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Next Page

OMB Control Number: 0694-0143
Expiration Date: March 31, 2022

REQUEST FOR PUBLIC COMMENT: RISKS IN THE SEMICONDUCTOR PRODUCT SUPPLY CHAIN

This form is intended to be used to submit comments on challenges currently facing the semiconductor product supply chain. All comments are invited, with this form designed to facilitate submission of information from sellers of integrated circuits (in Sections 2 through 5) and purchasers of integrated circuits or related products (in Sections 6 through 8).

Indicate here if this form contains business confidential information, or if all information contained throughout this form is public:	**BUSINESS CONFIDENTIAL**	Justification of nondisclosure and legal authority claimed:	**We believe this information is protected from public disclosure under 5 U.S.C. § 552(b)(4)**

Those submitting a form containing business confidential information will need to submit a non-confidential version of the same form that does not contain the business confidential information.

A.	Organization Name	ZZZB Corporation
	Street Address	12345 Eastern East Street
	City	Productburg
	State	Maine
	Zip Code	99999
	Country	United States
	Website	www.zzzbcorpwebsite.com

From the list below, identify your organization's primary and additional participation in the semiconductor product supply chain. Please mark all applicable rows.

	Segment		Participation
B.	Integrated Circuit Design		
	Front End Fabrication		
	Back End/Assembly Test/Packaging		
	Electronic Manufacturing Services / Printed Circuit Board Assembly		
	IC Distributor		
	Equipment Supplier		
	Material Supplier		
	Electronic Component Supplier		
	Intermediate or End User of Semiconductor Products		Primary
	Other	(specify here)	

Next Step:
Sections 2 through 5 of this form are intended to be filled out by organizations that have primary or additional participation in the following segments: Integrated Circuit Design, Front End Fabrication, Back End/Assembly Test/Packaging, Electronic Manufacturing Services / Printed Circuit Board Assembly, and IC distributor.

Sections 6 through 8 of this form are intended to be filled out by organizations that purchase integrated circuits.

If your organization’s responses do not reasonably fit in the above sections, please provide comments in Section 9.

BURDEN ESTIMATE AND REQUEST FOR COMMENT

Public reporting burden for this collection of information is estimated to average 4 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. 0694-0143), Washington, D.C. 20503.

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Previous Page Next Page

Table of Contents

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Section 2: Semiconductor Providers - Product Capabilities

A. Indicate the technology nodes (in nanometers), semiconductor material types, and device types which this organization is capable of providing (design and/or manufacture). A blank response is counted as "No Capability".

Technology Node (nm)	
6,000 - 10,000	
3,000 - <6,000	
1,500 - <3,000	
1,000 - <1,500	
800 - <1,000	
500 - <800	
350 - <500	
250 - <350	
180 - <250	
130 - <180	
90 - <130	
65 - <90	
45 - <65	
32 - <45	
28 - <32	
14 - <28	
7 - <14	
<7	

Semiconductor Material Type		
Amorphous Silicon		
Bulk Silicon		
Silicon on Insulator		
Silicon Germanium		
Silicon on Sapphire		
Silicon Carbide		
Gallium Arsenide		
Gallium Nitride		
Indium Phosphide		
Antimonides		
Organic Technologies		
Carbon Based Technologies (e.g. nanotubes)		
Superconducting Materials		
Other	(specify here)	

Device Type Organizations participating in the Electronic Manufacturing Services / Printed Circuit Board Assembly segment should list device types under "Other"		
Analog/Linear Technologies		
Digital Logic Technologies		
Digital Signal Processors		
Field Programmable Gate Arrays		
Structured ASICs		
Standard Cell ASICs		
Custom ASICs		
3D/2.5 ASICs		
System-on-Chip		
Other Processors		
Mixed Signal Technologies		
Nonvolatile Memory		
SRAM		
DRAM		
MEMS Technologies		
Optical/Photonic Technologies		
MMIC Technologies		
Other RF Technologies		
Other	(specify here)	

B. Point of Contact

Name	Title	Phone Number	E-mail	State	Country

Clarifying Comments (if applicable):	

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Previous Page Next Page

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Section 3: Semiconductor Providers - Integrated Circuit Production

For any integrated circuits you produce--whether fabricated at your own facilities or elsewhere--identify the primary integrated circuit type, product type, relevant technology nodes (in nanometers), and actuals or estimates of annual sales for the years 2019, 2020, and 2021 based on anticipated end use.

