

DEFENSE INDUSTRIAL BASE ASSESSMENT: U.S. MICROELECTRONICS INDUSTRY



SCOPE OF ASSESSMENT

The U.S. Department of Commerce (DOC), Bureau of Industry and Security (BIS), Office of Technology Evaluation (OTE), is conducting a survey and assessment of the capabilities of the U.S. microelectronics industrial base to support the national defense as required in Section 9904 of the National Defense Authorization Act (NDAA) of Fiscal Year 2021 (15 USC §4654), in light of the global nature and interdependencies of the supply chain. The survey will collect information on the upstream materials and downstream end uses associated with microelectronics production.

This survey is not part of the application for funding under Section 9902 of the 2021 NDAA (15 USC §4652). Individual survey responses will not affect your organization's eligibility and/or consideration for CHIPS Act or other government funding.

RESPONSE TO THIS SURVEY IS REQUIRED BY LAW

A response to this survey is required by law (50 USC §4555). Failure to respond can result in a maximum fine of \$10,000, imprisonment of up to one year, or both. Information furnished herewith is deemed confidential and will not be published or disclosed except in accordance with Section 705 of the Defense Production Act of 1950, as amended (50 USC §4555). Section 705 prohibits the publication or disclosure of this information unless the President determines that its withholding is contrary to the national defense. Information will not be shared with any non-government entity, other than in aggregate form. The information will be protected pursuant to the appropriate exemptions from disclosure under the Freedom of Information Act (FOIA), should it be the subject of a FOIA request.

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number.

BURDEN ESTIMATE AND REQUEST FOR COMMENT

Public reporting burden for this collection of information is estimated to average 14 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information to BIS Information Collection Officer, Room 6883, Bureau of Industry and Security, U.S. Department of Commerce, Washington, D.C. 20230, and to the Office of Management and Budget, Paperwork Reduction Project (OMB Control No. 0694-0119), Washington, D.C. 20503.

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

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BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

General Instructions

Your organization is required to complete this survey on the U.S. Microelectronics industrial base.

You must complete the survey using the DOC/BIS template which is Microsoft Excel based and can be downloaded at [link TBA].

A If you are not able to download the survey document, at your request BIS staff will email the Excel survey template directly to you.

For your convenience, a PDF version of the survey and required drop-down content is available on the BIS website to aid internal data collection. DO NOT SUBMIT the PDF version of the survey as your response to BIS. Should this occur, your organization will be required to resubmit the survey in Excel format.

B **This survey is not part of the application for funding under Section 9902 of the 2021 NDAA (15 USC \$4652). Individual survey responses will not affect your organization's eligibility and/or consideration for CHIPS Act or other government funding.**

Any forecasts requested in this survey are understood to be speculative and for aggregate, statistical purposes.

C Your organization has the option to provide a single Corporate level response or separate Business Unit/Division level responses for each of its semiconductor-related businesses.

Note, if your organization is completing Business Unit/Division level surveys, any reference to "your organization" should be inferred as business unit or division. The reporting level must remain consistent throughout the survey, unless instructed otherwise.

D Respond to every question. Surveys that are not fully completed will be returned for completion. Use the comment boxes to provide any information to supplement responses provided in the survey form. Make sure to record a complete answer in the space provided, even if the space does not appear to expand to fit all of the information.

Survey inputs should be completed by typing in responses or by using a drop-down menu.

E **Do not disclose any U.S. Government (USG) classified information in this survey form.**

F Submission of completed survey documents should be done using the designated Semiconductor Study inbox: SemiconductorStudy@bis.doc.gov

Questions related to the survey should be directed to BIS survey support staff at SemiconductorStudy@bis.doc.gov

G E-mail is the preferred method of contact.

You may speak with a member of the BIS survey support staff by calling (202)-482-7808.

For questions related to the overall scope of this assessment, contact SemiconductorStudy@bis.doc.gov or:

H Jason D. Bolton
Division Director, Industrial Studies
Defense Industrial Base Division
BIS/Export Administration/Office of Technology Evaluation
1401 Constitution Avenue, NW, Room 1093
Washington, DC 20230

DO NOT submit completed surveys to Mr. Bolton's postal or personal email address. All surveys must be submitted electronically to [TBD].

Section 1: Organization Information

Indicate the reporting level for this survey before proceeding by selecting Corporate/Organization Level Response or Business Unit/Division Level Response from the dropdown below. Note, the reporting level of responses must remain consistent throughout the survey.

Reporting Level:

Corporate Information		Business Unit or Division Information	
Provide the following information about your organization's corporate location.		Provide the following information about the Business Unit/Division completing this survey, if applicable.	
Organization Name		Business Unit/Division Name	
Street Address		Street Address	
City		City	
State/Province		State/Province	
Postal Code/Zip Code		Postal Code/Zip Code	
Country of Global Headquarters		Country	

Contact Information

Provide your organization's (1) primary point of contact and (2) alternate point of contact for this survey. The primary point of contact will serve as the principal liaison between your organization and the Department of Commerce regarding completion of this survey.

	Point of Contact Name	Official Title	Phone Number	Email Address	State/Province
1					
2					

Ownership

Is your organization publicly traded or privately held? If your organization is publicly traded, provide its stock ticker symbol:

Is your organization owned, in whole or in part, by another entity?

If yes, provide all entities that, directly or indirectly, own or have beneficial ownership of five percent or more of your organization in descending order in the table below.

	Entity Name	Percent Held	Voting Percent	Street Address	City	State/Province	Country
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Facilities

Provide the total number of U.S.-based facilities and non-U.S.-based facilities your organization operates. Then, provide the corresponding number of facilities for each segment of the microelectronics industry in which your organization participates. Facilities should be counted in all segments in which they operate (double-counting is expected).

