



DHL SEMICONDUCTOR LOGISTICS

AN INTEGRATED SUITE OF
SOLUTIONS AND SERVICES
FOR YOUR END-TO-END
SUPPLY CHAIN



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TODAY'S SEMICONDUCTOR INDUSTRY

As the world digitizes, semiconductors play an increasingly critical role in our goals and achievements. Today's most sophisticated chips are enabling us to do more than ever before, fueling innovation within almost every sphere of life.

For example, the newest vehicles outside our homes offer more extensive capabilities than ever before, containing upwards of 3,500 and even 4,000 individual semiconductors. Increasingly digital technology is also supporting and enhancing our healthcare services, and the work of medical professionals.

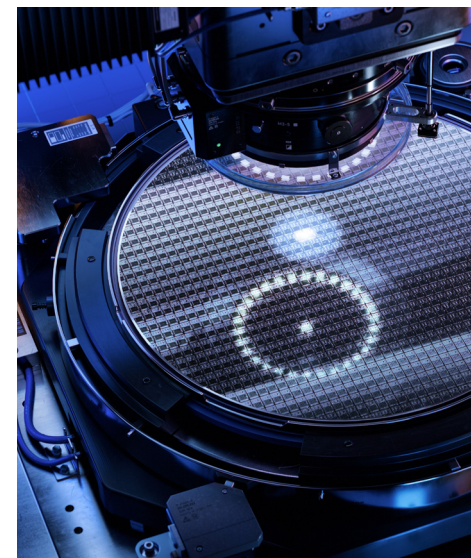
As future developments in artificial intelligence, autonomous driving, and industrial automation push demand for chips to new levels, global Semiconductor revenue is expected to grow to \$1 trillion by 2030¹.

The semiconductor industry is global in character, and chips are highly complex to design and make. To produce a single chip typically requires more than 1,000 separate processing steps, 25,000 travel miles, 70 or more border crossings, and 12 countries. No other industry requires the same high levels of investment in R&D and capital expenditure.

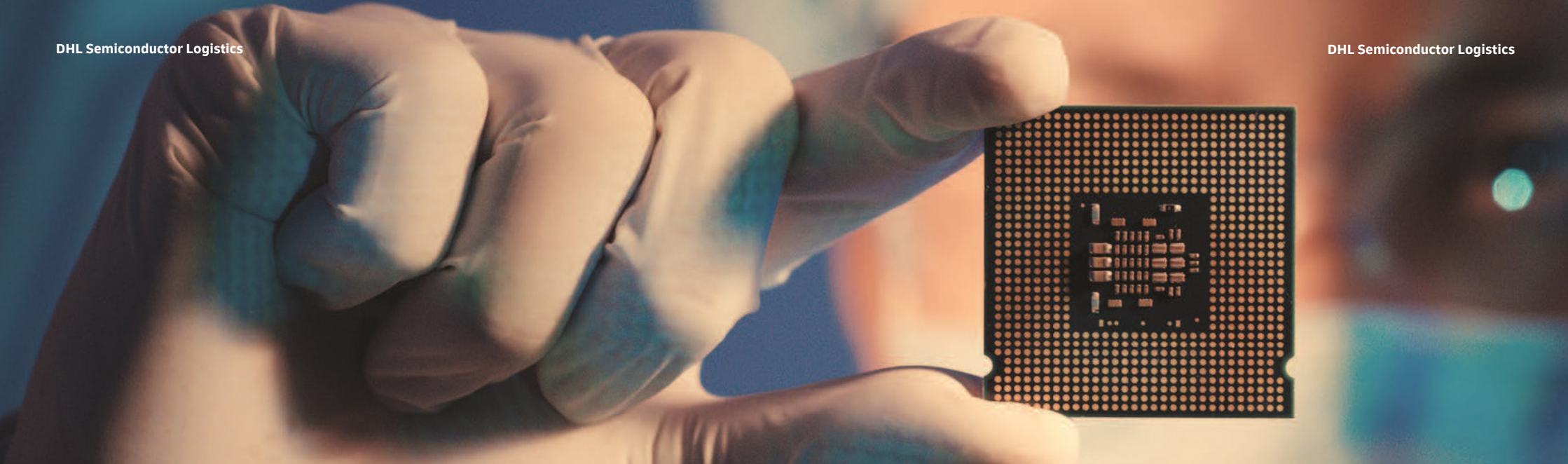
Previous chip shortages and disruptions in the Semiconductor supply chain have highlighted the importance of these products. This has rapidly

confirmed the Semiconductor industry as a strategic industry, resulting in an unprecedented expansion of manufacturing capacity.