Integrated Circuit Type						Integrated Circuit Production				
	Primary IC Type	Product Type	Primary Technology Node (nm)	Smallest Technology Node (nm)	Largest Technology Node (nm)			2019	2020	2021 (Projected)
Total						Total	$ (millions)			
							Units			
							Capacity (Units)			
Aerospace						Aerospace	% of Total $			
Automotive						Automotive	% of Total $			
Healthcare/Medical						Healthcare/Medical	% of Total $			
Industrial						Industrial	% of Total $			
IT/Computers - Personal and Consumer Products						IT/Computers - Personal and Consumer Products	% of Total $			
IT/Computers - Servers						IT/Computers - Servers	% of Total $			
Mobile Devices						Mobile Devices	% of Total $			
Network Infrastructure						Network Infrastructure	% of Total $			
Other (specify here)						Other	% of Total $			
Clarifying Comments (if applicable):										

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Previous Page Next Page

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Section 4a: Semiconductor Providers - Products

For the semiconductor products that your organization sells, identify those with the largest order backlog. Then for each product, identify the product attributes, sales in the past month, and location of fabrication and package/assembly. The total should account for all semiconductor products that your organization sells, not only the sum of those listed with the largest order backlogs.
This information will carry over into subsequent questions.

	Product					Most Recent Monthly Sales		Production				
	Product Name	Integrated Circuit Type	Material	Node (nm)	Product Description	$ (millions)	Units	Fabricated By	Fab Location	Packaged/Assembled By	Packaging/Assembly Location	Distributed By
	Total (all semiconductor products, including those not listed below)											
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Clarifying Comments (if applicable):	

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Previous Page Next Page

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Section 4b: Semiconductor Providers - Customers

For the top semiconductor products identified in Section 4a, list each product's top three current customers and the estimated percentage of that product's sales accounted for by each customer.

	Product Name (auto-generated from 4a)	Customer 1			Customer 2			Customer 3		
		Customer Name or Industry	Customer Location (City, State/Country)	% of Sales	Customer Name or Industry	Customer Location (City, State/Country)	% of Sales	Customer Name or Industry	Customer Location (City, State/Country)	% of Sales
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
Clarifying Comments (if applicable):										

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Previous Page Next Page

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Section 4c: Semiconductor Providers - Product Lead Times

For each phase of the production process, identify whether your organization carries out the step internally or externally. For the top semiconductor products identified in Section 4a, estimate each product's (a) 2019 lead time and (b) current lead time (in days), both overall and for each phase of the production process. Provide an explanation of any current delays or bottlenecks.

	Product Name (auto-generated from 4a)	Total Lead Time		Design phase		Acquisition of manufacturing inputs		Front End Manufacturing Process		Back End manufacturing process (ATP)		Electronic Manufacturing Services / Printed Circuit Board Assembly		Time in Outbound Transit/Shipping		Other		Explanation of Delays/Bottlenecks
	Internal/External --->																	
		2019	Current	2019	Current	2019	Current	2019	Current	2019	Current	2019	Current	2019	Current	2019	Current	
	Total (all semiconductor products)																	
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Clarifying Comments (if applicable):	

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Previous Page Next Page

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Section 4d: Semiconductor Providers - Product Inventories

For the top semiconductor products identified in Section 4a, list each product's 2019 and current inventory (in days), for finished product, in-progress product, and inbound product. Provide an explanation for any changes in inventory practices.

