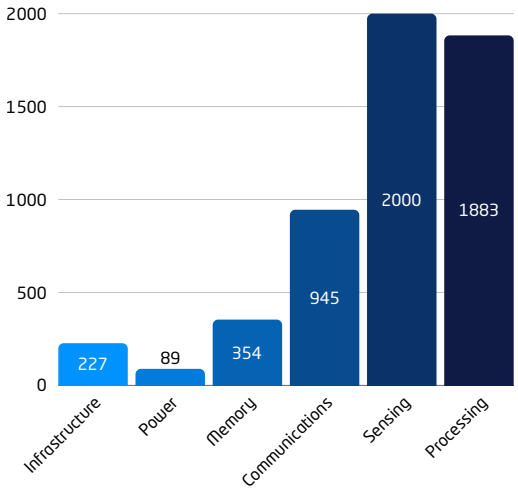
$5.5B

Total Funding Raised

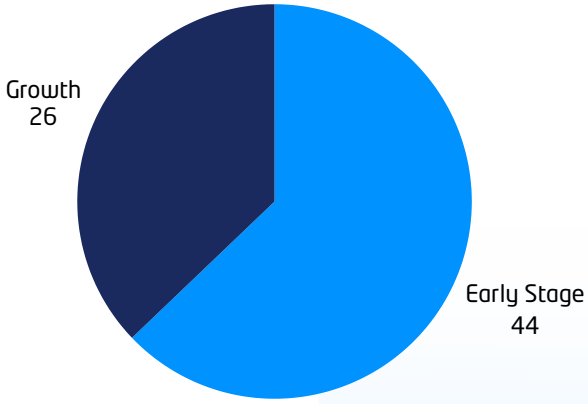
Startups by Category



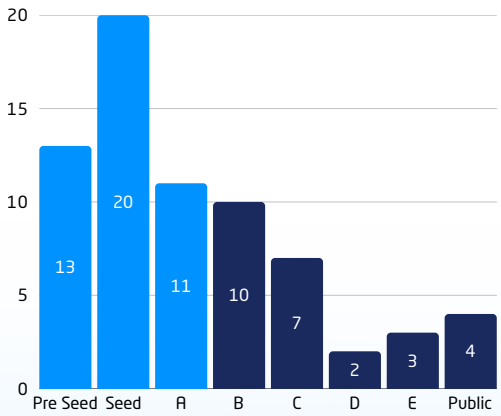
Funding by Vertical ($M)



Startups Maturity**



Startups by Funding Stage



*The data presented is based on proprietary research and information shared directly by the startups in H2, 2025.

** Growth refers to companies with over $50M raised, while early stage refers to those with under $50M.

TRENDS & THOUGHTS:

This report includes forward-looking statements that reflect current expectations and assumptions. Actual outcomes may differ due to various risks and uncertainties. Deloitte makes no guarantees and assumes no obligation to update such statements.

Technological advances in next-gen applications, increasingly prevalent in our everyday lives and driven by large capital investments - are met with geopolitical challenges and competition over resources like talent, minerals and expertise.

TRENDS IN USE-CASES & TECHNOLOGIES[21]

Generative AI Chips

Market value climbs from $125B in 2024 to an estimated $150B in 2025, capturing over 20% of global chip sales - driving demand in data centers, personal devices, and enterprise infrastructure.

Enterprise Edge & IoT

Proliferation of AI-powered sensors, smart edge servers, and connected devices enabling real-time analytics - fueling growth in industrial automation, smart cities, and autonomous systems.

Chip Design Innovation

Adoption of digital twins and chiplet architectures expands, supports rapid prototyping and complex system design, increases flexibility, and optimizes performance for next-generation applications.

AI-Enabled PCs

By 2026, neural processing units (NPUs) will be in 50% of newly shipped PCs. By 2028, AI capabilities are projected to expand significantly, transforming productivity and user experience.

WHERE THE WORLD AND ISRAEL ARE HEADED

Investments & Capital Flows

Investments in semiconductors are policy-backed, capital-heavy, and consolidating around strategic technologies. Venture funding and capital markets reward innovation in AI and emerging compute, while governments and corporates fund infrastructure. In Israel, venture capital and multinational R&D anchor a dynamic ecosystem that keeps local innovation tied to global growth.

Geopolitical & Supply Chain Resilience

Chip companies are diversifying supply chains with reshoring and nearshoring. Supported by government incentives and capital, new hubs in the Americas and Asia Pacific are expected to strengthen resilience, while Israel may contribute with its skilled workforce and strengths in design and metrology, integrated into allied supply chains.