In these unique circumstances, the supply chain must provide exceptional levels of support. Today DHL is helping customers build resiliency in the Semiconductor supply chain, ensuring it will withstand more than ever before and sustain long-term exponential growth.



¹ McKinsey, April 2022: The Semiconductor decade: A trillion-dollar industry



SUPPLY CHAIN PRIORITIES

Complex supply chain like the Semiconductor one have distinct characteristics and requirements. They are essential for providing any logistics services and solutions.

Global reach

Logistics and transportation capabilities for the Semiconductor industry must span every continent and country in the ecosystem of suppliers, manufacturers, and integrated circuit users, from remote locations to major population centers.

Reliable infrastructure

Regional Competence Centers and Control Towers are needed to coordinate and proactively monitor high-value, sensitive capital equipment movements as well as inbound goods transportation, manufacturing logistics, assembly and test transportation, warehousing, and distribution solutions.

Zero-defects mindset

With valuable, sensitive materials and devices in the Semiconductor supply chain, there must be planning and protection in place to deliver zero-defects quality levels.

Industry expertise and logistics capabilities

With highly specific supply chain requirements, the industry requires deep understanding and subject-matter expertise along with bespoke logistics solutions and specialty equipment.

Collaboration with partners and suppliers

The Semiconductor industry is built on collaboration between highly specialized logistics players. Digitalization enables Semiconductor companies to work more closely and align activities with all key parties in the global supply chain.

End-to-end supply chain visibility

Companies need visibility right around the world, 24/7 in real time to securely and optimally store and transport high-value semiconductor items and remain agile.

Sustainability

Semiconductor companies have ambitious sustainability targets. While the manufacturing process is the main driver of Scope 1 and 2 emissions, logistics partners and suppliers are expected to make a significant and increasing contribution to the reduction of Scope 3 emissions. Service options are required to minimize and avoid logistics-related carbon emissions, waste, and other environmental impacts along the entire supply chain.