	Product Name (auto-generated from 4a)	Finished Inventory		In-Progress Inventory		Inbound Inventory		Explanation of Inventory Changes
		2019	Current	2019	Current	2019	Current	
	Total (all semiconductor products)							
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Clarifying Comments (if applicable):								

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Previous Page Next Page

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Section 5: Semiconductor Providers - Disruptions

A. What are the primary disruptions or bottlenecks that have affected your ability to provide products to customers in the last year?

	Disruption/Bottleneck	Supplier of Delayed Input	Primary Product Impacted (from Section 4a)	Explanation
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

B.

What is your organization's book-to-bill ratio for the past three years?	2019	Explanation of any changes:	
	2020		
	2021		
If the demand for your products exceeds your capacity, what is the primary method by which your organization allocates the available supply?		Explanation:	
Does your organization have available capacity?		If Yes, what is preventing the filling of that capacity?	
Is your organization considering increasing its capacity?		If Yes, in what ways, over what timeframe, and what impediments exist to such an increase?	
What factors does your organization consider when evaluating whether to increase capacity?			

C.

Has your organization changed its material and/or equipment purchasing levels or practices in the past three years?		Explanation:
What single change (and to which portion of the supply chain) would most significantly increase your ability to supply semiconductor products in the next six months?		

Clarifying Comments (if applicable):	

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Previous Page Next Page

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Section 6: Semiconductor Product Consumers

A. From the list below, identify the market segments that your organization currently serves:

Market Segment		Primary/Secondary/Other	Defense/Commercial
Aerospace		Primary	Both
Automotive			
Healthcare/Medical		Secondary	Commercial
Industrial			
IT/Computers - Personal and Consumer Products			
IT/Computers - Servers			
Mobile Devices			
Network Infrastructure			
Other	(specify here)		
Other	(specify here)		

B. Provide a general description of the types of products your organization sells that rely on semiconductors:

We primarily make consoles for aircraft, but have recently diversified into medical equipment.

Clarifying Comments (if applicable):	

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Previous Page Next Page

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Section 7a: Consumers - Inputs

For the semiconductor products that your organization purchases, identify those that present the greatest challenge for your organization to acquire. Then for each product, identify the product attributes and average monthly purchases in 2019 and 2021, as well as average monthly orders in 2021. Then estimate the quantity of each product your organization would purchase in the next six months barring any production constraints, as well as the amount your organization expects to actually be able to purchase.
This information will carry over into subsequent questions.

	Product					2019 Average Monthly Purchase		2021 Average Monthly Purchase		2021 Average Monthly Orders		Ideal Monthly Purchase Quantity, Next 6 Months		Expected Monthly Purchase Quantity, Next 6 Months	
	Supplier	Product Description	Semiconductor Type	Material	Node	$ (millions)	Units	$ (millions)	Units	$ (millions)	Units	$ (millions)	Units	$ (millions)	Units
	Total (all semiconductor products)					$2.00	15100	$1.40	13200	$2.43	24400	$1.85	19400	$1.44	13700
1	ABC Semi	Logic Gates	Digital Logic Technologies	Bulk Silicon	28	$0.22	1200	$0.12	1100	$0.22	2225	$0.17	1770	$0.12	1140
2	DEF Inc	Memory	DRAM	Bulk Silicon	45	$0.14	1000	$0.10	940	$0.25	2750	$0.13	1470	$0.10	1000
3	GEF Corp	PMIC	Digital Logic Technologies	Gallium Arsenide	14	$0.13	940	$0.09	825	$0.19	1900	$0.13	1325	$0.09	850
4															
5															
6															
7															
8															
9															
10															
	Clarifying Comments (if applicable):														

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Previous Page Next Page

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Section 7b: Consumers - Input Lead Times and Inventory

For each of the top semiconductor products identified in Section 7a, estimate each product's lead times (between when your organization places the order and receives the order) and your organization's inventory for (a) 2019 and (b) currently (in days). Provide an explanation of any current delays or bottlenecks.