Segment	Total U.S. Facilities	Total Non-U.S. Facilities
Total		
Intellectual Property (IP) Core		
Electronic Design Automation (EDA)		
Design		
Test and Verification		
Front-End Manufacturing		
Assembly and/or Packaging		
Semiconductor Manufacturing Equipment and Tooling		
Materials and/or Inputs		
Electronic Manufacturing Services (EMS)/Printed Circuit Board (PCB) Assembly		
Research and Development (R&D)		
Intermediate or End User of Semiconductor Products		
Distribution and/or Warehousing		
Other (Specify Here)		
Other (Specify Here)		

Government and Industry Codes

Provide the Unique Entity Identifier (UEI) assigned to your organization by SAM.gov, if applicable:

Provide the primary CAGE, DUNS, and/or NAICS code(s) associated with your organization's corporate location, as applicable.

Commercial and Government Entity (CAGE) Code(s):	Data Universal Numbering System (DUNS) Code(s):	NAICS (6-digit) Code(s):
Find CAGE codes at: https://cage.dia.mil/	Find DUNS numbers at: https://www.dnb.com/	Find NAICs codes at: https://www.census.gov/naics/

Comments:

Section 2: Facilities and Operations

Identify each of your organization's facilities in operation since 2017, including facilities that are idle/standby, closed, or planned/expected (e.g. facilities that are or will be under construction or development). Then, provide the information related to each facility, as applicable. Note, for (g), (h), (i), and (j), you may specify the metric as applicable to your organization if the default metric is not appropriate using the dropdown menu option.

Facilities should include manufacturing facilities, design/R&D facilities, and distribution facilities. Do not include facilities that are solely engaged in sales and/or marketing activities. If you are reporting closed facilities, you only need to report facilities that have been closed within the past five years.

For column (h), "optimal 2022 capacity" is the capacity level this facility would have in 2022 if your organization were able to make this change with no cost or lead time.

Facility Name	Location			Operations						Energy Use			Future Outlook			
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)		(l)	(m)	(n)	
	City	State/Province	Country	Primary Operation (select from drop-down)	Operating Status (select from drop-down)	Initial Year of Operations (YYYY)	2022 Capacity (if applicable)	Optimal 2022 Capacity (if applicable)	Expected 2022 Capacity (if applicable)	2022 Facility Total Energy Usage (MWh)	Expected Facility Energy Use Change Through 2027 (select from drop-down)	Change in Energy Use	Reason for the Change	Do you have any plans to expand this facility within the next 10 years? (select from drop-down)	Do you have any plans to modernize this facility within the next 10 years? (select from drop-down)	Explain the future outlook for this facility, as applicable.
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Comments

Section 3a: Product Capability

Note: Sections 3a-3d are interconnected. In sections 3a-3c, you are asked to provide information on your organization's general product capabilities, production capabilities, and the estimated end use for each category. In section 3d, you are asked to provide more specification on your organization's primary products within each category, as applicable.

For each product category your organization designs, manufactures, and/or distributes, indicate the appropriate participation type and provide the corresponding product category information, as applicable. For (f), (g), (h), and (i), the default metric is nanometer (nm), however, you may specify the metric as applicable to your organization within the dropdown menu.

Product Category	Product Category Information								
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Participation Type <i>(select from drop-down)</i>	Percent (%) of Production (By Revenue)	Current Lead Time (Weeks)	Primary Material <i>(select from drop-down)</i>	Primary Wafer Size <i>(select from drop-down)</i>	Primary Technology Node	Smallest Technology Node	Largest Technology Node	Expected Primary Technology Node in 2027
						Nanometer (nm)	Nanometer (nm)	Nanometer (nm)	Nanometer (nm)
1 Analog ICs									
2 Microcontroller and Microprocessor ICs									
3 Logic ICs									
4 Memory ICs									
5 Discretes									
6 Optoelectronics									
7 Sensors & Actuators									
8 Printed Circuit Boards									
9 Equipment and Tooling									
10 Intermediate or End Product									
11 Test and Design Verification									
12 Assembly and/or Packaging									
13 Other	(Specify Here)								
14 Other	(Specify Here)								
15 Other	(Specify Here)								

Comments

Section 3b: Production Capability

For each product category your organization designs, manufactures, and/or distributes, **estimate** the percentage of each function (i.e. Design, Manufacture, Assembly/Packaging/Test, and Distribution) that is carried out by the specified locations (U.S. or Non-U.S.) and by whom (in-house or outsourced). For the Design function, pre-existing IP blocks should be counted separately from both in-house and out-sourced design.

Product Category	Design							Manufacture					Assembly/Packaging/Test					Distribution					
	U.S.			Non-U.S.			Total	U.S.		Non-U.S.		Total	U.S.		Non-U.S.		Total	U.S.		Non-U.S.		Total	
	In House	Outsourced	Pre-Existing Licensed IP Blocks	In House	Outsourced	Pre-Existing Licensed IP Blocks		In House	Outsourced	In House	Outsourced		In House	Outsourced	In House (Direct Sales)	Outsourced (Third-Party Sales)		In House (Direct Sales)	Outsourced (Third-Party Sales)				
1 Analog ICs							0%						0%										0%
2 Microcontroller and Microprocessor ICs							0%						0%										0%
A 3 Logic ICs							0%						0%										0%
4 Memory ICs							0%						0%										0%
5 Discretes							0%						0%										0%
6 Optoelectronics							0%						0%										0%
7 Sensors & Actuators							0%						0%										0%
8 Printed Circuit Boards							0%						0%										0%
9 Equipment and Tooling							0%						0%										0%
10 Intermediate or End Product							0%						0%										0%
11 Test and Design Verification							0%						0%										0%
12 Assembly and/or Packaging							0%						0%										0%
13 Other: N/A							0%						0%										0%
14 Other: N/A							0%						0%										0%
15 Other: N/A							0%						0%										0%
Comments																							

Section 3c: Product End Use (Estimate)

For each product category your organization designs, manufactures, and/or distributes, estimate the percentage of revenue attributed to each commercial and defense end use, where known.

