Before the United States International Trade Commission

In the Matter of Investigation Number 332-536
The Information Technology Agreement: Advice and Information on the Proposed Expansion: Part 2

November 20, 2012

Post-Hearing Briefing Comments from the Semiconductor Industry Association

Introduction

The Semiconductor Industry Association (SIA) strongly supports the expansion of duty free treatment for information technology (IT) products under the Information Technology Agreement (ITA). SIA regards the ITA as one of the most meaningful and successful trade agreements in the World Trade Organization (WTO). Since the ITA's inception in 1996, two-way trade of products covered by the ITA has grown from $1.2 trillion to $4 trillion, a 233 percent increase. U.S. exports of ICT products have almost tripled over the past 15 years to an estimated $1.4 trillion in 2010. Consumers of semiconductors, in particular, have benefited from the ITA. A recent study by the WTO on the ITA notes that semiconductors are the largest IT product category in the ITA, and accounted for 33 percent of global exports of IT products in 2010. In short, the ITA has helped drive innovation, accelerate productivity, increase employment, create more efficient markets, lower consumer prices, and bridge communities throughout the world in ways that were unimaginable 15 years ago when the Agreement was signed.

However, we cannot assume ITA benefits will continue unabated into the future. As advances in technology and innovation continue in the semiconductor industry, the substantial

benefits that the ITA has to offer might be lost unless the scope of the ITA changes to include these new products. Specifically, two such semiconductor innovations that should be covered by an expanded ITA are multi-component integrated circuits (MCO) and multi-chip packages (MCP). Covering these products would contribute significantly to ensure that the United States remains a leader in semiconductor and ICT exports, innovation, productivity, and growth. For example, MCOs are estimated to comprise between 1.5 percent and 3 percent of the global semiconductor market. Inclusion of MCOs in an expanded ITA would result in estimated global tariff savings of between $94 and $188 million, a significant portion of which would benefit U.S. semiconductor companies and their customers. Given the importance of MCOs, the World Semiconductor Council (WSC) -comprised of the semiconductor industry associations in China, Chinese Taipei, Europe, Japan, Korea, and the United States- has strongly endorsed the inclusion of MCOs in the ITA.

In addition to direct tariff elimination benefits for MCOs and MCPs, SIA supports expanding the ITA to include a wide range of ICT products being proposed, because doing so would also allow consumers to enjoy more benefits from semiconductor technology. Semiconductors are the building blocks that drive virtually all electronic products. As such, they are an integral and complementary component of the broader ICT ecosystem, an ecosystem which includes a host of downstream assemblies and finished electronic products as well as upstream semiconductor tools. When costs are lower in the broader ICT ecosystem, consumers are able to purchase more features for the same expenditure. In short, we see the semiconductor industry and its customers benefiting not simply through adding semiconductor products to the ITA but by broadening the ITA to include products throughout the ICT ecosystem.

Finally, SIA believes ITA expansion would also help eliminate uncertainty that arises as convergence in the ICT industry—the bringing of many technology functions into one product—continues to advance. ITA expansion would address the question of inclusion of "next generation" or "break-through" technologies, thereby helping to promote continued innovation in the ICT sector.

Semiconductors and the U.S. Semiconductor Industry

Semiconductor "chips" are used in everything that is computerized or uses radio waves. Indeed, semiconductors are critical components in a staggering variety of products, from smaller computers and smart phones to safer automobiles and navigation systems; from more energy efficient LED lights and appliances to smarter meters and motors. Semiconductors make the world around us smarter, greener, safer, and more efficient. They form the backbone of our critical telecommunications, power and transportation infrastructure and are economically vital to the nation's growth and productivity.

In 2011, U.S. semiconductor companies generated over $152 billion in sales — representing over half the worldwide market, and making semiconductors the nation's second largest export industry on a five year average from 2007-2011. The U.S. semiconductor industry directly employs nearly a quarter of a million workers in the United States and indirectly accounts for over a million additional jobs in other sectors of the U.S. economy. Economic analyses demonstrate that semiconductors, and the information technologies they enable, represent three percent of the economy, but drive 25 percent of economic growth. The U.S. semiconductor industry has an especially robust presence in over twenty states and funds research at over 40 U.S. universities.