WE HAVE
MORE THAN
5,000
SUBJECT MATTER
EXPERTS

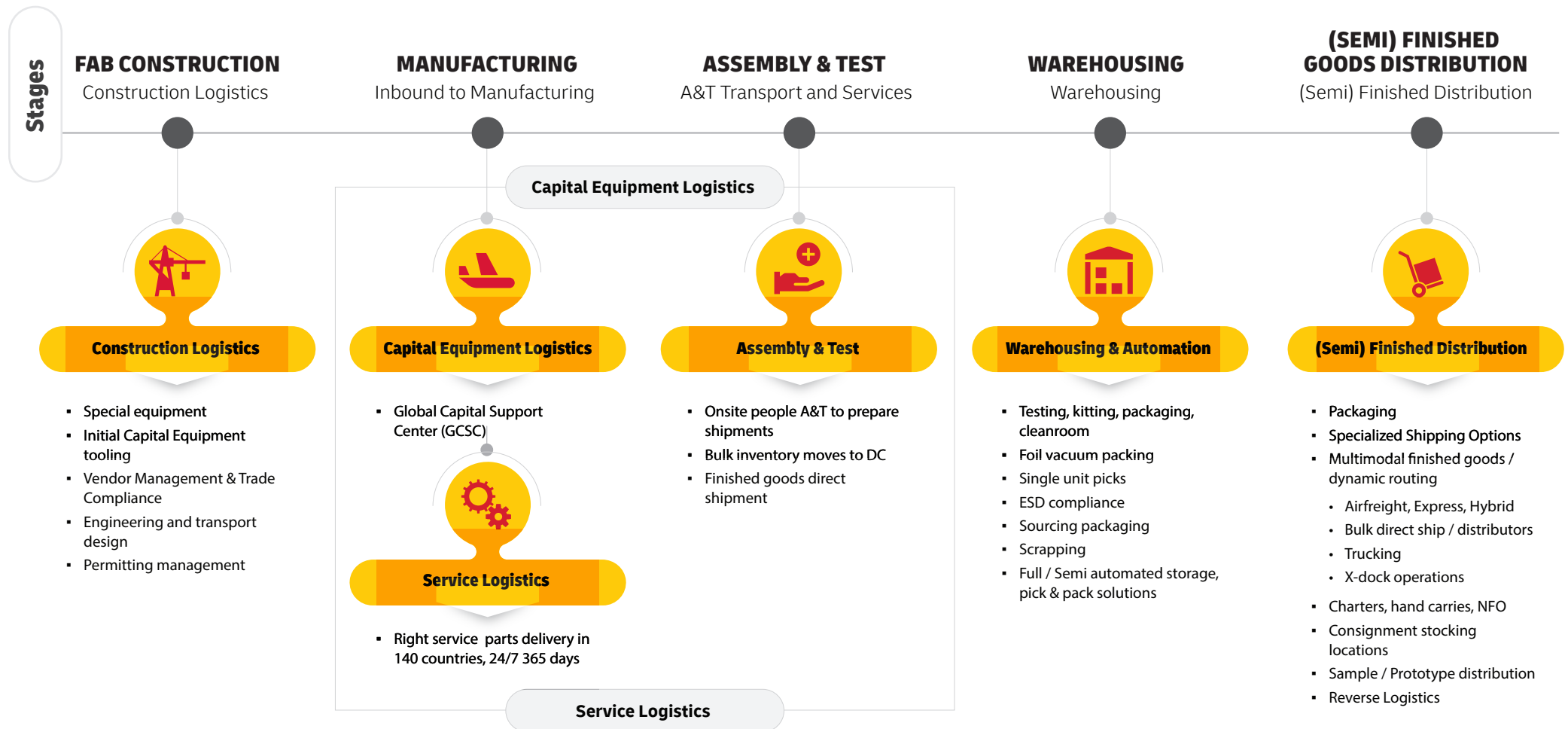


50
FACILITIES
WORLDWIDE

DHL SEMICONDUCTOR SOLUTION COVERAGE

OUR UNIQUE VALUE PROPOSITION

An integrated suite of solutions and services for your end-to-end supply chain, all from a single source

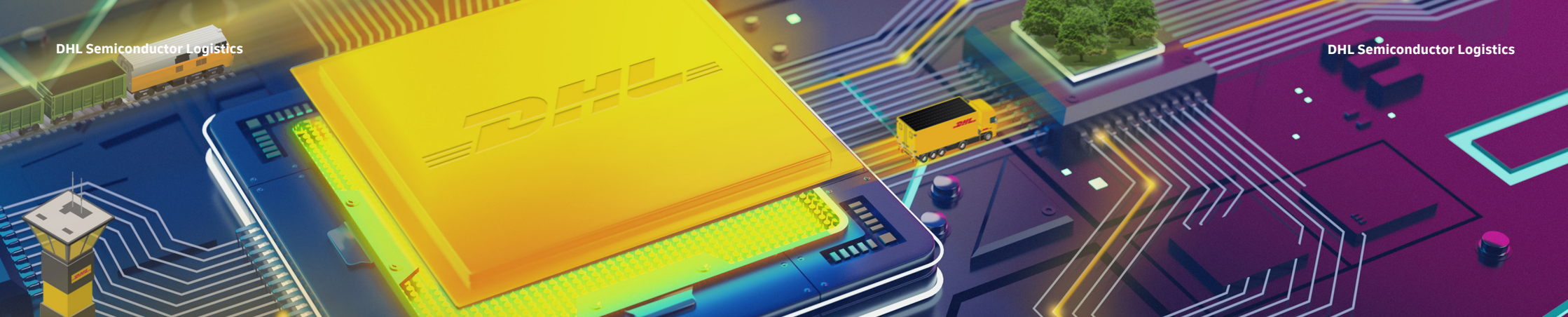


End-to-End Supply Chain

- Zero defects / 8D standardization
- Risk Management
- Industry Quality standards