Product Category	Commercial End Use										Defense End Use			
	Appliances/ Consumer Goods	Automotive	Commercial Aerospace	Healthcare/ Medical	Industrial	IT/Computers: Consumer Products	IT/Computers: Servers	Mobile Devices	Network Infrastructure	Other Commercial	U.S. Defense	Foreign Defense	Total	Unknown
1 Analog ICs													0%	100%
2 Microcontroller and Microprocessor ICs													0%	100%
3 Logic ICs													0%	100%
4 Memory ICs													0%	100%
5 Discretes													0%	100%
6 Optoelectronics													0%	100%
7 Sensors & Actuators													0%	100%
8 Printed Circuit Boards													0%	100%
9 Equipment and Tooling													0%	100%
10 Intermediate or End Product													0%	100%
11 Test and Design Verification													0%	100%
12 Assembly and/or Packaging													0%	100%
13 Other: N/A													0%	100%
14 Other: N/A													0%	100%
15 Other: N/A													0%	100%

B Overall, how confident is your organization in estimating its product end-uses on a scale of 1 (Not at all confident) to 5 (Extremely confident)? Select the closest number from the scale in the dropdown.

Comments

Section 3d: Primary Products

For each product category your organization designs, manufactures, and/or distributes, list up to the three primary product types with the highest gross revenue and provide the corresponding product type information, as applicable.
 For (g), (h), (i), and (j), the default metric is nanometer (nm), however, you may specify the metric as applicable to your organization within the dropdown menu.

		Product Type Information									
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Product Category	Primary Product Type <i>(select from drop-down)</i>	Product Description	Percent (%) of Category's Production (By Revenue)	Current Lead Time (Weeks)	Primary Material <i>(select from drop-down)</i>	Primary Wafer Size <i>(select from drop-down)</i>	Primary Technology Node	Smallest Technology Node	Largest Technology Node	Expected Primary Technology Node in 2027	
							Nanometer (nm)	Nanometer (nm)	Nanometer (nm)	Nanometer (nm)	
A	1 Analog ICs	1									
		2									
		3									
	2 Microcontroller and Microprocessor ICs	1									
		2									
		3									
	3 Logic ICs	1									
		2									
		3									
	4 Memory ICs	1									
		2									
		3									
	5 Discretes	1									
		2									
		3									
6 Optoelectronics	1										
	2										
	3										
7 Sensors & Actuators	1										
	2										
	3										
8 Printed Circuit Boards	1	(write-in)									
	2	(write-in)									
	3	(write-in)									
9 Equipment and Tooling	1	(write-in)									
	2	(write-in)									
	3	(write-in)									
10 Intermediate or End Product	1	(write-in)									
	2	(write-in)									
	3	(write-in)									
11 Test and Design Verification	1	(write-in)									
	2	(write-in)									
	3	(write-in)									
12 Assembly and/or Packaging	1	(write-in)									
	2	(write-in)									
	3	(write-in)									
13 Other: N/A	1	(write-in)									
	2	(write-in)									
	3	(write-in)									
14 Other: N/A	1	(write-in)									
	2	(write-in)									
	3	(write-in)									
15 Other: N/A	1	(write-in)									
	2	(write-in)									
	3	(write-in)									

Comments

Section 4: Outsourced Production

For each production function your organization outsources (i.e. Design, Manufacturing, Assembly/Packaging/Test, and/or Distribution), indicate the total number of service providers your organization uses both physically located in the U.S. and physically located outside of the U.S. Next, list up to the ten service providers most important for your organization's continued operations in each of respective functions and provide the corresponding information, as applicable.

A) Outsourced Design (IP Licensing)

Total Number of Providers Servicing in the U.S.:		Total Number of Providers Servicing Outside of the U.S.:					
	<input type="text"/>	<input type="text"/>					
	Design/IP Provider Name	Primary Location of Service Performance <i>(select from drop-down)</i>	Primary Product Category <i>(select from drop-down)</i>	Percent (%) of Primary Product Dependent on Provider	Percent (%) of Products Dependent Overall on Provider	Primary Reason for Service Provider Selection <i>(select from drop-down)</i>	Availability of Alternative Service Providers <i>(select from drop-down)</i>
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

B) Outsourced Manufacturing

Total Number of Providers Servicing in the U.S.:		Total Number of Providers Servicing Outside of the U.S.:					
	<input type="text"/>	<input type="text"/>					
	Manufacturing Provider Name	Primary Location of Service Performance <i>(select from drop-down)</i>	Primary Product Category <i>(select from drop-down)</i>	Percent (%) of Primary Product Dependent on Provider	Percent (%) of Products Dependent Overall on Provider	Primary Reason for Service Provider Selection <i>(select from drop-down)</i>	Availability of Alternative Service Providers <i>(select from drop-down)</i>
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

C) Outsourced Assembly/Packaging/Test

Total Number of Providers Servicing in the U.S.:		Total Number of Providers Servicing Outside of the U.S.:					
	<input type="text"/>	<input type="text"/>					
	Assembly/Packaging/Test Provider Name	Primary Location of Service Performance <i>(select from drop-down)</i>	Primary Product Category <i>(select from drop-down)</i>	Percent (%) of Primary Product Dependent on Provider	Percent (%) of Products Dependent Overall on Provider	Primary Reason for Service Provider Selection <i>(select from drop-down)</i>	Availability of Alternative Service Providers <i>(select from drop-down)</i>
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

D) Outsourced (Third-Party) Distribution

Total Number of Providers Servicing in the U.S.:		Total Number of Providers Servicing Outside of the U.S.:					
	<input type="text"/>	<input type="text"/>					
	Distribution Provider Name	Primary Location of Service Performance <i>(select from drop-down)</i>	Primary Product Category <i>(select from drop-down)</i>	Percent (%) of Primary Product Dependent on Provider	Percent (%) of Products Dependent Overall on Provider	Primary Reason for Service Provider Selection <i>(select from drop-down)</i>	Availability of Alternative Service Providers <i>(select from drop-down)</i>
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Comments

Section 5: Material and Input Suppliers

For each material and input category, provide the total number of suppliers your organization uses for its facilities located in the U.S. (Part A) and its facilities located outside of the U.S. (Part B); then, provide the corresponding information for each material and input category your organization sources, as applicable. Note, estimates for lead time and inventory levels are acceptable.

