SEMICONDUCTOR INDUSTRY ASSOCIATION

THE CHIPS ACT:
Strengthening the U.S. Semiconductor Industry

May 8, 2023

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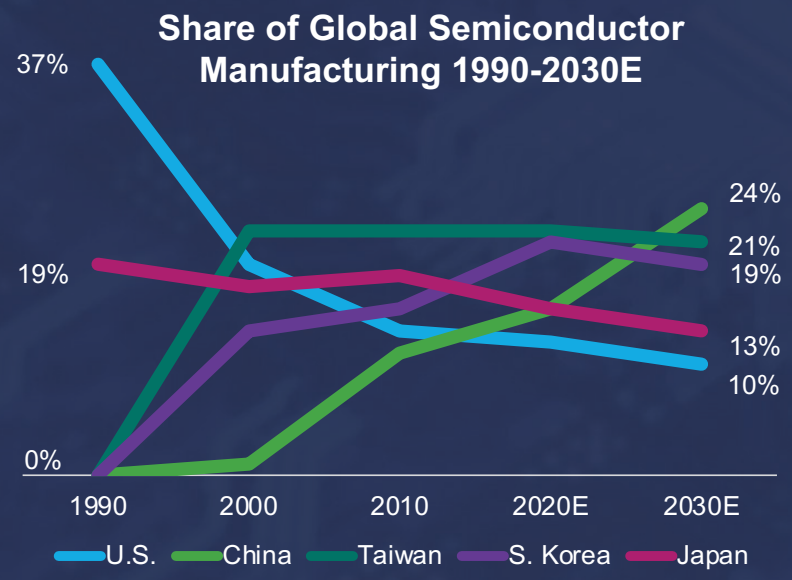
THE CHALLENGES FACING U.S. SEMICONDUCTOR SUPPLY CHAINS

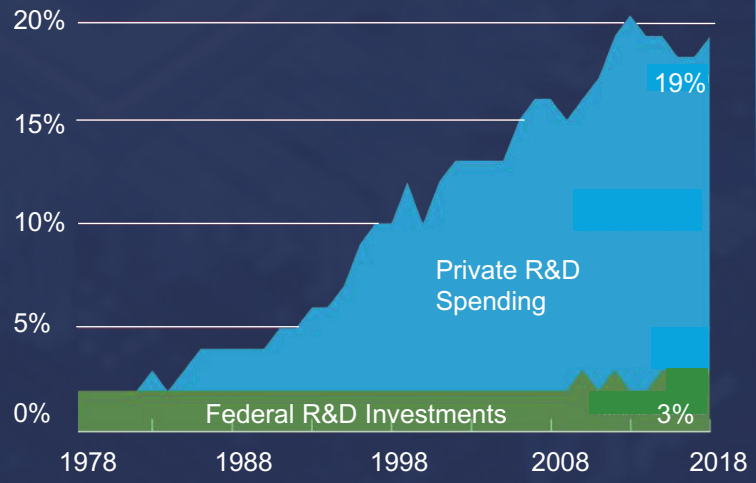
SEMICONDUCTORS ARE CRITICAL FOR U.S. NATIONAL SECURITY & THE ECONOMY

5G | Quantum Computing | Artificial Intelligence | Autonomous Systems | Space & Hypersonics | Cyber Security

1 U.S. Share of Chip Manufacturing is Eroding while Asia's has Grown to 77% of Global Capacity Due to Government Investment



2 Federal Semiconductor Research Funding Not Keeping Pace With Needs



Cost to build and operate a fab in the U.S. is 25-50% more expensive than locations abroad due to lack of government incentives.

The semiconductor industry invests 20% of revenue back into R&D, making it the #2 industry in R&D spending as a share of revenue.

