

## Project Gauss : Fairness Opinion

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## Introduction

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1. Background and engagement
2. Approach

## Background and engagement

### Overview over the number of relevant shares

Shares type	Nr. of shares
Issued shares	29,757,930
Treasury stock	1,736,026
<i>Treasury stock in FY15B (stock buyback)</i>	<i>1,493,838</i>
<i>Treasury stock as per end of FY14A</i>	<i>242,188</i>
<b>Number of relevant shares, excl. options</b>	<b>28,021,904</b>

Source: Micronas, EY

### Background

- ▶ Micronas Semiconductor Holding AG (Micronas or target) is a company incorporated under Swiss law and headquartered in Zurich.
- ▶ Micronas' registered shares are listed on the SIX Swiss Exchange since 1996 ([www.micronas.com](http://www.micronas.com); Valor: MASN). As of 11. December 2015, 29'757'930 registered shares with a nominal value of CHF0.05 per share have been issued. The number of treasury shares is 1,736,026, including the stock repurchased since March 2015. The free float, excluding treasury stock, is 100%.
- ▶ On 17 December 2015 TDK Corporation (TDK), a listed company with headquarters in Tokyo, Japan, will launch a public tender offer for Micronas (offer). The offer includes all listed, registered shares of Micronas, except for the treasury stock and shares, which are directly or indirectly owned by TDK or its subsidiaries.
- ▶ The offer for the outstanding shares of Micronas consists of a cash payment of CHF7.5 per registered share with a nominal value of CHF0.05.

### Engagement

- ▶ The board of directors of Micronas (board of directors) has engaged Ernst & Young Ltd, Switzerland (EY or us) to prepare a fairness opinion. The fairness opinion serves as a basis to assess the financial adequacy of TDK's offer.
- ▶ The fairness opinion intends to give Micronas' board and public shareholders a neutral opinion and assure that the offered price per registered share is fair and reasonable from a financial point of view.
- ▶ The fairness opinion does not constitute a recommendation regarding the acceptance or rejection of the offer. The fairness opinion does not contain any assessment of the possible impact an acceptance or rejection of the offer may have and makes no statement about the future performance of a Micronas share and the price at which the Micronas shares that are not being tendered may trade in the future.
- ▶ Since our assessment is largely based on information obtained from Micronas, our responsibility is limited to the careful and professional analysis and assessment of the information provided to us. Furthermore, Micronas confirmed to us that they are not aware of any facts or circumstances, according to which the information provided would be misleading, inaccurate or incomplete.
- ▶ The fairness opinion may be made available to the public.

## General approach and valuation principles

### General approach

- ▶ To assess the financial fairness of the offer, we performed our own valuation considerations. Essentially, the following steps were part of this fairness opinion:
  - Request relevant information
  - Analyze the information obtained from the target
  - Conduct interviews with responsible persons (Management)
  - Valuation considerations regarding Micronas by means of stock price analysis and appropriate valuation methods
  - Sensitivity analyses on key value drivers
  - Assessment of the offer by an EY internal Fairness Opinion Committee
- ▶ This fairness opinion has been prepared from the point of view of all public shareholders. Individual tax and other effects related to shareholders as a result of the acceptance or rejection of the offer have not been considered in our analysis. Considering such elements would not be possible due to the large number of different requirements of the shareholders.

### Analyses and valuation methods applied

#### Approach

Share price analysis – VWAP(60)  
 Analyst estimates of the target price  
 Discounted Cash Flow method (DCF)  
 Market multiples (trading und transaction multiples)

Source: EY

### Valuation principles

- ▶ The aim of the valuation is to determine the value of one registered share of Micronas, including the associated companies as of 11 December 2015. The total number of registered Micronas shares is 29'757'930 with a nominal value of CHF0.05. The number of treasury shares is 1,736,026. The number of employee stock options is 1'587'083, with a strike price between CHF4.73 and CHF11.90. Based on the calculated enterprise value, we have concluded that some options are in-the-money. Further information regarding the employee stock option program is provided in section 9 Discounted cash flow analysis.
- ▶ In principle, the share price of a listed company is the best indication of the company value. This requires that the shares are traded sufficiently, which is true for Micronas as will be shown in the next section.
- ▶ In order to develop a substantiated fairness opinion, further analyses and valuation methods were applied for Micronas in addition to the stock price analysis. These methods are listed in the adjacent table.

### Conclusion

Based on the results of the various valuation methods, we have determined a range for the fair market value of one registered share of Micronas.

In order to be seen as financially fair, the public offer must be within or above this range.

