

Assembly and Testing. We offer our customers turnkey services by providing the option to purchase finished semiconductor products that have been assembled and tested. We outsource assembly and test services to leading assembly and test service providers, including Siliconware Precision Industries Co., Ltd., or Siliconware, and Advanced Semiconductor Engineering Inc. in Taiwan. After final testing, the semiconductors are shipped to our customers' designated locations.

In addition to our foundry business, we also engage in the research, development and manufacture of products in the solar energy and LED industries.

Customers and Markets

Our primary customers, in terms of our sales revenues, include premier integrated device manufacturers, such as Texas Instruments and Intel Mobile, plus leading fabless design companies, such as Broadcom, MediaTek, Realtek, Qualcomm and Novatek. Although we are not dependent on any single customer, a significant portion of our operating revenues has been generated from sales to a few customers. Our top ten customers accounted for approximately 51.3% of our operating revenues in 2019. Set forth below is a geographic breakdown of our operating revenues in 2017, 2018 and 2019 by the location of our customers.

Region	Years Ended December 31,		
	2017	2018	2019
	%	%	%
Taiwan	32.8	36.4	36.4
Singapore	20.6	16.4	16.2
China (including Hong Kong)	12.7	12.2	12.9
Japan	3.2	3.9	6.6
USA	12.2	15.6	13.5
Europe	9.6	8.3	4.7
Others	8.9	7.2	9.7
Total	100.0	100.0	100.0

We believe our success in attracting these end customers is a direct result of our commitment to high quality service and our intense focus on customer needs and performance. As an independent semiconductor foundry, most of our operating revenue is generated by our sales of wafers. The following table presented the percentages of our wafer sales by types of customers for the years ended December 31, 2017, 2018 and 2019.

Customer Type	Years Ended December 31,		
	2017	2018	2019
	%	%	%
Fabless design companies	91.0	92.4	91.3
Integrated device manufacturers	9.0	7.6	8.7
Total	100.0	100.0	100.0

We focus on providing a high level of customer service in order to attract customers and maintain their ongoing loyalty. Our culture emphasizes responsiveness to customer needs with a focus on flexibility, speed and accuracy throughout our manufacturing and delivery processes. Our customer-oriented approach is especially evident in two types of services: customer design development services and manufacturing services. For example, in 2013, we expand our regional business by opening our UMC Korea office, in order to provide local support to our customers in Korea, and shorten time-to-market for our Korea-based customers designing and manufacturing on UMC process technologies. We believe that our large production capacity and advanced process technology enable us to provide better customer service than many other foundries through shorter turn-around time, greater manufacturing flexibility and higher manufacturing yields.