- Customs and Trade Compliance
- Piece level visibility
- Network optimization (e.g. Multi-use facilities)

- Collaborative supply chains / continuous improvement



INTEGRATED SUITE OF SOLUTIONS AND SERVICES



CONSTRUCTION LOGISTICS

End-to-End Supply Chain Services for Fab Construction and Inbound Logistics

This comprehensive construction logistics solution directly addresses challenges in the Semiconductor industry such as complex supply chain project coordination and time-effective operational execution. Additionally, our focus on engineering, site requirements, vendor management, sustainability, and established relationships with carriers and ground handlers ensures seamless project execution, even amid complex contract terms and conditions.

Bespoke services enable efficient management of inbound logistics for raw materials and stockroom operations. You can select our full suite of logistics services or choose specific elements to complement your in-house capabilities: appointment deliveries to the foundry or manufacturing site, with multiple transit time options, stockroom-to-factory floor management, critical inventory management, customer service, and inbound dangerous goods management.



CAPITAL EQUIPMENT LOGISTICS

Managing Your High-Value Capital Equipment Moves

We offer end-to-end operational expertise in all aspects of capital equipment handling by trained and certified subject matter experts, particularly full compliance with specific handling requirements to ensure the safety and integrity of your high-value items throughout the shipment journey. With state-of-the-art visibility tools, and a zero-defects mindset.

DHL ensures the safe and efficient handling, transportation, and storage of large, high-value capital equipment and materials. Catering to your shipment visibility needs on a global scale, we provide you with a DHL IoT monitoring solution (CapTrack) which includes near real-time reporting and condition monitoring at all transit points. From initial dispatch to on-time delivery, we also provide you with a single point of contact. In addition, we offer inventory management, and service parts logistics for capital equipment.



SERVICE LOGISTICS

Keeping Your Service Promise Anytime Anywhere

We get the right parts to the right place at the right time to keep your Semiconductor operations running smoothly. Our unparalleled Service Logistics network spans 140 countries and territories – a fully integrated, powerful combination of people and infrastructure to deliver a seamless experience, 24/7, 365 days a year.

We offer industry-leading real-time visibility and management via our Control Towers, worldwide connections, and rapid data analytics. And we make things easier for you, ensuring standardization through globally consistent business processes based on our operational standards model and executed on our single-instance global IT platform.

