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INFINEON TECHNOLOGIES - DETAILED VALUATION SUBSTANTIATING A BUY RECOMMENDATION

ALEXANDER HÜBNER
53837

A Project carried out on the Master in Finance Program, under the supervision of:

Miguel Marecos Duarte

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Abstract

This document is a detailed valuation report of Infineon Technologies AG. It focuses on financial analysis, market drivers, and future growth potential, considering various risks and industry dynamics. Key segments are examined for market trends and performance. The valuation uses both relative and DCF methods, reflecting Infineon's market potential. The conclusion suggests Infineon is undervalued, with strong future growth prospects despite some valuation risks.

Keywords (up to four)

Semiconductor
Valuation
Financial Projections
Monte Carlo

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This report is part of the Infineon Technologies AG company report (annexed), developed by Alexander Hübner and Camilla Jost, and should be read as an integral part of it.

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Introduction

The joint report provides a comprehensive analysis of Infineon’s stock, aiming to offer a clear investment recommendation.

The first part of the joint report begins with a comprehensive overview of Infineon, detailing its key business attributes, followed by an in-depth examination of the semiconductor industry, including influential trends and the macroeconomic landscape. Subsequently, we analyze Infineon's financial health and examine its income statement and the robustness of its balance sheet – also concerning its peers. Considering Infineon's financial standing and the industry context, we identify particular risks and opportunities that inform our projections for the company's future growth. This first part of our collaborative report lays a solid foundation for the forthcoming growth and valuation predictions for Infineon, which will be elaborated in the report's second segment.

This individual report forms the second part of the joint report and builds upon the foundation of potential for Infineon's share price growth, thoroughly analyzing underlying value drivers for Infineon’s revenue growth. As Infineon operates in a high-growth environment, a high emphasis is put on forecasting revenues, as they are one of the key drivers of the target share price. Hereby, we apply a blended approach of separately forecasted operating segments and regional segments, as Infineon does not provide information on detailed segment distribution in its operating regions. Projections suggest continued high growth in the next years at a $CAGR_{23\text{-}29}$ of 11.9%. Coupled with Infineon’s operational performance and trends this also translates into growing unlevered free cash flows.

However, it's important to note that the projections inherently carry risks related to unforeseeable company-specific and macroeconomic developments. These are outlined at the end of this individual report, just before our final recommendation. Despite these uncertainties, we believe our estimates are precise and well-founded under the current circumstances.

Our findings suggest that Infineon is currently undervalued. This conclusion is supported by both trading and transaction multiples and reinforced by an extensive DCF analysis complemented with a Monte Carlo simulation, which yields a valuation of €48.19 per share. Blending the valuation methods leads to a final valuation of €48.73. Looking ahead to the end of next year, we therefore anticipate a 29% upside potential for investors.

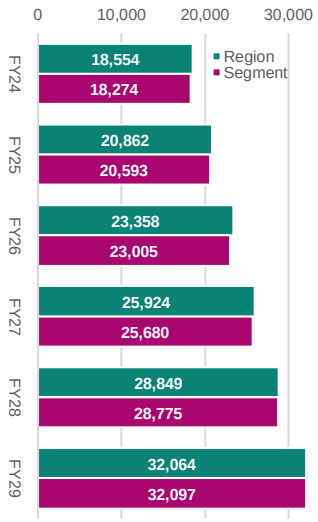
Financial Projections

Figure 1: Overview of Yearly Revenue Fcst

Total Fcst by		Weight
Regions	x	60%
+ Segments	x	40%
= Total Revenue Fcst		
x Relative Weight of Segment in Segment Fcst		
= Individual Segment Fcst		

Source: Own Estimates

Figure 2: Total Region vs Segment Fcst



Source: Own Estimates

In accurately assessing the value of Infineon, we consider projections of future revenues to be a main driver. As can be seen from past performance, increases in profitability have mostly stemmed from increased growth in revenues and less from improved operating efficiency. Therefore, a variety of projected market developments, as well as projected demand within key areas of applications for Infineon's products, have been considered as value drivers for anticipated revenue growth.

To achieve a robust and holistic projection of revenues, we employ two methods: First, we project revenue growth per region and by segment individually. Both forecasts are then considered for computing final revenue projections (Figure 1). Whilst regional growth is focused on projecting the semiconductor market size as a driver for revenue growth, segment projections are based on unique catalysts identified in each segment.[1] By considering both methods for our final revenue forecast, we acknowledge both the lack of sufficient available information on region-specific value drivers as well as insufficient past data for the chosen value drivers in the segment projections.[2]

Regional Forecast

We anticipate modest growth in China, targeting an achieved 1.20% market share gain by 2029

Infineon's historical data segregation of revenues from the **Chinese** market from the broader Asian market began relatively recently, resulting in insufficient data for a meaningful regression analysis. Consequently, we apply projected market share growth to forecasted semiconductor revenues for the region. Despite a 5.7% decline in China's semiconductor revenues in 2022 and a 7.3% decline in 2023, Infineon achieved revenue growth of 24.1% and 1.4% during these years, respectively. While it indicates Infineon's strong performance in the Chinese market, our market share growth forecast remains conservative. China's substantial investment in its domestic semiconductor industry in an effort to reduce imports under the "Made in China 2025" policy, presents a challenging environment for market share gains.[3] However, the significant growth in China's ATV semiconductor sector, Infineon's largest segment by revenue, partially mitigates these influences. Hence, we project a modest deceleration in market share gains, anticipating Infineon to reach 4.14% market share by 2029, up from 2.94% in 2023. This translates to an annual market share gain of 20bp. This trajectory is factored into a projected $CAGR_{23\text{-}29}$ of 13.1% for Infineon's revenue in this region.