## **Business description**

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3. Company description
4. Operating results
5. Market analysis

## Company

### Company logo

Source: Micronas



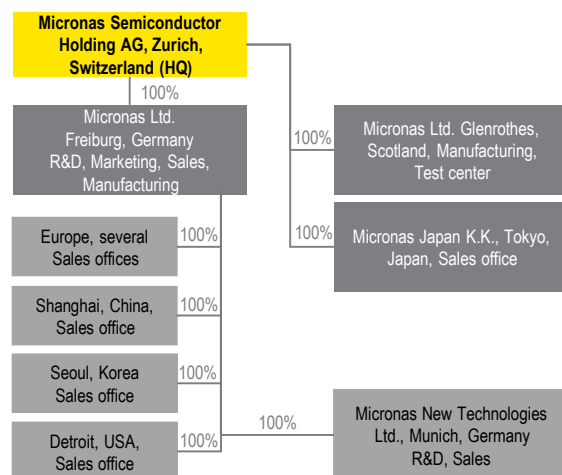
### Micronas

- ▶ Micronas is a globally active manufacturer and supplier of intelligent, sensor based system solutions in automotive and industrial segments. Micronas offers Hall sensors and embedded controllers for smart actuators for automotive and industrial applications, such as powertrain, chassis, motor management and comfort functions.
- ▶ The headquarters of the holding is located in Zurich (Switzerland) and the operational headquarters is situated in Freiburg (Germany). Micronas currently employs about 900 people.
- ▶ Since 2011 a strategic partnership exists between Micronas and X-FAB, one of the globally leading foundry groups for analog and mixed-signal semiconductor applications.
- ▶ The company is predominantly a business-to-business company, primarily serving automotive suppliers and distributors. Considerable manufacturers of automotive electronics are Micronas customers (among them Denso, Bosch and Continental).
- ▶ Micronas is globally present and operates sales offices in Europe, China, Korea, USA and Japan, which are supplemented by a global network of distributors.

## Company

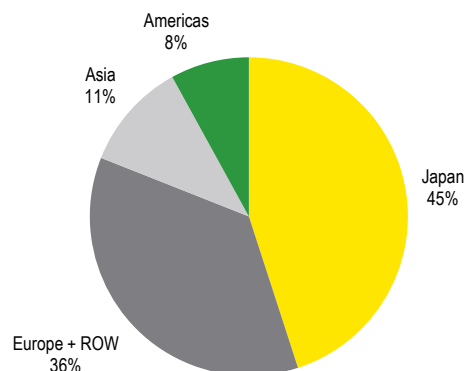
### Group structure

Source: Micronas



### Regional sales for Automotive and Industrial

Source: Micronas



Values are based on the FY15B data

### Group structure

- ▶ Micronas headquarters is located in Zurich, Switzerland. Manufacturing, R&D, Marketing and Sales are situated in Freiburg, Germany. In Glenrothes, Scotland a part of the product portfolio is manufactured and a test facility is operated, to ensure high product quality. Micronas Ltd. operates a global sales network. An exception is the sales office in Japan, which is directly coordinated by the holding (see the adjacent chart).

### Group revenues

- ▶ Group revenues are mainly driven by the Japanese market, which contributes with 45% to the total revenues (see the adjacent chart).

### Segments

- ▶ The business of the company is divided into two segments: Automotive and Industrial.

#### Automotive

- ▶ The product portfolio of Automotive includes Hall switches and 2D/3D Hall-effect sensors as well as embedded motor controllers (highly integrated system-on-chip solutions). Micronas offers products for the powertrain, motor controllers and car interior.
- ▶ Automotive is the core business for Micronas, which currently generates approx. 93% of the group's turnover.
- ▶ The core market for Automotive is Japan, followed by Western Europe, USA and China, which are also among the major markets for Micronas.

#### Industrial

- ▶ The segment Industrial develops products for robot controllers, production automation and machinery equipment. Furthermore, the product portfolio covers building, home and office automation markets.
- ▶ Industrial generates most revenues with Hall-sensors-based products and achieves currently approx. 7% of Micronas total sales.
- ▶ Turnover is mainly generated through global distribution partners.

## Historical financials and benchmarking

**1** Historical revenue development in FY11A-FY14A was very volatile. The significant decline of (16.5%) in FY11A was followed by a 6.1% increase in FY12A. In FY13A the turnover dropped again, followed by a recovery in FY14A. Average revenue was historically at approx. CHF160m.

Turnover fluctuations in the past were influenced by the currency fluctuations and demand cycles in the automotive industry.

### Key financials FY11A-FY14A

Currency: CHF 000

	FY11A	FY12A	FY13A	FY14A
Total revenue	158,799	168,465	151,919	158,450
Gross profit	59,187	67,502	48,974	50,371
EBITDA	25,149	28,780	13,159	13,152
EBIT	10,519	17,623	1,966	1,733
Profit/ (loss) for the year	11,508	19,294	6,635	3,448