A) U.S. Facilities										
	Material and Input Category	Total Suppliers	Total # of Suppliers Physically Located in the U.S.	Percent (%) Supplied by U.S Based Suppliers	Primary Reason for Supplier Selection <i>(select from drop-down)</i>	Availability of Alternate Suppliers <i>(select from drop-down)</i>	Lead Time (Weeks)	2018 Inventory Levels (Weeks of Supply)	2022 Inventory Levels (Weeks of Supply)	Optimal Inventory Levels (Weeks of Supply)
A	1 Wafer									
	a Bulk Silicon									
	b Other									
	c Other									
	2 Photoresist									
	3 Photomask									
	4 Gases									
	5 Wet Chemicals									
	6 CMP Slurry									
	7 PVD Targets									
	8 ALD/CVD Materials									
	9 Electroplating Metals									
	10 Spin-on Dielectrics									
	11 Leadframes									
	12 Packaging Substrates									
	13 Ceramics									
	14 Bonding Wire									
	15 Die Attach Material									
	16 Encapsulation Resins									
	17 Other	(Specify Here)								
18 Other	(Specify Here)									
19 Other	(Specify Here)									
20 Other	(Specify Here)									
B) Non-U.S. Facilities										
	Material and Input Category	Total Suppliers	Total # of Suppliers Physically Located in the U.S.	Percent (%) Supplied by U.S Based Suppliers	Primary Reason for Supplier Selection <i>(select from drop-down)</i>	Availability of Alternate Suppliers <i>(select from drop-down)</i>	Lead Time (Weeks)	2018 Inventory Levels (Weeks of Supply)	2022 Inventory Levels (Weeks of Supply)	Optimal Inventory Levels (Weeks of Supply)
B	1 Wafer									
	a Bulk Silicon									
	b Other									
	c Other									
	2 Photoresist									
	3 Photomask									
	4 Gases									
	5 Wet Chemicals									
	6 CMP Slurry									
	7 PVD Targets									
	8 ALD/CVD Materials									
	9 Electroplating Metals									
	10 Spin-on Dielectrics									
	11 Leadframes									
	12 Packaging Substrates									
	13 Ceramics									
	14 Bonding Wire									
	15 Die Attach Material									
	16 Encapsulation Resins									
	21 Other	(Specify Here)								
	22 Other	(Specify Here)								
	23 Other	(Specify Here)								
	24 Other	(Specify Here)								
	Comments									

Section 5b: Material and Inputs of Concern

For each material and input category that your organization sources, name up to three of the most essential material and inputs that your organization has difficulty acquiring. When reporting the supplier's country, provide the country where the supplier is physically located not the country where the supplier's headquarters are located.

Material and Input Category	Name of Material or Input of Concern	Level of Difficulty to Acquire (select from drop-down)	Primary Product Affected (select from drop-down)	Primary Supplier			Secondary Supplier			Lead Time (Weeks)	Inventory Levels (Weeks of Supply)			Do you anticipate difficulties to acquire this material/input in the future?	
				Supplier Name	Supplier Country	Percent (%) Supplied	Supplier Name	Supplier Country	Percent (%) Supplied		2018	2022	Optimal	Level of Difficulty	Explain
1	Wafer	1 2 3													
2	Photoresist	1 2 3													
3	Photomask	1 2 3													
4	Gases	1 2 3													
5	Wet Chemicals	1 2 3													
6	CMP Slurry	1 2 3													
7	PVD Targets	1 2 3													
8	ALD/CVD Materials	1 2 3													
9	Electroplating Metals	1 2 3													
10	Spin-on Dielectrics	1 2 3													
A	Leadframes	1 2 3													
12	Packaging Substrates	1 2 3													
13	Ceramics	1 2 3													
14	Bonding Wire	1 2 3													
15	Die Attach Material	1 2 3													
16	Encapsulation Resins	1 2 3													
17	Other: N/A	1 2 3													
18	Other: N/A	1 2 3													
19	Other: N/A	1 2 3													
20	Other: N/A	1 2 3													
21	Other: N/A	1 2 3													
22	Other: N/A	1 2 3													
23	Other: N/A	1 2 3													
24	Other: N/A	1 2 3													

Comments

Section 6: Equipment Suppliers

For each equipment category, provide the total number of suppliers your organization uses for its facilities located in the U.S. (Part A) and its facilities located outside of the U.S. (Part B); and provide the corresponding information, as applicable.

A) U.S. Facilities												
Equipment Category	Total Number of Suppliers	Primary Equipment Supplier Name	Primary Supplier Country	Description/ Specific Tool	Average Lead Time by Equipment Wafer Size (Weeks) (as applicable)				Primary Reason for Supplier Selection (select from drop-down)	Primary Challenge/Concern (select from drop-down)	Availability of Alternate Suppliers (select from drop-down)	Additional Comments
					<=150mm	200mm	300mm	No Size				
1 Design Tools and EDA Software												
2 Deposition												
3 RTP and Oxidation Diffusion												
4 Lithography												
5 Photoresist Processing												
6 Material Removal and Cleaning												
7 Diffusion/Ion Implantation (doping)												
8 Process Control (Metrology and Inspection)												
9 Manufacturing Automation												
10 Other Wafer Fabrication Equipment												
11 Test and Related Equipment												
12 Assembly Equipment												
13 Other (Specify Here)												
14 Other (Specify Here)												
15 Other (Specify Here)												