We project an achieved total market share gain of 1.50% in Japan by 2029

Given a greater pool of available data on past market developments for **Japan's** semiconductor market, we regress historical GDP and semiconductor market revenues since 1999. The results indicate a moderate correlation between GDP and the Japanese semiconductor market, confirming GDP as a significant value driver (p-value = 0.038), suggesting statistical significance. While the results imply only a moderate correlation, they provide a basis for consideration next to other factors. Japan's focus on technological collaboration and the absence of restrictive import policies offer a more favorable environment for Infineon's projected market share growth. Coupled with historical growth patterns we expect a relatively faster increase in market share in Japan than in China. By FY29, we expect market share to have grown from 4.16% in FY23 to 5.66%, considering an annual share growth of 25bp. This translates into a $CAGR_{23\text{-}29}$ of 12.2% for Infineon's revenue.

[1] Considering current contributions to sales, we attribute individual drivers to the respective segment forecast
2 Infineon does not provide specific segment separation for regions
[3] The "Made in China" policy is a strategic initiative by China to boost its domestic high-tech industries, aiming for technological self-sufficiency and reducing reliance on foreign technology, particularly in sectors like semiconductors and telecommunications

Market share growth in Asia Pacific is expected to annually increase by 15bps to 15.2%

The forecast for **Asia Pacific (excl. Japan, China)** follows the same principles as introduced for Japan. Whilst Infineon is currently expanding its production capabilities in Kulim (Malaysia), it is more focused on expansion in the Japanese and Chinese markets, partially offsetting potential effects from the Kulim expansion on market share growth. Additionally, fluctuations in market share appeared to be independent of the overall semiconductor revenue growth in the region. Therefore, we project Infineon's market share to increase relatively slower by 15pbs annually. This assumption results in a $CAGR_{23\text{-}29}$ of 15.2% for revenues in this region, representing overall market expectations.

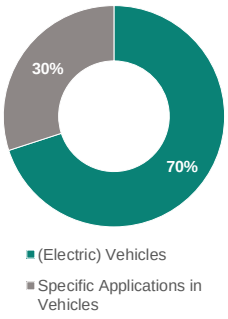
EMEA forecast projects a revenue $CAGR_{23\text{-}29}$ of 8.8%

Similarly, projections for **EMEA** are mainly based on GDP growth within its regions. Our regression analysis of historical semiconductor revenues against GDP growth in the EMEA region shows a strong correlation (0.79). As sufficient data is provided for this region, we used a regression to forecast Infineon's revenues based on market projections, predicting a $CAGR_{23\text{-}29}$ of 8.8%. This aligns with our expectations given past performance and investment measures such as the expansion of manufacturing capacity in Dresden (Germany), which is expected to continue fueling growth for Infineon in the medium-term future.[4]

Infineon's revenue in Americas is anticipated to grow above market

Americas is forecasted analogously to EMEA. Underlying GDPs are North, South, and Central America. Applying the same principles as before, we expect Infineon's revenues to grow at a $CAGR_{23\text{-}29}$ of 10.7%, outgrowing the market which is projected to grow at a $CAGR_{23\text{-}29}$ of 5.5%.

Figure 3: ATV Revenues – Weighting of Underlying Drivers



Source: Own Estimates, Infineon

Automotive (ATV)

The global ATV semiconductor market is forecasted to grow at a $CAGR_{23\text{-}29}$ of 9.6%. With a 16.7% market share, Infineon holds a strategic position as the market leader in this high-growth segment. Based on the company's product portfolio, we have derived applicational areas to forecast revenues from this segment, resulting in a projected market share of 21.6% by FY29. Building upon our weights (Figure 3), projections suggest revenues to grow at a $CAGR_{23\text{-}29}$ of 15%, considering specific market dynamics and Infineon's market position.

- Vehicles

To forecast growth in demand for ATV semiconductors, we analyze global **EV revenue**, unit growth for **autonomous vehicles**, and **motor vehicle** production. These elements are weighted at 45%, 20% and 35% respectively.

Global EV revenues grew by 66% annually from 2020 to 2022, indicating robust growth in the market for electric vehicles. This trend is expected to continue with a 9.96% $CAGR_{23\text{-}29}$. As semiconductor density is higher for EVs than for fossil-fueled cars, their demand significantly impacts demand for ATV semiconductors, justifying a 35% weight for this driver. **Motor vehicle** production growth is expected to be fairly stable over the next six years, averaging 3.15% annual growth during this period. This stability is a crucial component of our total vehicle growth forecast due to its longstanding role as a fundamental driver of revenue in the segment. The consistent growth in motor vehicle production reflects sustained demand for Infineon's semiconductor products. Given that this traditional segment represents a baseline for ATV industry growth, its predictability provides a reliable foundation for projections. To reflect these factors, we have assigned a weight of 35%. **Autonomous vehicles** are in the early stage of adaptation and therefore have high growth expected in the near future with a $CAGR_{23\text{-}29}$ of 27.87%. For

[4] Infineon: Annual Report 2023

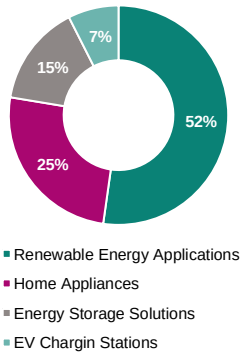
autonomous vehicles, advanced sensor and data processing products are crucial, driving demand and consequently impacting Infineon's revenues. We assign a weight of 20% to acknowledge their lower absolute contribution to the ATV market.

- Specific applications in vehicles

To achieve a nuanced overview of demand for Infineon's products and revenues, revenue forecasts for global **vehicle infotainment**, **ADAS** (advanced driver assistance systems), **light vehicles with ADAS**, and **ATV cybersecurity** are considered as additional value drivers. While considering their relevance regarding Infineon's ATV portfolio, they do not account for a large share of revenues generated within this segment, reflected by the assigned 30% weight on our overall ATV forecast. The **vehicle infotainment** market, for which Infineon develops semiconductor solutions, is expected to increase from currently $48,570mn to $88,059mn by 2029 ($CAGR_{23\text{-}29}$: 9.96%). **ADAS** market size growth shows a projected increase from $34,150mn in 2023 to $65,152mn by 2029, projecting a growing demand for Infineon's sensors and processor solutions. The number of **light vehicles with ADAS** supplements our analysis by providing insights into the expected increase of ADAS complexity and the semiconductor content within these vehicles. Given the relatively modest forecasted growth ($CAGR_{23\text{-}29}$: 2.23%), the disproportionate increase in ADAS market size ($CAGR_{23\text{-}29}$: 11.37%) implies a significant increase in semiconductor density per vehicle. **ATV cybersecurity** market size is critical for demand growth as it incorporates the digitization of vehicles and is also directly targeted by Infineon's product solutions. Forecasted to grow at 10.93% in the next two years, continued by an average annual growth of 2.91% from 2026 to 2029, this application displays robust short-term growth potential but indicates a gradual deceleration in market expansion. This trend most likely derives from the maturing technology becoming a more integrated part of automotive systems.

