Semiconductor Processing Technicians

SOC: 51-9141 • Career Profile Report

■ Key Facts

$51,180	31,900	+11.0%
Median Salary	Employment	Growth Rate

■ Requirements & Salary Range

Education: High school diploma

■ Automation Risk Assessment

Medium Risk - 38.0% probability of being automated in the next 10-20 years.

This job has some routine elements but still requires human judgment and interaction.

■■ Work-Life Balance

6.2/10 - Good work-life balance

■ Personality Fit (RIASEC)

Higher scores indicate better personality fit for this career type.

Realistic	8.4/10	**Investigative**	5.0/10
Artistic	3.8/10	**Social**	4.6/10
Enterprising	4.0/10	**Conventional**	8.0/10

■ Top Skills Required

Communication skills, Computer skills, Critical-thinking skills, Detail oriented, Dexterity

✓ Strengths

• High Demand
• Flexible Work
• Continuous Learning

■ Challenges

• Burnout Risk
• Rapid Technological Change

■ What They Do

Semiconductor Processing Technicians are highly specialized manufacturing professionals who operate and monitor the **equipment used to fabricate semiconductor wafers and microchips**. They play a critical role in the production of integrated circuits that power computers, smartphones, medical devices, vehicles, and advanced industrial systems. Working in cleanroom environments, these technicians ensure precision, quality, and consistency at the microscopic scale.

This career is well suited for individuals who enjoy technical work, following exact procedures, and contributing to cutting-edge technology manufacturing.

What Do Semiconductor Processing Technicians Do?

Semiconductor processing technicians run and maintain complex fabrication equipment used in chip manufacturing. Their responsibilities focus on precision, safety, and process control.

Common responsibilities include:

- Operating semiconductor fabrication equipment and tools
- Monitoring production processes and system parameters
- Loading and unloading silicon wafers into processing machines
- Inspecting wafers for defects or contamination
- Recording production data and process results
- Troubleshooting equipment or process deviations
- Following strict cleanroom and safety procedures

Key Areas of Semiconductor Processing

Technicians may work in different stages of chip fabrication:

- Photolithography: Patterning circuits onto wafers using light-based processes.
- Etching and Deposition: Removing or layering materials at the nanoscale.
- Diffusion and Ion Implantation: Modifying electrical properties of silicon.
- Chemical Mechanical Planarization (CMP): Smoothing wafer surfaces.
- Metrology and Inspection: Measuring and verifying wafer quality.
- Cleanroom Operations: Maintaining contamination-free environments.

Skills and Abilities Needed

Semiconductor processing technicians combine technical aptitude with strict attention to detail.

Core Technical Skills

Personal Qualities That Matter

Education and Training Pathway

Most semiconductor processing technicians enter the field through technical education and specialized training:

- Associate Degree or Technical Certificate: In semiconductor manufacturing, electronics, or engineering technology
- On-the-Job Training: Learning specific fabrication tools and processes
- Cleanroom and Safety Training: Required for contamination control and hazardous materials
- Continuing Education: Keeping up with evolving semiconductor technologies

Some technicians advance into equipment engineering, process engineering, or supervisory roles.

Where Do Semiconductor Processing Technicians Work?

These technicians are employed primarily in high-tech manufacturing environments:

- Semiconductor Fabrication Facilities (Fabs)

- Electronics and Microchip Manufacturers
- Research and Development Laboratories
- Equipment Manufacturing and Testing Companies
- Defense and Advanced Technology Facilities

Work is typically performed in cleanrooms with shift-based schedules, including nights or weekends.

How Much Do Semiconductor Processing Technicians Earn?

Earnings vary by experience, employer, and region:

- Entry-Level Technicians: Typically earn competitive technical wages
- Experienced Technicians: Often earn higher pay with advanced tool expertise
- Specialized or Senior Technicians: May earn more due to responsibility for critical processes

Compensation often includes shift differentials and benefits.

Is This Career Difficult?

This career is technically demanding and requires strict discipline. Technicians must maintain extreme precision, follow complex procedures, and work in highly controlled environments. The challenge lies in minimizing errors at microscopic scales while meeting production targets and safety standards.

Who Should Consider This Career?

This career may be a strong fit if you:

- Enjoy hands-on technical and manufacturing work
- Are interested in electronics and advanced technology
- Can follow precise instructions consistently
- Prefer structured, high-standards environments
- Want to work in a critical role within the semiconductor industry

How to Prepare Early

- Take courses in electronics, physics, and chemistry
- Learn basic manufacturing and quality control concepts
- Practice attention to detail and procedural discipline
- Explore technical or community college programs in semiconductor technology
- Seek internships or entry-level roles in electronics manufacturing

Semiconductor processing technicians enable modern technology by producing the microchips that power today's digital world, working with precision at the smallest scales of manufacturing.