B) Non-U.S. Facilities												
Equipment Category	Total Number of Suppliers	Primary Equipment Supplier Name	Primary Supplier Country	Description/ Specific Tool	Average Lead Time by Equipment Wafer Size (Weeks) (as applicable)				Primary Reason for Supplier Selection (select from drop-down)	Primary Challenge/Concern (select from drop-down)	Availability of Alternate Suppliers (select from drop-down)	Additional Comments
					<=150mm	200mm	300mm	No Size				
1 Design Tools and EDA Software												
2 Deposition												
3 RTP and Oxidation Diffusion												
4 Lithography												
5 Photoresist Processing												
6 Material Removal and Cleaning												
7 Diffusion/Ion Implantation (doping)												
8 Process Control (Metrology and Inspection)												
9 Manufacturing Automation												
10 Other Wafer Fabrication Equipment												
11 Test and Related Equipment												
12 Assembly Equipment												
13 Other (Specify Here)												
14 Other (Specify Here)												
15 Other (Specify Here)												

Export Controls

1 What is your organization's outlook for equipment supply over the next three years?

2 Indicate the impact of export controls on your production levels and provide an explanation below.

3 Have export controls affected your organization's equipment acquisition processes? If yes, provide an explanation below.

4 Has your organization experienced loss of sales opportunities due to export controls? If yes, provide an explanation below.

Comments

Section 7: Current and Future End Use

(Part B):

(a) the percentage (%) of your organization's total revenue attributed to the end use overall, (b) the percentage (%) of (a) attributed to U.S. sales in the end use, (c) the primary non-U.S. country of end use, (d) the total percentage (%) of (a) attributed to its primary country of end use, and (e) the percentage (%) of the end use segment using advanced packaging.

Example: Your organization's total revenue is split 50/50 between the Automotive and Commercial Aerospace end uses. Of the percentage of total revenue attributed to each respective end use, 50% of the Automotive and 100% of the Commercial Aerospace end use total revenue is attributed to U.S. sales. Overall, 75% of your organization's total revenue is attributed to U.S. sales across its end uses.

Commercial End Use	(a)	(b)
	Percent (%) of Total Revenue	Percent (%) of End Use Total Revenue from U.S. Sales
Automotive	50%	50%
Commercial Aerospace	50%	100%
Total Commercial	100%	75%

Next, in each Total Commercial and Total Defense row in both Part A (current end uses) and Part B (future/expected end uses), identify the primary non-U.S. country of respective total end use, the percentage (%) of total revenue attributed to the primary country, and the percentage (%) of the respective total end use using advantaged packaging.

A) Current End Use (Estimated)										
Commercial End Use	(a)		(b)		(c)		(d)		(e)	
	Percent (%) of Total Revenue		Percent (%) of End Use Total Revenue from U.S. Sales		Primary Non-U.S. Country of End Use (select from drop-down)		Percent (%) of End Use Total Revenue to Primary Country		Percent (%) of End Use Using Advanced Packaging	
1 Appliances/Consumer Goods										
2 Automotive										
3 Commercial Aerospace										
4 Healthcare/Medical										
5 Industrial										
6 IT/Computers - Personal and Consumer Products										
7 IT/Computers - Servers										
8 Mobile Devices										
9 Network Infrastructure										
# Other										
Total Commercial (Current)	0%	0%								
Defense End Use	Percent (%) of Total Revenue		Percent (%) of End Use Total Revenue from U.S. Sales		Primary Non-U.S. Country of End Use (select from drop-down)		Percent (%) of End Use Total Revenue to Primary Country		Percent (%) of End Use Using Advanced Packaging	
# U.S. Defense										
# Foreign Defense										
Total Defense (Current)	0%	0%								
B) Future/Expected End Use (Estimated)										
Commercial End Use	(a)		(b)		(c)		(d)		(e)	
	Percent (%) of Total Revenue		Percent (%) of End Use Total Revenue from U.S. Sales		Primary Non-U.S. Country of End Use (select from drop-down)		Percent (%) of End Use Total Revenue to Primary Country		Percent (%) of End Use Using Advanced Packaging	
	2027	2032	2027	2032	2027	2032	2027	2032	2027	2032
Appliances/Consumer Goods										
Automotive										
Commercial Aerospace										
Healthcare/Medical										
Industrial										
IT/Computers - Personal and Consumer Products										
IT/Computers - Servers										
Mobile Devices										
Network Infrastructure										
Other										
Total Commercial (Future/Expected)	0%	0%	0%	0%						
Defense End Use	Percent (%) of Total Revenue		Percent (%) of End Use Total Revenue from U.S. Sales		Primary Non-U.S. Country of End Use (select from drop-down)		Percent (%) of End Use Total Revenue to Primary Country		Percent (%) of End Use Using Advanced Packaging	
U.S. Defense										
Foreign Defense										
Total Defense (Future/Expected)	0%	0%	0%	0%						

Comments

Section 8: Supply Chain and Risk Management

Does your organization have a supply chain risk management (SCRM) program?	
What software, subscriptions, and/or tools do your organization use to help anticipate and monitor supply chain risks (e.g. disruptions, bottlenecks, delays, etc.)?	
What protocols do your organization have in place to mitigate supply chain risks (e.g. bottlenecks, disruptions, delays, etc)? Please explain.	

For the below supply chain practices or features, identify how your organization's activities (a) have changed since 2017 and (b) are expected to change from 2022 to 2027.

	Item	Change since 2017	Explanation of Changes	Expected Changes from 2022 to 2027	Explanation of Anticipated Changes
B	1 Redundancy of suppliers				
	2 Localized supply chains				
	3 Target inventory levels				
	4 Length of supplier contracts				
	5 Length of customer contracts				
	6 Use of non-cancellable supplier contracts				
	7 Use of non-cancellable customer contracts				
	8 Number of supply chain management workers				
	9 Use of distributors				
	10 Use of supply chain modeling and forecasting				
	11 Use of shipping and receiving ports				
	12 Other	(Specify Here)			
	13 Other	(Specify Here)			

Please describe your organization's general method for maintaining inventory levels of critical materials:

In the event of an unexpected shutdown, how long would it take your organization to resume normal levels of production? *(select from dropdown)*

C Identify the three materials/inputs for which your organization expects to have the greatest increase in usage/demand in the next 10 years:

	Material/Input	Explanation
1		
2		
3		

Comments

Section 9: U.S. Employment and Workforce Development

Respond to the questions below pertaining to employment and workforce development in the U.S.