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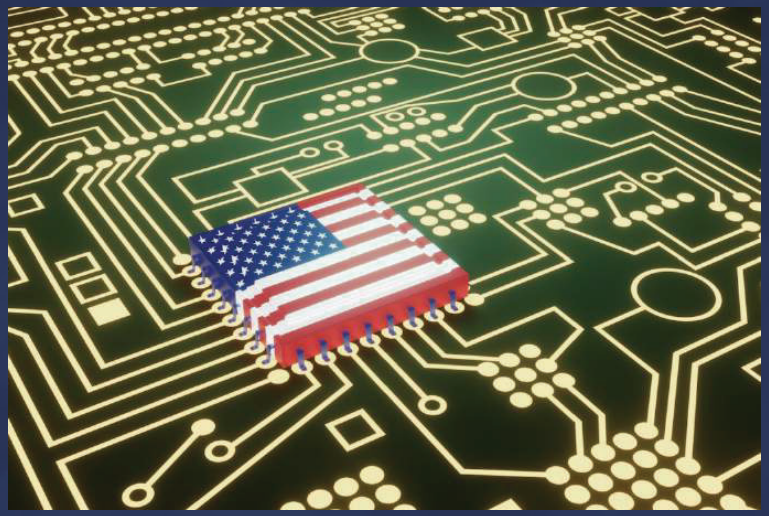
THE CHIPS ACT

Manufacturing Incentives



- $39 billion grant program (over 5 years) for semiconductors, equipment, and materials
- Application process beginning now
- 25% “Advanced Manufacturing Investment Tax Credit” on investments commenced through 2026 for fabs/equipment facilities

CHIPS INCENTIVES	FY22	FY23	FY24	FY25	FY26	Subtotal
Department of Commerce Grants & Loans for Semiconductor Manufacturing	$19 billion *incl. $2B for mature nodes *Up to $6B may be used for direct loans and loan guarantees	$5 billion	$5 billion	$5 billion	$5 billion	$39 billion

THE CHIPS ACT R&D PROGRAMS

PROGRAM	FY22	FY23	FY24	FY25	FY26	FY27	Subtotal
National Semiconductor Technology Center (NSTC)	$2 billion	$2 billion (Total)	$1.3 billion (Total)	$1.1 billion (Total)	$1.6 billion (Total)	--	**$13 billion**
National Advanced Packaging Manufacturing Program (NAPMP)	$2.5 billion						
Manufacturing USA Institute	$0.5 billion						
NIST Metrology Program	--						
CHIPS Defense Fund (DOD)	--	$0.4 billion	$0.4 billion	$0.4 billion	$0.4 billion	$0.4 billion	

National Semiconductor Technology Center

- Structured as public-private consortium with a headquarters and network of technical centers
- Grow the domestic semiconductor workforce

National Advanced Packaging Manufacturing Program

- Separate NIST program, but will coordinate closely with the NSTC

DOD Microelectronics Commons

- Department of Defense Microelectronics Commons to support lab to fab transition for R&D innovations with defense implications

Manufacturing USA Institutes

- Establish up to 3 institutes focused on topics such as machinery automation, advanced ATP capabilities, and skills training

CHIPS ACT ENABLING INVESTMENTS AND JOBS

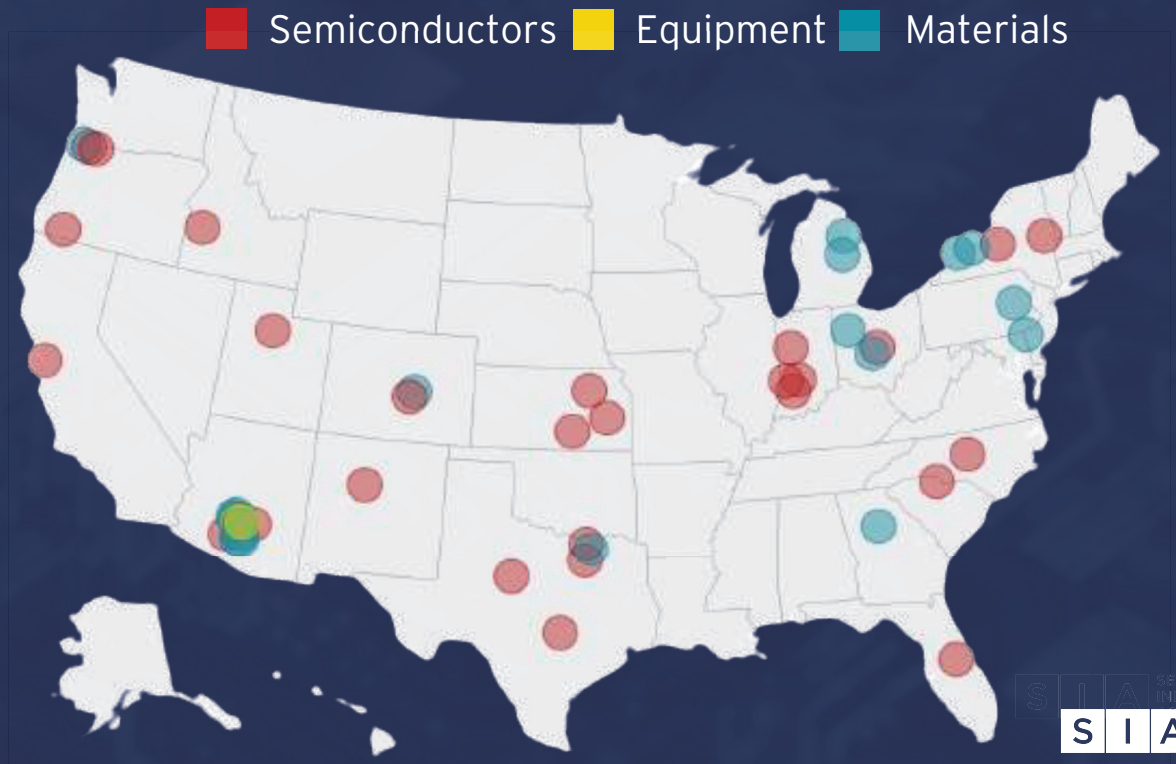
Grant program and tax credits must be implemented wisely