Background on the SIA

SIA is the voice of the U.S. semiconductor industry, one of America's largest export industries and a bellwether of the U.S. economy. Semiconductor innovations form the foundation for America's high-tech sector affecting millions of U.S. workers. Founded in 1977 by five microelectronics pioneers, SIA unites more than 60 companies from across the United States that account for 80 percent of the Nation's semiconductor production. SIA seeks to strengthen U.S. leadership in semiconductor design and manufacture by working with the Administration, Congress, and other industry groups to enable the right ecosystem for technology development and commercialization. Specifically, SIA encourages policies and regulations that fuel innovation, propel business and drive international competition in order to maintain a thriving semiconductor industry in the United States.

ITA Benefits

The ITA is one of the most successful trade agreements in the World Trade Organization (WTO). It has helped to drive the growth of the information communications technology (ICT sector), promote innovation, accelerate productivity, create new companies and jobs, increase employment, establish a more open and efficient global market, and lower consumer prices.

Consumers of semiconductor technology, in particular, have benefited from the ITA. Semiconductor products account for a substantial portion of high-tech trade growth under the ITA. A recent study by the WTO on the ITA notes that semiconductors are the largest IT product category in the ITA, and accounted for 33 percent of global exports of IT products in

2010. Semiconductor products also have the highest export growth rate of all ITA product categories, growing at 7.8 percent from 2005-2010.

More broadly, the ITA has had significant benefits to the overall IT sector. Since the ITA's inception in 1996, two-way trade of products covered by the ITA has grown from $1.2 trillion to $4 trillion, a 233 percent increase. U.S. exports of ICT products have almost tripled over the past 15 years to an estimated $1.4 trillion in 2010. According to the WTO, from 1996 to 2010 total IT world exports have grown by an average annual rate of 7 percent. During this same time, total IT world imports have grown by an average annual rate of 7.7 percent. In short, the ITA has benefited our world in ways that were unthinkable 15 years ago when the Agreement was conceived.

Benefits of ITA Expansion to the U.S. Semiconductor Industry and ICT Consumers

However, we cannot assume ITA benefits will continue unabated into the future. Specifically, as advances in technology and innovation occur in the semiconductor industry, the substantial benefits that the ITA has to offer might be lost. New types of semiconductors that did not exist when the original ITA was signed 15 years ago have been are under development which further miniaturize semiconductor technology and allow consumers to enjoy products that are more mobile with greater functionality. Unfortunately, many of these new semiconductors are not covered under the current ITA. Product advances and technological innovation are causing today's semiconductors to fall outside traditional integrated circuit customs' classification codes and into H.S. categories on which duties of up to 20% are applied in countries around the world.

Two such innovations in the industry are multi-component integrated circuits (MCO) and multi-chip packages (MCP). These are two prime examples of how the ICT sector has exploded with new and improved products since the ITA came into force, yet the scope of the Agreement

has never been expanded. For the U.S. to remain a leader in semiconductor and ICT exports, innovation, productivity, and growth, the scope of the ITA needs to expand to include these products.

MCOs, a new innovation in semiconductor technology, are estimated to comprise between 1.5 percent and 3 percent of the global semiconductor market. Inclusion of MCOs in an expanded ITA would result in estimated global tariff savings of between $94 and $188 million. Given the importance of MCOs, the World Semiconductor Council (WSC) -comprised of the semiconductor industry associations in China, Chinese Taipei, Europe, Japan, Korea, and the United States- has strongly endorsed the inclusion of MCOs in the ITA.