Employment Totals

Record the total number of U.S. Citizen and non-U.S. Citizen full time equivalent (FTE) employees and contractors at your U.S. facilities for each year from 2017 to present, as well as the percentage of non-U.S. Citizen FTE employees and contractors that are H1-B Visa Holders. Then, indicate the annual turnover rate for U.S. Citizen and non-U.S. Citizen FTE employees.

		2017	2018	2019	2020	2021	2022	Annual Turnover Rate
A	1 U.S. Citizen							
	2 Non-U.S. Citizen							
	a % of H1-B Visa Holders							
	b % from U.S. Arms Embargoed Countries*							

*As of the release of this survey this includes: Afghanistan, Belarus, Burma, Cambodia, Central African Republic, China (PRC), Congo, Cuba, Cyprus, Eritrea, Haiti, Iran, Iraq, Lebanon, Libya, North Korea, Russia, Somalia, South Sudan, Sudan, Syria, Venezuela, and Zimbabwe

Educational Qualifications

Record the total number of current and expected full time equivalent (FTE) employees by qualification. Then, identify the primary job title associated with each educational level and key challenges associated with recruiting or maintaining employees at each educational level.

	2022	2027	2032	Primary Job Title	Explanation of Challenges Recruiting/Maintaining
B No Education Requirement					
High School/GED					
Certification or Partial College					
B.S./B.A.					
M.S./M.A.					
Doctorate					

Vacancies

For each occupation category that your organization employs, indicate the minimum educational qualification required, the average salary, and the average starting salary. Then, record the number of current employees and number of current vacancies (2022) as well as the number of vacancies expected in the next 5 years (2027) and in the next 10 years (2032) in each category.

Occupational Categories	Minimum Educational Qualification Required (select from dropdown)	Average Salary (\$)	Average Starting Salary (\$)	Current Employees	Current Vacancies	Total Number of Employees (Expected)	
				2022	2022	2027	2032
C Manufacturing Engineers, Scientists, R&D							
Production Line Operations							
Testing and Quality Control							
Information Technology/Computing							
Sales, Administrative, and Management							
Other (Specify Here)							
Other (Specify Here)							

Workforce Development

Indicate your organization's level of difficulty recruiting/training workers with little industry experience. Explain:

Indicate which of the following methods you currently employ, then rank the top five by their value to your organization's recruitment/training programs:

Program	Use	Rank	Explanation
1 Internships			
2 Outreach to K-12			
3 Partnership with local high schools			
4 Partnership with local community college			
5 Partnership with local university			
6 Partnership with semiconductor associations			
7 Participation in career fairs			
8 Direct advertising			
9 Outreach to specific communities (e.g., Veterans)			
10 Partnership with local American Job Centers			
11 Other (Specify here)			
12 Other (Specify here)			

D Identify the skills necessary for your industry that are currently least available:

If you have had difficulty obtaining and retaining the necessary skilled workforce; what steps could and should the U.S. government pursue to assist industry prevent that difficulty in the future?

What key workforce programs are your organization undertaking to rebuild the semiconductor workforce in the U.S.?

What does your organization offer to employees as part of workforce retention efforts? (e.g. salary/wage increases, bonuses, tuition reimbursement, etc)

What trainings or certifications does your organization cover for employees?

What percentage of your current employees has received on-the-job training related to the skills identified as necessary for the industry and how often are these trainings conducted?

Comments

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

Section 10a: Financials

Report the following financial line items for the years 2017 to present.

Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12

Reporting Schedule:		2017	2018	2019	2020	2021	2022 (Estimate)
Income Statement (Select Line Items)							
	1 Net Sales (and other revenue)						
	a. % of U.S. Sales						
	1.1. % of U.S. sales from U.S. locations						
	1.2. % of U.S. sales from non U.S. locations						
A	b. % of Non-U.S. Sales						
	2.1. % of non-U.S. sales from U.S. locations						
	2.2. % of non-U.S. sales from non-U.S. locations						
	2 Cost of Goods Sold						
	3 Total Operating Income (Loss)						
	4 Earnings Before Interest and Taxes						
	5 Net Income						
Balance Statement (Select Line Items)							
	1 Cash						
	2 Inventories						
B	3 Current Assets						
	4 Total Assets						
	5 Current Liabilities						
	6 Total Liabilities						
	7 Retained Earnings						
	8 Total Owner's Equity						
Human Capital Expenditure							
C	1 a. Total Salary and Wages (Including Benefits)						
	b. Estimated costs associated with recruitment						
	c. Estimated costs associated with workforce training						
D	On a scale of 1 to 10, estimate your organization's overall financial health (1 being imminent failure and 10 being highly profitable for the foreseeable future).						
Comments							
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act							

Data Confirmation
2020 Net Sales
None

Section 10b: Research, Development, and Capital Expenditures

Research & Development (R&D) Expenditure		2017	2018	2019	2020	2021	2022 (Estimate)	2027 (Expected)	2032 (Expected)
1. Total R&D Investment									
a. % of investment in R&D carried out in the U.S.									
b. % of investment in R&D carried out outside of the U.S.									
Government-Funded R&D		2017	2018	2019	2020	2021	2022 (Estimate)	2027 (Expected)	2032 (Expected)
2. Total R&D funding received from U.S. government sources									
a. % of R&D funding from U.S. Federal Government									
b. % of R&D funding from U.S. State and Local Governments									
3. Total R&D funding received from non-U.S. government sources									
a. Primary country and % of R&D funding received									
b. Secondary country and % of R&D funding received									
c. Tertiary country and % of R&D funding received									

Identify your organization's top anticipated R&D priorities over the next five years and provide a brief description. Next, indicate the percent (%) of funding your organization anticipates to receive from government (both U.S. or non-U.S.), and provide the primary Country and State source of funding, as applicable.