ATV revenue forecast based on segments suggests a $CAGR_{23\text{-}29}$ of 15%

Figure 4: GIP Revenues – Weighting of Underlying Drivers



Source: Own Estimates, Infineon

Green Industrial Power (GIP)

To project revenue growth in Infineon's GIP segment, we consider different renewable energy applications as the main drivers (Figure 4). We predict a segment revenue CAGR of 8.14% through FY29, reaching €3,527 million. Despite slower growth than Infineon's core ATV segment, we expect Infineon to effectively capitalize on increasing demand.[5,6]

- Renewable energy

To provide a robust forecast within the renewable energy segment, we are considering multiple subsegments. Based on semiconductor usage within the subsegments, we assign the following weights: Globally **installed PVs** at 40%, **wind power installations** at 20%, **renewable energy market** at 20%, and **newly installed renewable energy capacity** at 20%. The market for **Installed PVs,** which heavily rely on semiconductors for energy conversion and management, is expected to grow at a $CAGR_{23\text{-}29}$ of 15.7%.[7] **Wind power installations** utilize semiconductors in power conversion and control systems, however, the semiconductor content per MW in wind power is lower compared to PV, implying a relatively smaller weight on our demand forecast. This application is projected to grow at a $CAGR_{23\text{-}29}$ of 7.1%.[7] Data on the **renewable energy market** includes areas with varying semiconductor intensity. It is included to additionally reflect a financial overview of growth in the renewable energy sector in indicating the market's potential and

[5] Infineon Investor Call PSS 2022
[6] The weight allocation is based on the weight of respective contributions to Infineon's revenues in this segment
[7] Statista (2023)

opportunities for semiconductor applications and is projected to grow with a 9.6% $CAGR_{23-29}$.[8] In line with this is the consideration of **newly installed renewable energy capacity** as a general measure of the RE capacity, including all forms of renewable energy, correlating with the increased demand for semiconductors in these technologies. Hence, both elements are assigned a 20% weight in the overall renewable energy value driver.

- Home appliances

Although less contributing to the company's revenues, this subsegment is also covered by Infineon's product portfolio. According to the availability of data, we divide it into **smart thermostats** and **air-conditioning** revenues. Owing to the significant difference in market size ($3,900mn vs. $60,120mn) we apply weights of respectively 20% and 80%. As **Smart thermostats** are a specific area of application for Infineon's products, it is considered in our revenue forecast. Additionally, global **air-conditioning** market growth is included, as it represents another significant product focus of Infineon's home appliance semiconductor products. Together, a weighted $CAGR_{23-29}$ of 11.4% revenue growth is expected.[7]

- EV charging stations

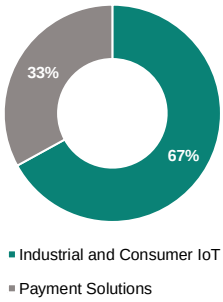
While partially being captured in the revenue forecast for the ATV segment, EV charging station infrastructure is also a crucial component of GIP. Recently, it has seen significant growth and is projected to maintain a high growth rate with a slight decrease over the next six years. We look at both **charging station revenues** and **charging station units**, weighing them equally. This enables a monetary and hardware-focused sector view, resulting in a 21.1% $CAGR_{23-29}$.

- Energy storage solutions

GIP revenue forecast based on segments suggests a $CAGR_{23-29}$ of 8.1%.

To assess the growth in demand for energy storage solutions we consider solution types such as **battery** (40%), **hydrogen** (20%), **thermal** (20%), and **pumped hydro** (20%) storage. Weights are attributed based on both market size and relevance within the context of semiconductors. Based on these calculations, we arrive at a $CAGR_{23-29}$ of 15.9% for energy storage solutions.

Figure 5: CSS Revenues – Weighting of Underlying Drivers



Source: Own Estimates, Infineon

Connected Secure Systems (CSS)

Forecasts for revenues in the CSS segment rely on industrial and consumer IoT and demand for payment solutions in line with Infineon's portfolio in this segment. CSS revenues are projected to grow in accordance with the demand for applications in this segment, which is in line with past revenue developments, leading to €3,663mn projected revenues by FY29.

- Industrial and Consumer IoT

We forecast demand for industrial and consumer IoT by considering the demand for **smart home** appliances, **infotainment/ADAS** (other weightings than in ATV), **wearables,** and **IoT-connected devices**. The assigned weights are 15%, 15%, 20%, and 60% respectively. The **smart home** element consists of forecasted average growth of households with SH systems, SH security revenues, SH control and connectivity, global SH revenues, and sales of major household appliances. Taking these into account, we estimate a $CAGR_{23-29}$ of 10.8%. In the context of the CSS segment, **infotainment** includes ATV infotainment and connected cars market size, which aligns with Infineon's application portfolio in the segment. This results in 15.4% $CAGR_{23-29}$. **Wearables**, specifically global activity tracker devices, and global smartwatch device shipments

[8] Infineon Investor Call PSS 2022

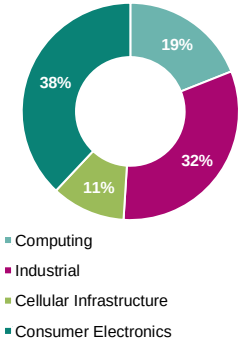
contribute through demand for products like microcontrollers, embedded security controllers, and connectivity solutions. Based on our forecast for these devices, we estimate a $CAGR_{23\text{-}29}$ of 5.31% for wearables. **IoT-connected devices are** the most important driver for the industrial and consumer IoT division, also reflected in the relatively high assigned weight. This driver incorporates all subsequent markets and is therefore essential to achieve a broader demand assessment for our projections for industrial and consumer IoT.