In addition to direct tariff elimination benefits for such products, SIA supports expanding the ITA to include a wide range of ICT products being proposed, because doing so would lower costs on products that contain semiconductors and thus expand the benefits of semiconductor technology to consumers. Semiconductors are the building blocks that drive virtually all electronic products. As such, they are an integral and complementary component of the broader ICT ecosystem, an ecosystem which includes a host of downstream assemblies and finished electronic products as well as upstream semiconductor tools. As costs are reduced in the broader ICT ecosystem, consumers are able to reap more of the benefits of ICT. In short, we see the semiconductor industry and its customers benefiting not simply through adding semiconductor products to the ITA but by broadening the ITA to include products throughout the ICT ecosystem.

Finally, SIA believes ITA expansion would also help eliminate uncertainty that arises as convergence in the ICT industry—the bringing of many technology functions into one

product—continues to advance. ITA expansion would address the question of inclusion of "next generation" or "break-through" technologies, thereby helping to promote continued innovation in the ICT sector.

Inclusion of Multi-Component Semiconductors (MCOs) and Multi-Chip Packages (MCPs) in ITA Expansion

Since the ITA was negotiated in the mid-1990's, advances in technology have led to new types of semiconductor devices, including what is known as multi-component semiconductors, referred to as MCOs, and multi-chip packages, known as MCPs. This evolution of semiconductor devices – which allows more than one component inside the package but does not alter the underlying basic functionality of the semiconductor product – has given rise to a classification issue since they appear to be "more than" a semiconductor "device" and, cannot currently be correctly classified as a collection of semiconductors on a printed circuit board, i.e., a "printed circuit assembly." MCOs, in fact, currently fall outside the HS heading for integrated circuits (8542) given existing definitional criteria established by the World Customs Organization (WCO) for this heading.

These MCO products are sometimes classified according to the products into which they will be incorporated as "parts of" those products. Parts, accessories and components are often covered by separate headings and subheadings under the terms of the structure of the HS. As such, MCOs currently may be found across a broad variety of headings, such as parts of refrigerators (8418.99) dishwashers (8422.90), vending machines (8476.90), vacuum cleaners (8508.70), smart phones (8517.12), gaming consoles (9504.10), and medical devices (9018.11-

20), to name a few. In short, they have fallen between the cracks in many jurisdictions and have been excluded from the ITA, despite the attempt of the Agreement's negotiators to provide comprehensive coverage of integrated circuits.

The WCO made a first step to account for semiconductor advances by classifying a subset of these products – multi-chip packages (MCPs) – under HS 8542, the HS number for integrated circuits. The World Semiconductor Council (WSC) -comprised of the Semiconductor Industry Associations in China, Chinese Taipei, the European Union, Japan, Korea and the United States- has recommended further reforms to define MCO integrated circuits. As of the date of this submission, the Governments and Authorities of five regions – Chinese Taipei, European Union, Japan, Korea and the U.S. - have agreed on a definition of MCOs (appended in Annex 1) that they have jointly submitted within the context of ITA expansion negotiations. Other countries are encouraged to support these efforts.

Driven by consumer demand for increased performance, ultra miniaturization, energy efficiency, and cost saving, MCOs simply represent an evolution in semiconductor technology, not a revolutionary change in product. As such, these semiconductor products should be covered under the ITA along with other semiconductors, which are duty free in all major markets. These products are currently listed without regard to their classification, since they are not classifiable under 8542 and tend to fall under other HS classifications that may differ from one jurisdiction to another, or by the use of a device in a particular finished product. This explains as well as anything the continuing need for the use of the "Attachment B" convention of the ITA.

Additionally, as noted above, multi-chip packages (MCPs) should already fall within the 8542 subheadings in the HS 2007 schedule pursuant to Chapter 85 note 8(b)(iii) and therefore can be covered in "Attachment A". The parts provision, 8542.90, should also be included as

they are specifically designed for use in finished MCP devices, and accordingly should be covered under the ITA expansion effort.

Summary

SIA appreciates the opportunity to provide input to the ITC for its study on the proposed expansion on the ITA. We strongly support the expansion of duty free treatment for information communication technology (ICT) products under the Information Technology Agreement (ITA). As a trade association that represents an industry that has significantly benefited from the ITA, SIA hopes that the ITA further expands to include even more ICT products that have been introduced into the market since the original ITA was signed 15 years ago. The pace of innovation in the semiconductor industry is breathtaking, and we commend the current efforts to consider expansions to the ITA to keep pace with these innovations.