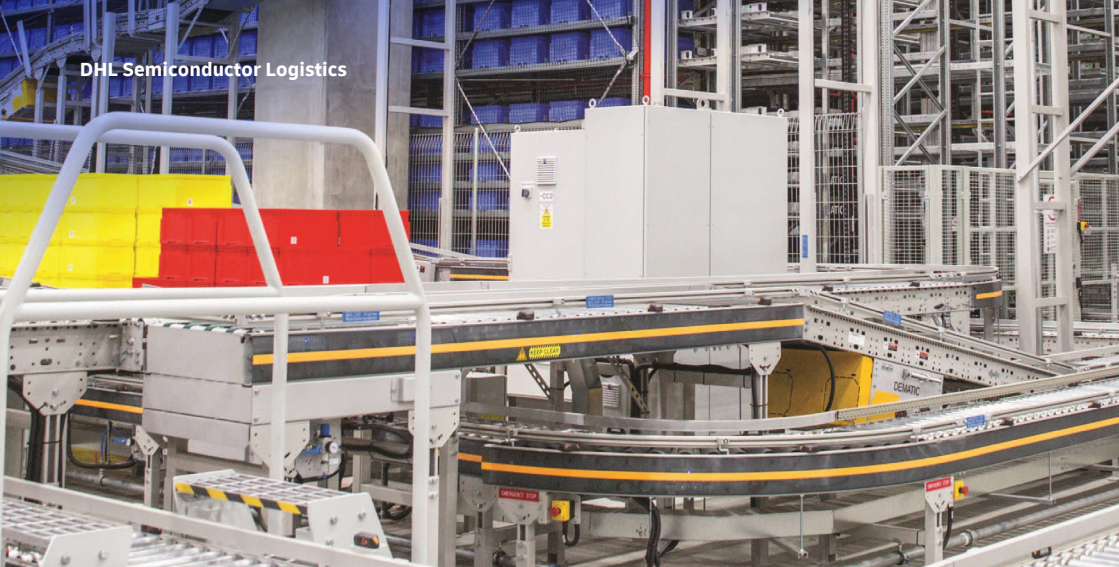


ASSEMBLY & TEST

Full Range of OSAT Logistics Services to Meet Your Specific Needs

We can take control of onsite management for inbound and outbound services related to outsourced Semiconductor assembly and test (OSAT) needs. Our personnel can be deployed in your assembly and test facilities to manage bulk inventory and sample moves to your warehouses and distribution centers.

Alternatively, DHL can send your finished goods to distributors or end customers with the necessary documentation, such as invoices, bypassing your warehouses. You can select from a range of additional value-added services, including proactive shipment monitoring, risk assessments, and contingency planning.



WAREHOUSING & AUTOMATION

Innovative Contract & Service Logistics with a Range of Delivery Options

Our Semiconductor warehousing services include testing goods for compliance or replacement as well as kitting right down to the unit level and preparing and packaging your products. We fulfil to industry compliance standards and meet specific service requirements such as sourcing specialist packaging, providing foil vacuum packing, and enabling single-unit picks.

To ensure Semiconductor item integrity, our personnel are trained and experienced in specialist cleanroom activities. We offer a total inventory management service using our system or your own systems and provide proactive reporting according to your specific needs.

Our consignment stocking locations include vendor-managed inventory (VMI) hubs for time-tested efficient distribution. We can handle materials scrapping to standard operating procedure (SOP) requirements. In addition, we operate service parts warehouses globally to ensure time-definite delivery of critical manufacturing items to your manufacturing site. Our robotics solutions, including different indoor robots and stationary automation, help us to increase the efficiency of our operations.



(SEMI-)FINISHED GOODS DISTRIBUTION

Secure and Flexible Distribution of Products Based on Your Specific Requirements

Understanding that product integrity is critical, we share your priority of secure handling and transportation, and offer a range of packaging materials and solutions to suit your needs. DHL utilizes multiple shipment options to achieve the right balance of speed and cost for every shipment – for example, same-day or express courier services as well as freight forwarding via air, ocean, road, or rail. There are options for sample and prototype distribution, and all shipments can include near real-time monitoring.

Sensitive goods are transported on predictable, tested international routes, and our Control Tower services enable dynamic routing when plans need to change at the last minute. For your reverse logistics needs, we provide a full suite of Semiconductor solutions including testing, warranty returns, authorization systems, and daily reporting combined with full visibility.



END-TO-END SUPPLY CHAIN

Resilience and Visibility for Your Entire Semiconductor Ecosystem

Understanding that product integrity is critical, The supply chain is only as strong as its weakest link, so end-to-end management and understanding of your specific requirements are essential. DHL is your assurance of a reliable and resilient supply chain supported by zero-defects, 8D compliance, and risk management tools and processes.

Our personnel offer expertise in customs handling and specific security solutions for high-value goods, providing necessary escorts when required and delivering all services with item-level visibility. In a collaborative partnership with you, we align our objectives and regularly review joint progress to ensure continuous improvement.

For Further Information

To find out more about our integrated suite of solutions and services, please get in touch. We look forward to a close collaboration with you, achieving a resilient and scalable Semiconductor supply chain that will support your ambitions today, tomorrow, and in the years to come.

**FOR MORE INFORMATION
PLEASE CONTACT US AT**

info.semicon@dhl.com

or visit us on > **dhl.com/semiconductor**