- Payment Solutions

Cashless transaction growth is anticipated to decline from annual growth of 16.1% in 2023 to 8.3% in 2029.[9] However, it is still heavily fuelling demand for processing solutions and thereby demand for Infineon's products. **Credit, debit and prepaid cards in circulation** are a key factor in this forecast as they fundamentally drive the demand for payment systems, forming the basis for the expanding need for semiconductors within payment solutions. Currently amounting to 26,686mn cards, it is projected to grow to 29,586mn by 2029. This fairly moderate growth balances the strong growth of cashless transactions into a more comparable context accounting for the non-linear relationship between semiconductor demand based on growth in transactions.

CSS revenue forecast based on segments suggests a $CAGR_{23\text{-}29}$ of 10.2%.

Figure 6: PSS Revenues – Weighting of Underlying Drivers



Source: Own Estimates, Infineon

Power & Sensor Systems (PSS)

This segment's revenue drivers cover the applications for Infineon's product portfolio, namely computing, industrial, cellular infrastructure, and consumer electronics. Historical slower growth in Infineon's PSS segment revenues relative to PSS market growth indicates that the company has not been able to capitalize linearly on market growth. To reflect this, we applied a discount of 300bp on anticipated market growth to project Infineon's PSS revenues.

- Computing

IT spending on data centers is included as data centers are significant consumers of power and sensor systems. The spending trends in data centers provide insights into the level of investment in infrastructure that requires advanced power management and sensor solutions, directly impacting semiconductor demand in this sector. Since data centers are critical consumers of power and sensor systems and have a direct correlation with semiconductor demand, we apply a significant weight of 35%. **Spending on cloud & data centers** is important due to the growing reliance on cloud computing, which necessitates robust and efficient power and sensor systems. As cloud infrastructure expands, the demand for high-performance semiconductors in power management and sensor technologies also increases, making this a key driver for revenues from computing. The expanding cloud infrastructure is closely tied to data center growth. Although overlapping with IT spending on data centers, it also captures broader cloud-related investments, justifying a substantial weight of 30%. **IoT-connected devices are** relevant as each device necessitates semiconductors for connectivity and power management. The rise in the number of IoT devices directly increases demand for Infineon's sensor and power systems. Even though it is a major driver, it has a slightly less direct impact compared to data center spending as IoT devices often have diverse and sometimes lower semiconductor needs on an individual basis than the other drivers. Accordingly, a weight of 20% is attributed. **IoT global revenue** adds a monetary perspective to the last driver. While providing a comprehensive view of the market size and growth potential in IoT, it is not as directly correlated to semiconductor demand, as it does

[9] Statista (2023)

not directly translate to semiconductor revenue, hence the smaller weight.

- Industrial

Revenues from charging stations are directly linked to the growth in EV charging infrastructure, providing insights into the market demand for EV on-board chargers and infrastructure, both of which require Infineon's PSS products. Due to the direct impact on the demand for EV on-board chargers and charging infrastructure, we assign a weight of 30%. **Charging stations** reflect the scale of deployment and expansion of EV charging infrastructure, being a direct market for PSS components and sensor systems. While being a key indicator of the growth of the EV infrastructure, this metric mainly offers a more quantitative measure of market expansion, justifying the weight of 25%. **IoT global revenue (excl. consumer)** is included as it encompasses the financial scale of IoT in industrial applications, directly tied to the market potential for semiconductors. Covering a broad range of industrial applications, reflecting extensive market opportunities for semiconductors in various industrial applications, we assign a weight of 45%.

- Cellular Infrastructure

Preparation of 6G start will further fuel demand for cellular infrastructure

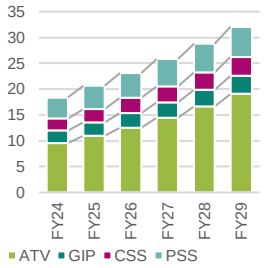
Global cellular subscriptions are a direct indicator of the scale and demand for cellular network infrastructure, including base stations, telecommunication servers, and backhaul systems. As the number of subscriptions grows, the need for robust and efficient infrastructure to support this user base increases, which in turn drives demand for Infineon's power and sensor systems in these areas. To capture ongoing demand for cellular infrastructure we apply a weight of 40%, recognizing incremental advancements of this technology and its stable demand and maturity. **Global 5G subscriptions** directly impact the deployment of 5G infrastructure, including massive MIMO (Multiple Input Multiple Output technology). Massive MIMO is a key feature of 5G networks that requires power management and sensor systems. Given the increased complexity of the 5G market, we attribute a weight of 60%, highlighting the higher revenue and market expansion opportunities for Infineon's PSS segment.[10]

- Consumer Electronics

Based on the following drivers for consumer electronics, we estimate this segment to grow at a $CAGR_{23\text{-}29}$ of 6.9%. **Smartphone revenues & unit sales** both are relevant due to smartphones being a major application for power management and sensor systems, including USB Type-C and USB Type-C PD, which are direct use cases of Infineon's PSS solutions. We assign a higher weight to smartphone revenues because revenues indicate a shift towards higher-value, technology-advanced phones. These typically require more complex semiconductors, aligning with Infineon's PSS product portfolio. Accordingly, revenues offer a better indication of market potential and profitability than the sales volume. Hence, we apply weights of 30% and 20% respectively. Growth in demand for **wearables** is relevant because wearables increasingly require semiconductors in power management and sensing capabilities. Despite their growing popularity, wearables currently present a smaller market compared to sectors like smartphones, justifying a more moderate weight of 15%. This metric's underlying drivers are the same as those introduced under CSS. The **E-bike market size** indicates the demand for semiconductors within its market, particularly for power management systems and sensors. While the market is expanding, it is smaller in scale compared to sectors like smartphones, hence a weight of 10% is attributed. **Global household major appliances revenues**, such as refrigerators, washing