Respectfully submitted,

Ian Steff
Semiconductor Industry Association

Annex 1

MCO definition

Multi-component integrated circuits (MCOs) are a combination of one or more monolithic, hybrid, and/or multi-chip integrated circuits with at least one of the following components:

silicon-based sensors, actuators, oscillators, resonators and/or combinations thereof, and/or components performing the functions of articles classifiable under heading 8532, 8533, 8541, and/or inductors classifiable under heading 8504, formed to all intents and purposes indivisibly into a single body like an integrated circuit, as a component of a kind used for assembly onto a printed circuit board (PCB) or other carrier, through the connecting of pins, leads, balls, lands, bumps, or pads.

For the purpose of this definition the following expressions mean:

1. " Components" may be discrete, manufactured independently then assembled onto the rest of the MCO, or integrated into other components.

2. "Silicon based" means built on a silicon substrate, or made of silicon materials, or manufactured onto integrated circuit die.

3(a). "Silicon based sensors" consist of microelectronic and/or mechanical structures that are created in the mass or on the surface of a semiconductor and that have the function of detecting physical or chemical quantities and transducing these into electric signals, caused by resulting variations in electric properties or displacement of a mechanical structure.

"Physical or chemical quantities" relates to real world phenomena, such as pressure, acoustic waves, acceleration, vibration, movement, orientation, strain, magnetic field strength, electric field strength, light, radioactivity, humidity, flow, chemicals concentration, etc.

3(b). "Silicon based actuators" consist of microelectronic and mechanical structures that are created in the mass or on the surface of a semiconductor and that have the function of converting electrical signals into physical movement.

3(c). "Silicon based resonators" are components that consist of microelectronic and/or mechanical structures that are created in the mass or on the surface of a semiconductor and have the function of generating a mechanical or electrical oscillation of a predefined frequency that depends on the physical geometry of these structures in response to an external input.

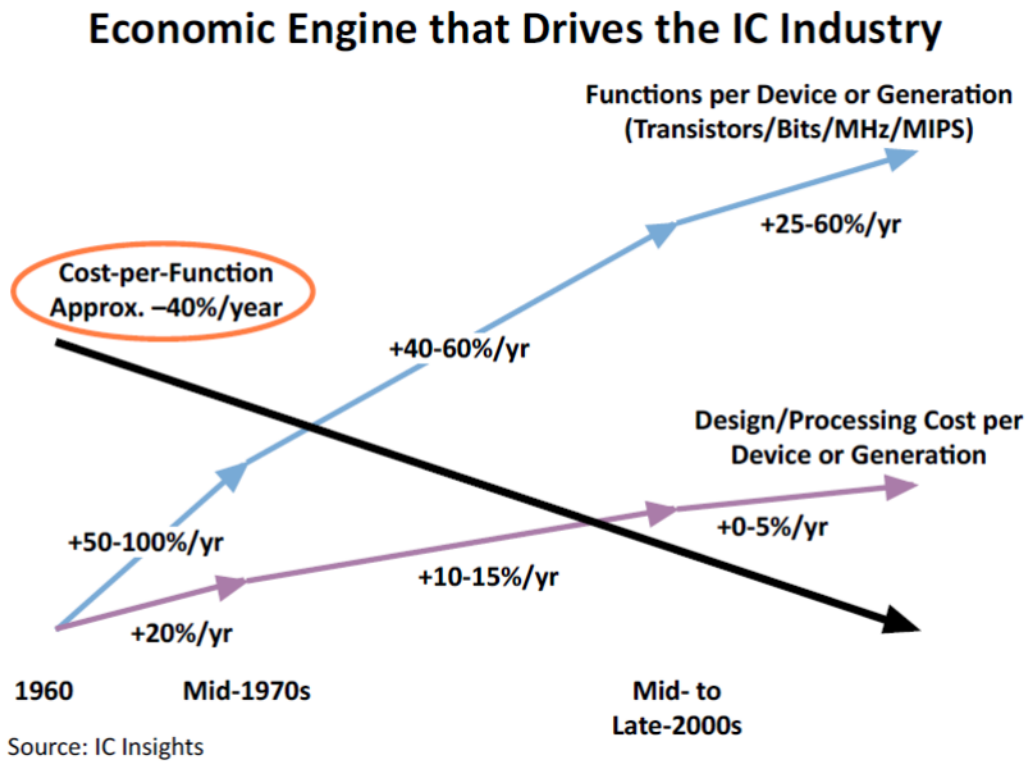
3(d). "Silicon based oscillators" are active components that consist of microelectronic and/or mechanical structures that are created in the mass or on the surface of a semiconductor and that have the function of generating a mechanical or electrical oscillation of a predefined frequency that depends on the physical geometry of these structures.