Key Facts:

- **$210 billion** in private investments over the next decade for fabs, packaging, equipment, materials.
- **50 projects in 19 states** to strengthen domestic manufacturing and expand capacity
- **44,000** jobs, which support an additional **228,000** indirect jobs

The CHIPS Act in Action

Announced Projects



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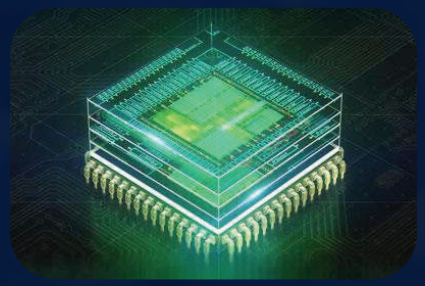
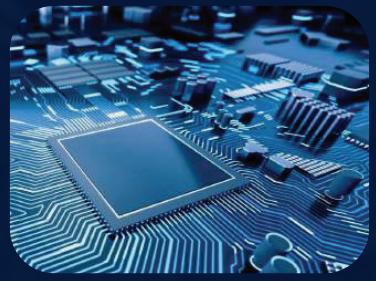
Source: SIA Analysis

SUPPLY CHAIN RESILIENCY

U.S. LEADERSHIP

Chip Design



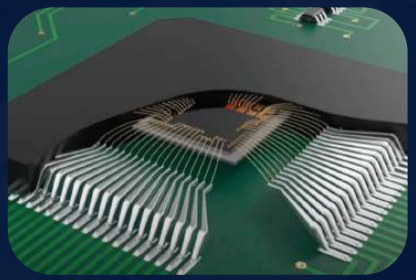


EDA & CORE IP

Fab Equipment

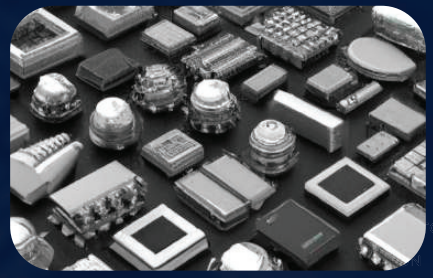
GAPS/VULNERABILITIES

Manufacturing



Assembly, Test, & Packaging

Materials



WORKFORCE: CHALLENGES & OPPORTUNITIES

Engineers

Shortage of Semiconductor Engineers Due to Departure of Foreign STEM Graduates

Field, by percent international

Electrical Engineering	74%
Computer and Information Sciences	72%
Industrial and Manufact. Engineering	71%
Civil Engineering	61%
Mechanical Engineering	58%
Chemical Engineering	54%
Metallurgical/Materials Engineering	53%
Materials Sciences	52%

Source: National Science Foundation Survey of Graduate Students and Postdoctorates in Science and Engineering, 2019

Technicians

Over 75,000 semiconductor technicians needed by 2030 due to new jobs created and annual turnover

Apprenticeships	Associate's Degrees
Quick Start/ Bootcamps	Certificate Programs

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