[10] Hakeem et al.: Vision and research directions of 6G technologies and applications

Figure 7: CSS Revenues – Weighting of Underlying Drivers



Source: Own Estimates

machines, and air conditioners, are increasingly integrating smart and energy-efficient technologies. These appliances often require more complex, non-commodity semiconductor components for power management and sensor functionalities. Given their higher complexity and the growing trend towards smart and connected homes, this sector has a significant impact on the demand for Infineon's PSS products. Therefore, a weight of 10% reflects its importance in the overall demand mix. **Global small household appliance revenues**, including items like microwaves, coffee makers, and toasters, are also adopting smarter technologies but typically involve less complex semiconductor needs compared to major appliances. While the market for small appliances is substantial, the per-unit semiconductor content and value are generally lower than in major appliances. Consequently, this segment is assigned a lower weight of 5%. **SH growth** gives an indication of the demand for sensor and power management systems in smart home devices, including appliances in lighting and security systems, impacting the market for Infineon's PSS products. While the market for this application is significant, it is smaller and not as established as the smartphone market, justifying a smaller weight of 10%.

PSS revenue forecast based on segments suggests a $CAGR_{23-29}$ of 7.3%

Operating Forecast

Over the past five years, Infineon has been able to reduce its cost of revenues by 7.5% from 62% to 54.4%. We have found that increases in cost of revenues have been closely linked to increases in raw material prices and idle costs in the past. This relationship can particularly be observed in FY20, when cost of revenues increased by 5.4% due to the 11% increase in average raw material prices such as silicon, gallium, and palladium.[11] In FY20, the increase in raw material prices continued (11% increase in average semiconductor raw material prices) and decreased demand for semiconductors continued to increase idle costs, overall increasing cost of revenues by 5.4% to 68.1% in FY20. Due to the unforeseeable nature of such macroeconomic events, we assume their absence in our projections. Hence, we considered current raw material price projections for our cost of revenue forecast. After the decrease in raw material prices in FY23, prices are expected to increase in FY24 to return to an annual growth rate of 3.6% by FY25, which is projected to decrease to 3% annual growth by 2029. As we expect an improvement in manufacturing efficiency and inventory management during the projected period, we forecast increased raw material prices to be offset by these improvements, overall projecting stable cost of revenues. However, we expect a slight increase relative to FY23 due to the disproportional increase in raw material price increase in FY24. With stable input costs, we assume cost of revenues to be at 55% for the forecast period.

In the past, **R&D expenses** have increased mainly because of sudden increases in employees i.e., through the Cypress acquisition in FY20 that caused R&D expenses to increase to 14% of revenues. Once the acquisition had its full effect on revenues, R&D expenses decreased as a proportion of revenues to 12.2% in FY23. As we are not projecting any major acquisitions in our model, we assume R&D expenses to stay consistent at 12.2% of revenues for the projected period.

Infineon's upcoming facility expansions will temporarily increase SG&As

Similarly, Infineon has experienced increases in **SG&A expenses** since FY18 mainly due to the increase in SG&A employees through the Cypress acquisition and has been able to decrease SG&A expenses to 9.8% of revenues by FY23. To project SG&A expenses, we have considered the expansion of Infineon's manufacturing facilities, especially in Dresden, which will increase the number of employees during the period of FY24-FY26 before the facility generates revenues.

[11] IMF Primary Commodity Price System (2023)

Hence, we project SG&A expenses to reflect this increase in employees, assuming the number of employees to increase each year from FY24-FY26, increasing SG&A expenses from 12% in FY24 to 14% in FY25 and 16% in FY26. Once revenues can be generated from the expansion, we project SG&A expenses to decrease to 13% in FY27, and 11% in FY28, reflecting the increasing value generated.

Valuation

Our valuation methodology integrates a relative valuation using multiples with a Discounted Cash Flow (DCF) analysis, incorporating multiple scenarios to enhance the robustness of our price target, accounting for both an intrinsic view and an extrinsic view. This combined approach is designed to mitigate potential projection inaccuracies and to account for market volatility.

Relative Valuation

- Comparable Company Analysis (CCA)

Figure 8: CCA - Selected Peer Groups 1 & 2

Selected peers are based on similarity in industries, business model, and financial metrics

From an initial pool of 38 companies, we've identified 10 peers to be most similar to Infineon based on their geographic presence, business models, and key financial metrics. These 10 companies are split into two groups according to their ranking of similarity, providing a focused peer comparison for accurate market assessment. EV/Sales is considered as the semiconductor industry is a capital-intensive industry and many companies heavily invest in R&D. Hence, a sales multiple provides insights into Infineon's market value concerning its core business operations and ability to generate revenue growth. To achieve a nuanced view of Infineon's relative market value we further include EV/EBIT in the valuation, which accounts for the effects of D&A expense, being relevant in an innovation and technology-driven industry. The P/E ratio reflects investors' expectations of the market and helps us assess how the market values a company's current earnings with its share price. While we find the resulting EV/Sales multiples to be equal at 4.0x for both groups and EV/EBIT only slightly differing (12.8x for group 1, 12.9x for group 2), more significant differences are found in P/E multiples. Whilst the P/E multiple is 14.2x for group 1, group 2 resulted in a P/E ratio of 15.5x. To reduce the impacts of idiosyncratic factors, we are considering multiples from group 2 for the valuation. Throughout the analysis, forward multiples for 2024 are used. We compute the final share price of the CCA valuation by equally weighting resulting share prices from the three considered multiples, resulting in a share price projection of €46.85.[12] When comparing CCA valuation results to the results yielded from the intrinsic valuation (see chapter on DCF), positive market sentiment among investors and potentially strong expectations for future revenue and EBIT growth of Infineon are implied.