	Supplier Product (auto-generated from 7a)	Lead Time		Inventory		Explanation of Delays/Bottlenecks and Changes in Inventory Practices
		2019	Current	2019	Current	
	Total (all semiconductor products)	45 days	135 days	12 days	7 days	It has taken our suppliers significantly longer to provide products. We would have preferred to increase inventory, but have been unable to.
1	ABC Semi - Microcontrollers	47 days	210 days	9 days	7 days	ABC Semi tells us they have delays with their own suppliers
2	DEF Inc - Memory	19 days	155 days	0 days	0 days	We're told packaging is the problem for lead times. Per our business practices, we typically did not maintain inventory for this product
3	GEF Corp - processors	62 days	190 days	16 days	13 days	Some product is provided in a timely manner, but overall lack of availability has increased average lead times
4						
5						
6						
7						
8						
9						
10						
	Clarifying Comments (if applicable):					

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Previous Page Next Page

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Section 8: Consumers - Supply Chain Disruptions

A. What are the primary disruptions or bottlenecks that have affected your ability to provide products to customers in the last year?

	Disruption/Bottleneck	Primary Semiconductor Input Impacted (from Section 7a)	Supplier of Delayed Input	Your Organization's Primary Product Impacted	Explanation
1	Insufficient supply of processors	GEF Corp - processors	GEF Corp	Dialysis machines	We have been unable to purchase enough processors for the dialysis machines we manufacture
2	COVID	ABC Semi - Microcontrollers	ABC Semi	Aircraft display consoles	COVID shutdowns have caused significant delays in sourcing products
3	Shipping	ABC Semi - Microcontrollers	AMC Semi	Aircraft display consoles	Shipping delays of up to 3 months
4					
5					
6					
7					
8					
9					
10					

B.

Is your organization limiting production due to lack of available semiconductors?	Yes	Explanation	We have more demand for products than we're able to supply based on availability of inputs
What percentage of your current production has your organization had to defer, delay, reject, or suspend in the past year?	13%	Explanation	For now most orders are delayed, but we fear cancellations if the situation isn't resolved soon
Is your organization considering or carrying out new investments to mitigate semiconductor sourcing difficulties?	Neither	Explanation	We don't have the ability to make investments in semiconductors, but would be willing to coordinate with others in similar circumstances to support the necessary investments

C. What semiconductor product types are most in short supply, and by what estimated percentage relative to your demand? What is your view of the root cause?

	Product	Percent of your demand you are able to fill	Explanation
1	28nm silicon processors for our dialysis machines	45%	We just can't get enough. They need to make more.
2			
3			

D.

Has your organization changed its material and/or equipment purchasing levels or practices in the past three years?	No	Explanation:	
What single change (and to which portion of the supply chain) would most significantly increase your ability to purchase semiconductors in the next six months?	Semiconductor manufacturers should increase their production		
What percentage of your orders are fulfilled by distributors versus through direct purchase orders to semiconductor product manufacturers?	Direct Purchase from OEM: 75%	Distributor: 25%	
For the semiconductor products your organization purchases, how long (in months) are the typical purchase commitments?	0 months	How, if at all, do your organization's purchase commitments differ for products in short supply?	None

E. Has your organization faced “de-commits” (defined as a notification from a supplier that expected or committed supply will not be delivered in the agreed-upon time and quantity) in recent months? If this is a significant issue, please explain (e.g., nature of product, supplier, impact)

We have typically placed just-in-time orders, and haven't experienced cancellations, but have found that multiple suppliers have turned down our orders due to inability to provide.

Clarifying Comments (if applicable):

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Previous Page Next Page

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Section 9: General Comments

Use this space to provide any general comments that do not reasonably fit in other sections of the form. Please limit your response to the space available; supplemental information can be submitted as a separate attachment on regulations.gov.

A.	