R&D Priority	Description	Percent (%) of Funding Anticipated from Government	Primary Source of Government Funding (as applicable)			
			Country	% of Funding	State	% of Funding
1						
2						
3						
4						
5						

Capital Expenditure (CapEx)		2017	2018	2019	2020	2021	2022 (Estimate)	2027 (Expected)	2032 (Expected)
1. Total CapEx Investment									
a. % of investment in the U.S.									
b. % of investment outside of the U.S.									
c. % of investment outside of the U.S.									
Does your organization expect to use the investment tax credit included in Section 107 of the CHIPS Act of 2022 (also known as the FABS Act)?				Explain:					
2. If Yes, estimate the expected total value of the applicable investment				Explain:					
Does your organization expect to be impacted by the corporate minimum tax included as part of the Inflation Reduction Act of 2022?				Explain:					

In the table below, identify your organization's anticipated top CapEx priorities over the next five to ten years.

For each CapEx priority, select the option from the drop down menu that best aligns with your organization's investment. If the option provided do not represent your organization's investment priority, use the "Other: Specify here:" option to write in your response. Then, provide a description of the CapEx investment priority. For example, if your organization is investing in equipment, describe the type of equipment that will be acquired through the investment.

For the Product Category, select the two product categories that will be primarily affected by the investment and the respective primary technology node. If you need to report additional product categories, use the comment section at the end of the page. When providing the "Anticipated Total Cost (\$)", indicate the overall cost of the investment, including any government or third party funding.

CapEx Investment	Primary Facility	Product Category (select from dropdown)	Primary Technology Node (Nanometer (nm))	Year	Anticipated Total Cost (\$)	Percent (%) of Government Funding	Primary Source of Government Funding Anticipated (as applicable)	
							Country	State
1. Priority	Description							
2								
3								
4								
5								

Have any of your investment projections increased due to unexpected disruptions such as construction delays, licensing issues, labor shortages/increased wages, etc.? If yes, indicate the type of delay, the percent of budget increase attributed to the delay, the number of days delayed, and provide an explanation.

Type of Delay (select from dropdown)	Budget Increase (%)	# of Days Delayed	Explain
1			
2			
3			
4			
5			
6			
7			

1. Are any of your investment plans currently on hold or pending until government funding is available?

Explain

2. Will investment plans receive foreign funding or incentives if U.S. funding is unavailable?

Explain

Comments

Section 11a: Joint Ventures and Partnerships

How many joint ventures does your organization currently participate in?

Identify your organization's current joint venture relationships, including public/private R&D partnerships. Explain the purpose of each joint venture (e.g. patent licensing, co-production, product integration, after-market support, etc.), as applicable.

Partner Organization/Entity Name	Country	Controlling Shareholder	Year Initiated	Primary Purpose of Relationship (select from dropdown)	Explain
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Has your organization had any actions blocked (or failed as a result of lack of government approval) or mandated by a government entity? Such actions might include mergers, acquisitions, joint ventures, partnerships, sales agreements, licensing agreements, etc.

If yes, identify the action(s) and government(s) involved.

Actions	Government Involved	Explain
1		
2		
3		
4		
5		

Has your organization received solicitations or requests for partnership from entities that are known/suspected of being state owned or affiliated with foreign government?

If yes, identify each entity and the foreign government, then provide an explanation.

Entity Name	Foreign Government	Explain
1		
2		
3		
4		
5		

Has your organization felt coerced to share technology with a JV partner or government?

If yes, provide the following information for each instance your organization felt coerced to share technology.

Entity Name	Type of Technology	Description	Did the transfer occur?	Method of Transfer	Country (if applicable)	Estimated Value (USD) of the transferred technology
1						
2						
3						
4						
5						

Does your organization currently participate in any semiconductor industry consortia? If yes, please provide an explanation.

Explain

Does your organization currently participate in any Cooperative Research or Production Agreements? If yes, please provide an explanation.

Explain

Comments

Section 11b: Technology Transfers

Has your organization lost control of its IP to any entity whose primary beneficiary your organization knows or suspects is a foreign government or is affiliated with a foreign government or is otherwise state-controlled?

If yes, identify the most recent entities of such transfers, the beneficiary country, the primary method of transfer, the type of IP, and provide an explanation.

	Entity Name	Beneficiary Country	Primary Method of Transfer	Type of IP	Explain
A 1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Has your organization experienced any unauthorized transfers of its microelectronics-related design and manufacturing intellectual property, including trade secrets or confidential business information, from 2017 to present?

Indicate the methods by which unauthorized transfers of your organization's microelectronics-related design and manufacturing intellectual property, including trade secrets or confidential business information, occurred from 2017 to present, the suspected location of the perpetrator(s), the type of IP, trade secrets or confidential business information that was transferred, and explain.

	Method	Suspected Country	Suspected Perpetrator if Known	Type of IP/ TradeSecrets/ Confidential Business Information	Explain
B	Cybersecurity intrusions				
	Planting staff in your organization				
	Physical break-ins at organization facilities				
	Business partners				
	Dumpster diving				
	Current employees (other than persons performing R&D within your organization)				
	Former employees				
	External IT system contractors				
	Persons performing R&D within your organization				
	Organization campus Wi-Fi network interceptions				
	Disclosure by outside industry analysts/experts				
	Disclosure by your bankers/financiers				
	Disclosure by contractors and suppliers				
	Violation of Non-Disclosure Agreements (NDAs)				
	Insertion of vulnerabilities in the supply chain				
	Compromised managed service provider				
	Phishing/spear-phishing				
	Other (Specify Here)				

Comments

Section 12: Competitive Factors

Estimate the current percentage of cost of sales by process step, as well as the breakout of the percentage of cost of sales carried out or sourced (a) in the U.S. and (b) outside of the U.S.