Annex 2

Responses to ITC Hearing Questions:

1) The Commission asked that SIA illustrate how the semiconductor industry provides added value at less cost to consumers.

The semiconductor industry is noted for its ability to constantly improve product performance while simultaneously reducing cost. The figure below shows how since 1960 the cost per function for semiconductors has steadily decreases while the performance or functionality of semiconductors has increased.



This trend has allowed semiconductors to be sold at continuously lower prices per function, allowing consumers to purchase more functionality per dollar. These price reductions are attributable to a combination of cost reductions and the incredible pace of innovation that defines the industry. This pace of innovation in the industry has been defined as Moore's Law, named after one of the founders of Intel Corporation. Moore's Law states that the number of transistors on a semiconductor doubles every 18 to 24 months, thereby doubling semiconductor functionality every 18 to 24 months.

2) The Commission asked that SIA provide background on the Attachment B Process.

Products are considered to be included in the ITA if they fall under attachment A or B of the Agreement. Attachment A defines product coverage by specific 6-digit HS codes. Attachment B defines ITA product coverage through product descriptions but not through any corresponding HS code. The descriptive approach in Attachment B allows for product

coverage regardless of specific HS codes, sometimes referred to as a "wherever classified" approach. Attachment B is necessary to provide coverage for MCOs.

3) Commission staff asked that SIA provide the list of HS codes used to estimate tariff savings for MCO imports into specific countries.

Today, MCOs, as defined, are classified and traded in numerous HTS headings that refer to "parts categories" of downstream products for which they are intended.

SIA drafted a list of potential HS headings that MCOs currently fall under in the trading system. SIA used these codes to calculate an average tariff rate for MCOs being imported into select countries. This exercise has allowed us to estimate tariff savings of imports into specific countries if tariffs on MCOs are eliminated under the ITA expansion.

The following is an illustrative list of HS codes we interpreted as containing MCOs:

8409.91, 8415.90, 8418.99, 8422.908450.90, 8473.10, 8473.21, 8473.29, 8473.30, 8473.40, 8473.50, 8476.90, 8501.10, 8504.40, 8504.90, 8508.70, 8516.90, 8517.12, 8517.62, 8517.70, 8518.10, 8522.90, 8523.52, 8525.80, 8528.71, 8529.90, 8535.90, 8536.50, 8536.90, 8537.10, 8543.70, 8543.90, 8548.90, 8708.30, 8708.94, 8708.95, 9018.11-20, 9025.11, 9025.19, 9025.80, 9025.90, 9026.10, 9026.20, 9026.80, 9026.90, 9027.10, 9027.20, 9027.30, 9027.50, 9027.80, 9027.90, 9030.33, 9030.89, 9030.90, 9031.80, 9031.90, 9032.10, 9032.20, 9032.81, 9032.89, 9032.90, 9033.00, 9504.10, 9504.30, 9504.50

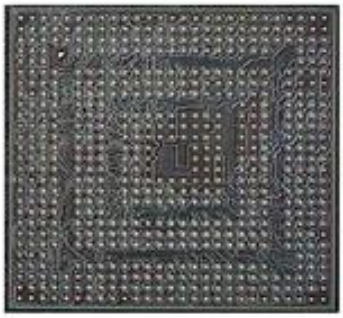
It should be emphasized that this list of codes is not meant to be "all inclusive". Rather it provides a sampling of current and potential categories that MCOs could fall under. As semiconductors, including MCOs, continue to be incorporated into a wide range of downstream products, it's conceivable that this list will change over time.

