

**LIST OF FIGURES**

Figure 1: 2013-2023 Foundry Sales Forecast ..... 10

Figure 2: TSMC Sales to Apple and Qualcomm (2014-2018) ..... 12

Figure 3: Pure-Play vs. IDM Foundry Market Share ..... 12

Figure 4: Sampling of IDM Foundries ..... 13

Figure 5: 2016-2019E Quarterly Pure-Play Foundry Sales ..... 14

Figure 6: Foundry Sales as a Percent of Total IC Sales ..... 16

Figure 7: Major 2019E Foundries (Pure-Play and IDM) ..... 17

Figure 8: Major Pure-Play Foundries ..... 18

Figure 9: Chinese Companies' Share of the Pure-Play Foundry Market ..... 19

Figure 10: Pure-Play Foundry Sales by Customer Type ..... 20

Figure 11: 2019E Pure-Play Foundry Customer Makeup ..... 21

Figure 12: Fabless Companies by Year Founded ..... 22

Figure 13: Pure-Play Foundry Sales by Region ..... 23

Figure 14: Pure Play Foundry Market by Region ..... 24

Figure 15: 2019E Pure-Play Foundry Sales by Region ..... 25

Figure 16: Pure-Play Foundries' China Sales ..... 26

Figure 17: TSMC's Quarterly Sales to China ..... 27

Figure 18: Pure-Play Foundry Sales by Application ..... 28

Figure 19: 2019E Pure-Play Foundry Sales by System Type ..... 29

Figure 20: Pure-Play Foundry Growth Rates by Application ..... 30

Figure 21: Major Pure-Play Foundry Revenue per Wafer ..... 31

Figure 22: Pure-Play Foundry Revenue per Logic Wafer in 2Q19 ..... 32

Figure 23: Pure-Play Foundry Sales by Feature Size ..... 33

Figure 24: Leading-Edge Leads the Way in Pure-Play Foundry Growth ..... 34

Figure 25: 2019E Pure-Play Foundry Sales by Feature Size ..... 35

Figure 26: Major Pure-Play Foundries' <40nm Revenue ..... 36

Figure 27: TSMC's 10nm and 7nm Revenue Trend ..... 36

Figure 28: TSMC's Revenue Ramp Quickens in Leading-Edge Processes ..... 37

Figure 29: Major Pure-Play Foundry Comparisons ..... 41

Figure 30: IC Foundry Capacity Forecast (200mm Wafer Equivalents) ..... 42

Figure 31: Major Pure-Play Foundry Capacity Utilization Trends ..... 44

Figure 32: Total IC Foundry Capital Spending Trends ..... 45

Figure 33: Foundry Share of Total Semiconductor Industry Capital Spending ..... 46

Figure 34: Major Pure-Play Foundries' Capital Spending Outlays ..... 47

Figure 35: Major Pure-Play Foundries' Capital Spending as a Percent of Sales Trends ..... 48

**LIST OF FIGURES (continued)**

Figure 36: Average Price Per Wafer – CMOS Wafers .....	50
Figure 37: Average Price Per Wafer – SOI 200mm/180nm Node.....	51
Figure 38: Average 200mm Wafer Prices by Process Node.....	51
Figure 39: Average 300mm Wafer Prices by Process Node.....	52
Figure 40: Average Cost per Mask Layer by Wafer Size (CMOS) .....	53
Figure 41: 200mm Wafer Mask Set Cost by Process Node.....	54
Figure 42: 300mm Wafer Mask Set Cost by Process Node.....	54