CCA leads to a share price projection of €46.85

- Comparable Transaction Analysis (CTA)

In our valuation analysis for Infineon, we consider a range of semiconductor industry transactions from the last three years, categorizing them into Core Semiconductor Competitors (Tier 1), and Related Semiconductor and Component Manufacturers (Tier 2). Based on the available data on precedent transactions, we assess for best comparability regarding business model, operating markets, market capitalization, and EBITDA margin, averaging at 27% for Tier 1, compared to a last three-year average of 32.26% for Infineon. The inclusion of a broader set of companies mitigates the lack of directly comparable recent transactions, offering a wider but still pertinent dataset for a multiple analysis. To get a more comprehensive view of calculated multiples based

[12] Reflecting its significance of providing a market-based view, we attribute a 15% contribution to our final target share price. CCA: P/E, EV/Sales, EV/EBIT

Figure 9: Precedent Comparable Transactions' Ranking

Tier 1	1	Xilinx
	2	Dialog Semiconductor
	3	Cypress Semiconductor
	4	Maxim Integrated Products
Tier 2	5	Toshiba
	6	Osram Licht
	7	Kyocera AVX
Tier 3	8	National Instruments
	9	Veoneer
	10	Kemet
Tier 4	11	Atotech Deutschland
	12	CMC Materials
	13	NxEdge

Source: Own Estimates, PitchBook

Tier 1 & 2 EV/Sales & EV/EBIT multiples lead to implied share prices of €47.45 & €78.86

on Tier 1 and Tier 2 combined, we additionally consider the multiples of peripheral and indirect market participants, and industry suppliers and service providers. The central cohort for our direct valuation analysis is composed of Tier 1 & 2. Due to the limited number of transactions among the primary comparable companies, we include this secondary set to achieve a sufficiently diverse dataset for median calculations. These firms share enough common ground with Infineon to warrant a meaningful comparison. This combined analysis (Tier 1 & 2) yields an average implied EV/EBIT multiple of 26.0x and EV/Sales multiple of 3.4x, substantially higher than those of Infineon, which is largely attributable to the control premiums embedded within transaction prices.

While the precedent transactions are not a perfect match for valuing Infineon, they indicate a potential undervaluation. We believe, even in the absence of control premiums, that Infineon is rather inexpensive relative to transaction multiples. This assessment is further supported when we expand the analysis to include peripheral and indirect market participants (Tier 3), and industry suppliers and service providers (Tier 4) to the broader peer group. These companies, subject to similar market forces, supply chain dynamics, and customer bases, offer additional context, yielding a median EV/EBIT of 28.3x and EV/Sales of 4.6x. The consistency of multiples when including this wider group suggests robustness in the comparable companies chosen for our primary analysis. We compute the final share price of our CTA by equally weighing implied share prices of EV/Sales and EV/EBITDA (Tier 1 & 2 combined), resulting in €63.15.[13]

Figure 10: WACC's Sensitivity to Changes in Cost of Equity

Cost of Equity	WACC
9.76%	8.91%
10.26%	8.46%
10.76%	**8.46%**
11.26%	8.91%
11.76%	9.81%

Source: Own Estimates, Refinitiv

WACC

To have a representative D/E ratio incorporated into the model, we consider the past and future D/E ratios based on estimated market values. As they stay in a respectable range for the future (0.10-0.11), we leave the calculated weights (FY23) unadjusted. This leads to a weighted average cost of debt of 1.80%. Considering the market value of equity, our weighted average cost of equity results in 9.68%. Adding both weighted average cost rates leads to a WACC of 9.81%. Since the underlying capital structure mostly consists of equity, the WACC is highly sensitive to changes in cost of equity.

Figure 11: Selected WACC Components

Cost of Equity	
Beta	1.47
Risk free rate (rf)	2.36%
Market Risk Premium	5.70%
Cost of Equity	**10.76%**
Capital Structure	
Market Value of Equity	47,300
Market Value of Debt	5,235
Total Capital	**52,536**

Source: Own Estimates, Infineon, Bloomberg

To enhance the accuracy of our analysis and capture a comprehensive risk profile, we calculate the industry beta using a regression. Regressing Infineon's historical stock returns on the EUROSTOXX 600 index, we find a beta of 1.47. This index is selected over narrower indices such as the DAX to ensure a diversified and representative dataset, given Infineon's base in the European market. For the regression, we employed weekly data from the past five years to calculate excess returns against 10-year German Government Bond yields, thus establishing a risk-free rate. We used weekly data to balance between data sufficiency and mitigating the noise often associated with higher-frequency data. Incorporating this beta into the CAPM together with a risk-free rate of 2.36% (10-year German government bond) leads to a calculated total cost of equity of 10.76%.

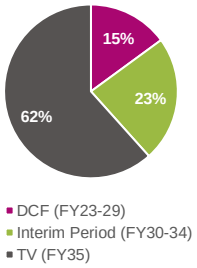
As for the cost of debt, market value of debt is calculated using Infineon's average debt maturity, the total projected book value of debt in FY24, assuming that average maturity is consistent with FY23, incorporated forecasted interest expenses for FY24 and the current cost of debt derived by the pre-tax cost of debt (2.5%) and the marginal tax rate of 28% (corporate tax rate of 15% plus solidarity surcharge of 5.5% of the corporate tax rate and trade tax rate of 12%).

[13] This value accounts for 5% of our final share price target, reflecting its reduced significance because of embedded control premiums

Interim Period

Given Infineon's current trajectory of higher growth, and the anticipation of continued expansion in the near future, it is unlikely that the company will reach a steady growth state by the end of FY29. To achieve a more precise valuation, we include an interim period of five years from FY30 to FY34, following our financial forecast horizon. This approach allows us to integrate projected growth until FY34 while accounting for the increasing uncertainty in projections. During this interim period, we align the growth in unlevered free cash flows (UFCF) with the anticipated growth rates of the semiconductor industry. These growth rates are projected to gradually decrease from 5.3% in 2030 to 3.5% in 2034, reflecting a shift towards alignment with long-term GDP growth trends. The cash flows generated in this interim period are discounted to the valuation date (31st December 2024), serving as an additional component in the computation of Infineon's enterprise value.