4) The Commission asked that SIA could provide examples of MCOs.

Below are illustrations of common MCO semiconductors. MCOs come in a diverse range of looks and packages. The common thread that defines MCOs is that they incorporate in their packages a combination of integrated circuit(s) and discrete components, as characterized in the MCO definition. Again, these examples are not intended to be "all inclusive." Rather they are intended for illustrative purposes.

Key example (1.b) Package on Package (PoP) MCO

<Top view>



<Bottom view>

<Side view>

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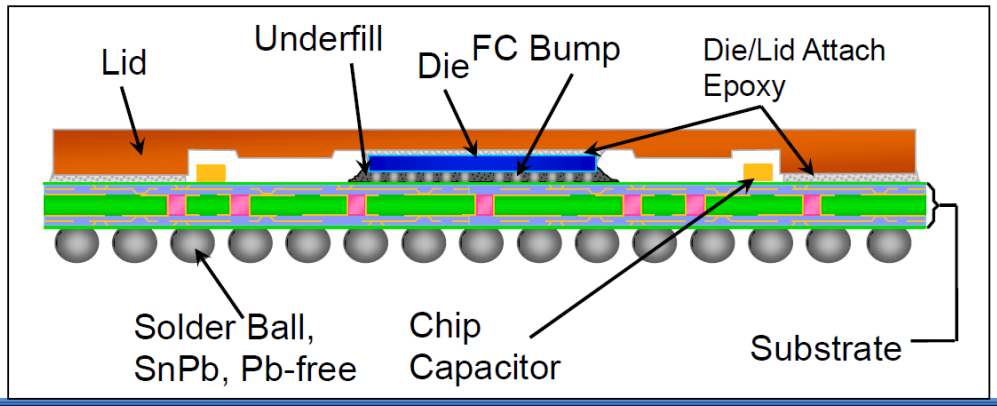
Key example (3): MCO for mobile phone & notebook applications

Applications: mobile phones, notebooks

Array of solder terminals on chip which are flipped onto a package substrate

- **Lines and spaces of 20um on substrate**
  - **Organic or ceramic materials**
- **High pin counts (2000-5000)**
- **Excellent high frequency performance**

Trends: More Input/Output, Higher Power



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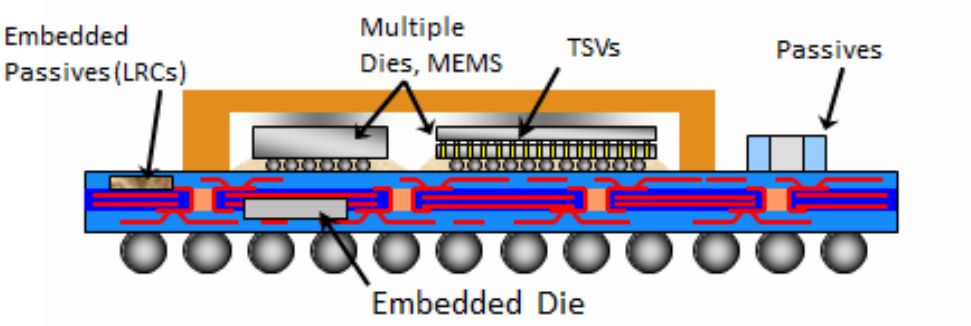
Key example (4) MCO for handheld projector applications

- Applications: handheld projectors

- Active or passive components embedded in substrate
- Coupling directly to package
- Enables RF, digital, and MEMS in a single package



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