Process Step	Percent (%) of Cost of Sales	Percent (%) Carried out or sourced in U.S.	Percent (%) Carried out or sourced outside U.S.	Explain
1 Direct Labor				
a Design Labor				
b Front-End Manufacturing Labor				
c Back-End Manufacturing Labor				
A 2 Core IP				
3 Fabrication as a Service (Foundry Services)				
4 Material Inputs				
5 Processed Inputs				
6 Energy				
7 Water				
8 Test and Verification				
9 Assembly and/or Packaging				
10 Transportation				
11 Other				

For each of the following factors, indicate whether locating the factor inside the U.S. or outside the U.S. provides the greater competitive advantage. Next, rank your organization's top five factors (1 being the most important; 2 being the next most important, etc.) when deciding on a location to invest on the expansion or construction of facilities, and explain.

Factor	Location with Greatest Advantage	Country with Greatest Advantage	Rank	Explain
Labor Cost				
Labor Availability				
Labor Quality				
Material Cost				
Material Availability				
Material Quality				
Equipment Cost				
Equipment Availability				
Equipment Quality				
R&D Cost				
B R&D Quality				
Energy Reliability				
Environmental Compliance Cost				
Export Control Compliance Cost				
Export Control Policies				
Energy Cost				
Renewable Energy Accessibility				
Construction Time				
Construction Cost				
Proximity to Customers				
Tax Costs				
Government Incentives				
Collaboration Benefits				
Ability to Protect IP				
Other	(specify here)			
Other	(specify here)			

Comments

Section 13: Long Term Development and Investment

What factors do you consider when investing on the expansion or construction of facilities? Please list the decision making factors by importance.

Deciding Factor		Explanation
A	1	
	2	
	3	
	4	
	5	

Which value chain segments are most in need of government incentives and/or financial intervention? (List up to the 3 by order of importance).

Value Chain Segment (select from dropdown)	Explanation
1	
2	
3	

1 Are there any regulations preventing your organization from constructing, expanding or modernizing any facilities in the U.S.? If yes, provide an explanation.

--

2 What can the U.S. government do to promote higher investment of microelectronics manufacturing in the United States?

--

3 What can help your organization's coordination with local economic development organizations to help facilitate investment?

--

4 How can the United States government help facilitate the long-term competitiveness of your organization?

--

B

5 What other economic clusters should the United States Government invest in to help strengthen the semiconductor industry? For example, AI, etc. How could these investments benefit your company?

--

6 How could the United States Government stimulate R&D partnerships within the semiconductor fields and related sectors such as metals, materials, etc at research universities, etc to help with R&D?

--

7 What are the most important emerging technologies that your organization is currently exploring or developing?

--

8 What are the most important emerging technologies for the microelectronics industry as a whole?

--

9 What are the main obstacles to introducing emerging technologies into broad-scale manufacturing? Are those obstacles larger or smaller in the United States? How and why?

--

Comments	
----------	--

Section 14: Challenges

Identify the issues that have impacted your organization between 2017 to present and the issues that you anticipate will impact your organization between 2023 and 2027. Then, rank your organization's top five issues for both time frames (1 being the most important issue; 2 being the next most important issue, etc.) and explain the affirmative issues where examples and narrative will aid the U.S. Government's understanding of your concerns. Then, provide any suggestions for ways the U.S. Government can help mitigate the issue, if applicable. Explanations and suggested solutions are helpful but not required.

Type of Issue	2017 to 2022		2023 to 2027		Explanation of Issue	Suggested USG Solution/Mitigation
	-Yes/No-	Rank	-Yes/No-	Rank		
Aging equipment, facilities, or infrastructure						
Aging workforce						
Competition - domestic						
Competition - foreign						
Counterfeit parts						
Cyber security						
Environmental regulations/remediation						
Export controls/ITAR & EAR						
Financing/credit availability						
Government acquisition process						
Government purchasing volatility						
Government regulatory burden						
A Healthcare						
Industrial espionage - domestic						
Industrial espionage - foreign						
Input availability (e.g. materials)						
Input quality						
Intellectual property/patent infringement						
Labor availability/costs						
Lack of infrastructure						
Lack of public R&D partnerships (e.g. universities)						
Natural disasters (including disease/quarantine)						
Obsolescence						
Pension costs						
Proximity to customers						
Proximity to suppliers						
Qualifications/certifications						
R&D costs						
Reduction in USG demand						
Taxes						
Trade disputes						
Worker/skills retention						
Other (specify here)						
Other (specify here)						
Other (specify here)						
Comments						

Section 15: Certification

The undersigned certifies that the information herein supplied in response to this questionnaire is complete and correct to the best of his/her knowledge. It is a criminal offense to willfully make a false statement or representation to any department or agency of the United States Government as to any matter within its jurisdiction (18 U.S.C. 1001 (1984 & SUPP. 1197))

Once this survey is complete, first save it to your computer, and then submit the document via [instructions TBA].

Organization Name	
Organization's Internet Address	
Name of Authorizing Official	
Title of Authorizing Official	
E-mail Address	
Phone Number and Extension	
Date Certified	

In the box below, provide any additional comments or any other information you wish to include regarding this survey assessment.

--

How many hours did it take to complete this survey?	
---	--

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

Code	Category	Description
0000	Root	Root
0001	Contract/Project Analysis	Contract/Project Analysis
0002	Analysis	Analysis
0003	Phase Management	Phase Management
0004	Sign-off/Closeout	Sign-off/Closeout
0005	Analysis/Design/Construction	Analysis/Design/Construction
0006	Application Specific Analysis	Application Specific Analysis
0007	Construction	Construction
0008	Construction	Construction
0009	Construction	Construction
0010	Construction	Construction
0011	Construction	Construction
0012	Construction	Construction
0013	Construction	Construction
0014	Construction	Construction
0015	Construction	Construction
0016	Construction	Construction
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0097	Construction	Construction
0098	Construction	Construction
0099	Construction	Construction
0100	Construction	Construction