Figure 12: Enterprise Value Distribution

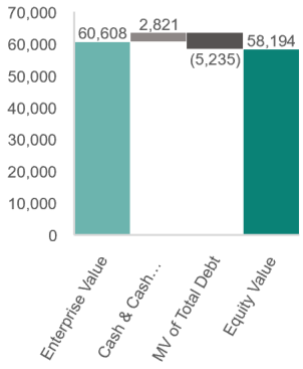


Source: Own Estimates

Terminal Value (TV)

Our TV follows the forecasted interim period and provides Infineon's projected value from FY35 forward, discounted to the valuation date. We use the expected global real GDP growth from 2020-2035, averaging 2.8% per year for the perpetual growth of the company. This approach is underlined by the forecasted inflation of the raw materials required for Infineon's production. Raw materials price inflation is expected to significantly decrease in the future, such that their inflation is fairly in line with the average global GDP growth.[14] Our assumed terminal growth of 2.8% is in line with Infineon's expected stable growth in a post-forecast period characterized by less volatility and uncertainty. By using a perpetual growth rate that is conservative in comparison to the high growth rates of the earlier years, we account for the expected deceleration of growth as Infineon and underlying market drivers mature. This approach is substantiated by Infineon's role in the semiconductor industry, which, while cyclical, has a solid base in continuous technological development and innovation driving sustained demand far into the future. Our valuation of Infineon from FY35 onwards intentionally avoids using exit multiples from trading and transaction comparables. As we are calculating our TV based on UFCFs from FY35 onwards, these short-term indicators are not suitable for projecting the company's long-term value due to the significant time gap, which introduces a high level of uncertainty and potential market changes. Additionally, the volatile nature of the semiconductor industry implies that current multiples may not accurately reflect the company's potential and intrinsic value.

Figure 13: EV Equity Bridge (in €mn)



Source: Own Estimates

Discounted Cash Flow (DCF)

To determine Infineon's equity value as of December 31st, 2024, we employ the calculated WACC of 9.81% to discount projected UFCFs. We use mid-year discount factors to represent the timing of these yearly projected cash flows more accurately. Implementing all components yields a total EV of €60,608mn. To transition from EV to equity value, we deduct the projected market value of debt for FY24, amounting to €5,235mn, and incorporate the projected cash and cash equivalents of €2,821mn. This calculation leads to an equity value of €58,194mn, translating to an implied equity value per share of €44.56 (see Figure 14).

Note that this share value does not represent our base case scenario, but serves as a key input to calculate our base case by applying a Monte Carlo (MC) simulation.

Figure 14: DCF Components

Perpetuity Method	
Final Year Cash Flow (2034)	6,035
Perpetuity Growth Rate	2.8%
WACC	9.8%
Terminal Value	88,823
Discount Factor	9.25
Discounted Terminal Value	37,356
(+) Discounted UFCFs (2025-2029)	9,058
(+) Discounted UFCFs (2030-2034)	14,194
Enterprise Value	**60,608**

Per Share Analysis	
Enterprise Value	60,608
(-) Gross Debt	5,235
(+) Cash and Equivalents	2,821
Equity Value	**58,194**
(/) FDSO	1,306
Implied Equity Value per Share	**€ 44.56**

Source: Own Estimates

[14] Statista (2023)

- Sensitivity Analysis

Based on the most determining factors driving our valuation, we analyze the sensitivities of revenues, perpetuity growth, and WACC. Due to the nearly identical revenue forecasts based on regions and operating segments, the final valuation is sensitivity towards changes in weights is neglectable. Nevertheless, sensitizing total revenue growth on a yearly basis shows the high dependence of revenue growth on our final valuation (see Figure 15).

Figure 15: Sensitivity to Changes in Yearly Revenue Growth

-7.5%	-5.0%	-2.5%	0.0%	2.5%	5.0%	7.5%
€ 37.04	€ 39.40	€ 41.91	**€ 44.56**	€ 47.43	€ 50.49	€ 53.71

Source: Own Estimates

Our DCF is more sensitive to perpetuity growth rate than changes in WACC, explained by the longer forecasting period, reducing the impact of perpetuity growth because of a longer discount period (Figure 16). Interim period growth changes have much less influence on the final valuation.

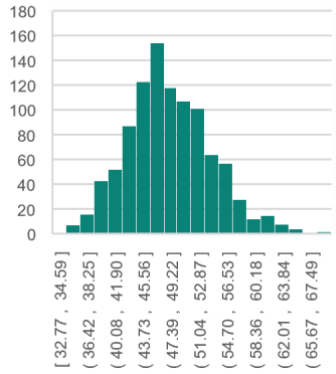
Figure 16: Sensitivity to Changes in Perpetuity Growth and WACC

Perpetuity Growth Rate \ WACC	10.8%	10.3%	9.8%	9.3%	8.8%
2.0%	€ 36.64	€ 38.82	€ 41.33	€ 44.23	€ 47.62
2.5%	€ 37.99	€ 40.40	€ 43.20	€ 46.46	€ 50.30
2.8%	€ 38.97	€ 41.55	**€ 44.56**	€ 48.10	€ 52.29
3.5%	€ 41.25	€ 44.27	€ 47.82	€ 52.05	€ 57.16
4.0%	€ 43.24	€ 46.66	€ 50.73	€ 55.64	€ 61.66

Source: Own Estimates

- Scenario Analysis

Figure 17: Distribution of Simulated Share Prices



Source: Own Estimates

The **base case** is built upon the foundation of the DCF value. The base case share price is derived from an MC simulation, providing a more nuanced view than the singular value from our DCF model. We model metrics used to forecast our statement items, by determining standard deviations (SD) for randomizing our inputs. Hereby we based our SDs on past financial developments; in many cases, we allowed for numbers that exceed past amplitudes. The key inputs WACC and perpetuity growth are considered with a SD of 0.5% respectively. To reflect natural variability, we assume a normal distribution for randomizing our values within the assigned SDs. We do not simulate values that we have treated as non-core in our financial projections. The MC iterated 1000 individual share prices, outputting our base case price of €48.19, the mean of all observations. Our MC approach enables a more accurate picture of the valuation, as inputs will realistically change partially independent of each other.