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Previous Page

Section A: Definitions

Term	Definition
Authorizing Official	An executive officer of the organization or business unit or another individual who has the authority to execute this survey on behalf of the organization.
Capability	The ability to perform standardized design and/or manufacturing steps for producing integrated circuit products within an organization's own facilities and its own employees with little or no outsourcing.
Complementary Metal Oxide Semiconductor (CMOS)	A class of semiconductor used in digital logic circuits employed in microcontrollers, microprocessors, memory, and other devices. The technology is also used in analog circuits such as sensors, transceivers, data converters and other systems.
Customer	An entity to which an organization directly delivers the product or service that the facility produces. A customer may be another organization or another facility owned by the same parent organization. The customer may be the end user for the item but often will be an intermediate link in the supply chain, adding additional value before transferring the item to yet another customer.
Design Facility	A facility with personnel who use design software, intellectual property blocks, supporting computer systems, and other information technology to create integrated circuit designs.
Extreme Integration	The incorporation of functional systems (e.g., logic, memory, input/output, etc.) on an integrated circuit (IC) die or in combination with the integration of multiple IC die (such as memory, standard processors, and field programmable gate arrays) to form a single operational component.
Foundry	For the purpose of this survey a foundry is considered to be a facility that manufactures integrated circuit products for outside organizations as a business. Foundries are: 1) businesses dedicated solely to manufacturing integrated circuit products for fabless integrated circuit companies and other businesses; and/or 2) organizations that chiefly design and manufacture their own integrated circuit products, but that also operate a business of manufacturing IC products for other entities for a fee.
Integrated Circuit (IC)	Analog or digital devices that incorporate transistors, diodes, capacitors, resistors, and other circuit elements that are integrated on a single substrate (chip), typically silicon.
Manufacturing	The production of a working integrated circuit product at a fabrication facility.
Manufacturing Facility	A facility that transforms integrated circuit designs into integrated circuit devices using an array of fabrication equipment including photolithography, deposition, etch, wafer dicing, and testing tools. These facilities produce functioning die as an end-product, devices that may be built with electronics-grade silicon or compound semiconductor materials, including gallium arsenide, gallium nitride, indium phosphide, and others.
Non-U.S. Company	For the purpose of this survey, a non-U.S. company is an organization (publicly traded, privately held, for profit, not-for-profit, or non-profit) that is domiciled at a location outside of the United States. Companies that are a business unit of a parent organization with legal domicile located outside of the United States are non-U.S. companies.
Organization	A company, firm, laboratory, or other entity that owns or controls one or more U.S. establishment(s) capable of designing and/or manufacturing integrated circuit products. A company may be an individual proprietorship, partnership, joint venture, or corporation including any subsidiary corporation in which more than 50 percent of the outstanding voting stock is owned by a business trust, cooperative, trustee(s) in bankruptcy, or receiver(s) under decree of any court owning or controlling one or more establishment.
Outsource	To obtain goods and/or services by contract from a supplier (domestic or foreign) outside the organization.
Product/Process Development	Conceptualization and development of a product prior to the production of the product for customers.
Semiconductor	Elemental materials such as silicon and germanium (or compounds like gallium arsenide) that possess levels of electrical conductivity that are less than a conductor but greater than an insulator. The properties of these materials and similar ones can be manipulated to affect conductivity through temperature and/or the use of dopants.
Service	An intangible product (contrasted to a good, which is a tangible product). Services typically cannot be stored or transported, are instantly perishable, or come into existence at the time they are bought and consumed.
Single Source	An organization that is designated as the only accepted source for the supply of parts, components, materials, or services, even though other sources with equivalent technical know-how and production capability may exist.
Sole Source	An organization that is the only source for the supply of parts, components, materials, or services. No alternative U.S. or non-U.S. based suppliers exist other than the current supplier.
Supplier	An entity from which your organization obtains inputs, which may be goods or services. A supplier may be another firm with which you have a contractual relationship, or it may be another facility owned by the same parent organization.
United States	The "United States" or "U.S." includes the 50 states, Puerto Rico, the District of Columbia, Guam, the Trust Territories, and the U.S. Virgin Islands.
Wafer Starts Per Week	The number of semiconductor wafers that can be processed by an integrated circuit production line in a 7-day period.