Workforce and Ecosystem Development

The industry faces a deepening global talent shortage, with demand for engineers and technicians outpacing supply despite new training and reskilling efforts. In Israel, talent is pulled toward other sectors, multinationals, and attractive opportunities abroad, making retention a critical challenge.

IN CONCLUSION

The future of semiconductors will be shaped by geopolitics, surging AI demand, the rise of specialized architectures, and the race to build talent and infrastructure. Israel's capabilities in design, inspection and metrology, startup-led innovation, and multinational backing - strengthen its positioning and resilience in this evolving field, in the wake of geopolitical challenges.

Earth & Beyond Ventures is a VC fund focused on early-stage investments in Israeli DeepTech startups driven by cutting-edge scientific and technological advancements, in fields such as quantum computing, semiconductors, optics & photonics, energy, material science, new space, robotics, engineering, and more. The fund operates an incubator in strategic partnership with the Israel Innovation Authority and also collaborates with corporations and academic institutions to build new startups, commercialize academic research, and develop innovative technologies, with the goal of fostering the next generation of DeepTech startups.

www.earthandbeyond.ventures

Deloitte Catalyst helps enterprises, governments, and startups – from early stage to high growth – to innovate, scale and deliver value faster. We take the isolation out of innovation by connecting you – and co-developing solutions – with a worldwide community of catalysts that accelerate how innovation transforms your business to lead how our world is changing. With presence in Israel, the United States, and expanding geographies, we have the leading network, relationships and capabilities that help make a global ecosystem of technologies and innovators locally accessible to deliver the unmet needs of your business and its customers.

https://solutionsmap.deloitte.co.il/en/catalyst/

CONTACT US

Zack Fagan

Partner

Earth & Beyond Ventures

Amit Harel

Partner

Deloitte Catalyst Leader

Noga Yaari

VP Business Development

Earth & Beyond Ventures

Or Nehushtan

Senior Consultant, DeepTech

Deloitte Catalyst

Ariel Koren

Associate

Earth & Beyond Ventures

Rotem Dolev

Partner

Deloitte

REFERENCES

1. Tracxn, "Top startups in Deep Tech in Tel Aviv, Israel (Sep, 2025) - Tracxn", Sep 2025.
2. Donald E. Watkins, "Transistors", San José State University.
3. Techovedas, "10 Pivotal Milestones in Semiconductor History", Techovedas, 2024.
4. Simon-Kucher & Partners, "1970s: Semiconductors Go Mainstream", Simon-Kucher Insights, 2024.
5. INO.com, "Geopolitical Tensions and the Silicon Shield: Why Taiwan Semiconductor Manufacturing Company (TSMC) Remains a Tech Titan", INO Blog, Dec. 2024.
6. Francesca Tabor, "US-China Trade Tensions and Taiwan's Semiconductor Nexus", Francesca Tabor, May 4, 2025.
7. Evertiq, "Semiconductor News", Evertiq, 2024.
8. European Parliamentary Research Service, "Global Semiconductor Supply Chain", European Parliament Think Tank, July 8, 2022.
9. Arjun Kharpal, "SoftBank to Acquire Chip Designer Ampere in $6.5 Billion Deal", CNBC, Mar. 19, 2025.
10. Bloomberg Law, "Fidelity Said in Talks to Lead Cerebras $1 Billion Funding Round", Bloomberg Law, 2025.
11. U.S. Department of Commerce, "Biden-Harris Administration Announces Preliminary Terms for TSMC Expanded Investment", U.S. Department of Commerce Press Release, Apr. 2024.
12. Yahoo Finance, "Intel Will Get $8.5 Billion in CHIPS Act Funding to Support Its U.S. Manufacturing Efforts", Yahoo Finance, 2024.
13. PR Newswire, "Texas Instruments Plans to Invest More Than $60 Billion to Manufacture Billions of Foundational Semiconductors in the U.S.", PR Newswire, 2025.
14. CompaniesMarketCap, "Largest Semiconductor Companies by Market Cap", CompaniesMarketCap, 2025.
15. Isra-Tech, "The Israeli Semiconductor Industry", Isra-Tech, 2024.
16. Chiportal, "מסטארטאפ ניישן לסמיקונדקטור ניישן", Chiportal, 2024.
17. Israel Innovation Authority, "Israeli Chip Industry", Israel Innovation Authority, 2024.
18. IVC Research Center, "Israeli High-Tech and Venture Capital Data", IVC Online, 2025.
19. Institute for Supply Management, "How Tariffs Could Disrupt Semiconductor Supply Chains", Inside Supply Management Magazine, Apr. 2025.
20. Startup Nation Central, "Israeli Innovation in War: A Year of Resilience", Startup Nation Central, 2024.
21. Deloitte, "Semiconductor Industry Outlook", Deloitte Insights, 2024.