Figure 18: Snapshot of used Metrics for MC Basis

% of Cash & Cash Equivalents
% of Revenues
% of Operating Expenses
% of long- and short-term debt
% of Gross Debt
DSO
DPO
Income Tax Rate in %
Dividend Payout Ratio

Source: Own Estimates

Our **bear case** considers poor implications on Infineon's development, regarding revenue growth, cost efficiency, and all other underlying drivers for forecasting the company's financials. In this scenario, WACC is set to 11.8% (+2% from base case), perpetuity growth to 2.3% (-0.5% from base case), and yearly revenue growth is adjusted by -10%. Additionally, all financial item forecasts have been adjusted to a more pessimistic setting. These assumptions lead to a share price of €36.19. This price indicates what could theoretically happen when pessimistic assumptions are applied to all inputs.

The **bull case** utilizes the same approach as the bear case, except for using the most optimistic assumptions regarding revenue growth, cost efficiencies, and more, leading to the share price of €71.56.

Valuation Risks

The semiconductor industry's cyclical nature presents risks for Infineon, with fluctuations often occurring due to inventory changes in client industries. Infineon's significant investments in new

technologies can also lead to supply inflexibility, impacting its response to demand shifts.[15] Reduced activity in fabs can lower capacity utilization and dilute operating profits for Infineon, particularly during downturns. Infineon's revenues reflect the cyclical nature of global trade, with a notable correlation with economic conditions historically.[15] Infineon's significant dependence on the fluctuating automotive industry and the uncertainty of government policies related to electric vehicles notably impact its sales.[16] Infineon faces risks from potential order cancellations due to customers' duplicate orders and its reliance on external manufacturers for supplies and price negotiations, impacting revenue and margins.[17] Additionally, the competitive landscape may intensify, putting pressure on the company's market share and pricing power globally, especially with Chinese vendors rapidly expanding their manufacturing capacities in mature nodes.[18]

Infineon's revenues are closely tied to global economic conditions & automotive cycles

Infineon is challenged by the emerging SiC market, which, despite its current niche status and cost issues, is expected to grow significantly due to its technical superiority over traditional solutions (CAGR of 26% between 2022 to 2030).[19,20] While this risk is being addressed by constructing the 200-millimeter SiC power fav in Kulim, it remains uncertain how it will precisely impact Infineon's future market share in this segment.[17]

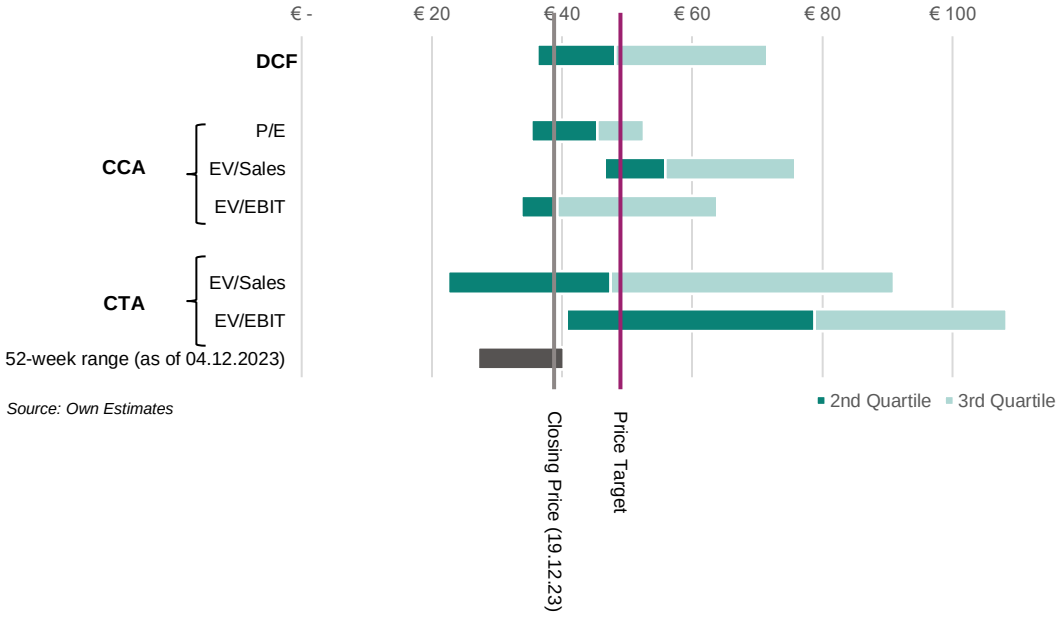
Exchange rate fluctuations pose a financial risk to global operations

Another uncertainty that cannot be fully incorporated into future projections is foreign exchange rate risks. Infineon has a varying but significant portion of its revenue, COGS, R&D expenses, and SG&As denominated in foreign currencies, mainly in US$.

Recommendation

Considering our target price of €48.73 for Infineon Technologies AG, an anticipated dividend of €0.48 in 2024, and the current share price of €38.04 (as of 19.12.23), we project a substantial upside potential of 29%.[21] The company's strong margins, robust cash flows, minimal debt, and sufficient cash reserves position it well to navigate economic challenges. Expected tailwinds from market drivers, coupled with its expansion strategy, suggest that the company is well-prepared to effectively capitalize on these opportunities. Therefore, our stock recommendation is to **Buy**.

Figure 19: Valuation Football Field



Source: Own Estimates

[15] Deutsche Bank Research: Extraordinary semiconductor cycle triggered by one-time events, cyclical effects
[16] Handelsblatt: Im neuen Jahr droht Vollbremsung bei Elektromobilität.
[17] Infineon: Investor Presentation Q3 FY23
[18] Electronicsweekly: China increasing capacity at mature nodes
[19] McKinsey: New silicon carbide prospects emerge as market adapts to EV expansion
[20] Medium: Semi insulator SiC Substrates Market Size: Share and Scope Projections
[21] Final target price calculation: 0.8 * Base Case DCF + 0.15 * CCA + 0.05 * CTA