### KPIs

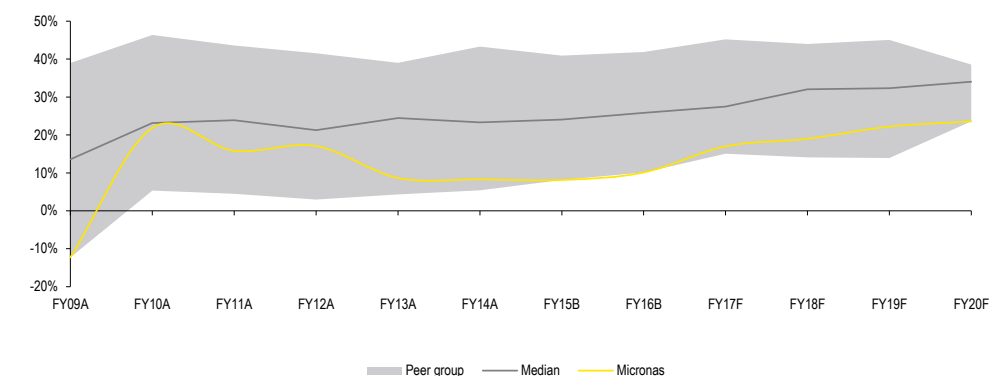
Revenue growth/ (decline) <b>1</b>	(16.5%)	6.1%	(9.8%)	4.3%
Gross profit	37.3%	40.1%	32.2%	31.8%
EBITDA margin	15.8%	17.1%	8.7%	8.3%
EBIT margin	6.6%	10.5%	1.3%	1.1%

Source: Capital IQ

**2** Historical and future EBITDA margins of Micronas are in the range of comparable companies. Until FY19F the expected margin lies rather in the lower range of the values for the peer group, which is primarily attributable to higher fixed costs compared to revenue and higher expenditures due to the switch from 6" to 8" production. FY15B values also consider negative currency effects from CHF appreciation as well as declined demand in the Japanese automotive market (lower inventories and no re-stocking). In FY20F a stronger performance and increased EBITDA margin of 23.6% are expected, which should be reached through planned optimization measures. Required investments are consistently considered in the business plan.

### 2 EBITDA margin

Source: Capital IQ, EY Analysis



## Benchmarking

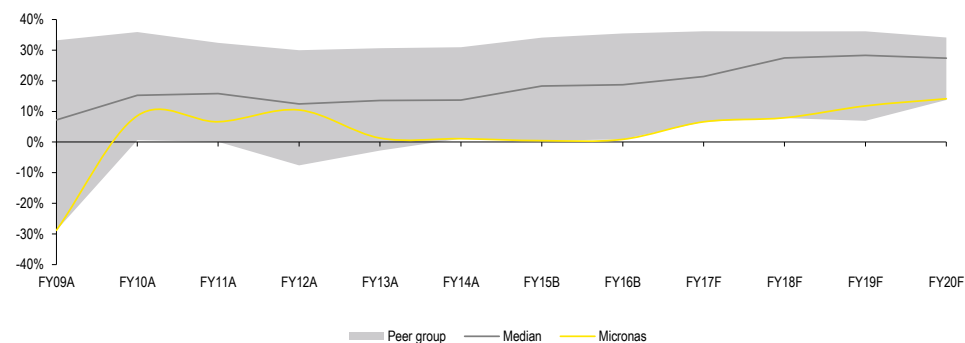
**1** Similarly to EBITDA margin, also the expected EBIT margin lies in the range of the peer group. Historical results are located rather in the lower range of the comparable companies, in particular for the years FY13A-FY15B. Starting from FY16B a growth of the EBIT margin is planned and a 14.1% margin is expected in FY20F.

Long-term improvement of the profitability is primarily driven by the following four factors:

- Above average revenue growth in diverse submarkets and as a result better production capacity utilization and fixed costs coverage
- Market share growth and margins improvement through new, innovative product generations (Hall sensors and embedded motor controllers)
- Switch from 6" to 8" production and as a result increase in productivity
- New production equipment with better performance and efficiency

### 1 EBIT margin

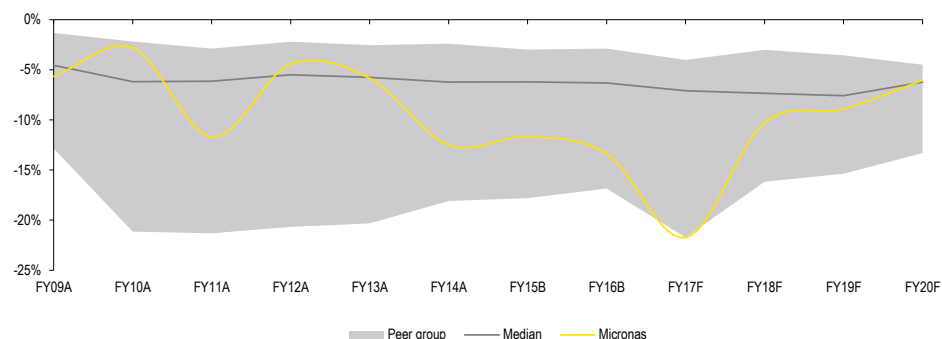
Source: Capital IQ, Micronas, EY



**2** Capex in FY09-FY13A were rather moderate, when compared to the peer group. For that, investments, in particular in new products and more efficient production processes, will increase significantly over the following years. In FY17F investments are planned to reach 21.7% of revenues, which in turn would contribute to higher turnover and better productivity in the future. Beginning from FY18F a normalization is planned, which would be in line with the average peer group values.

### 2 Investments in % of revenue (Capex, displayed negatively)

Source: Capital IQ, Micronas, EY



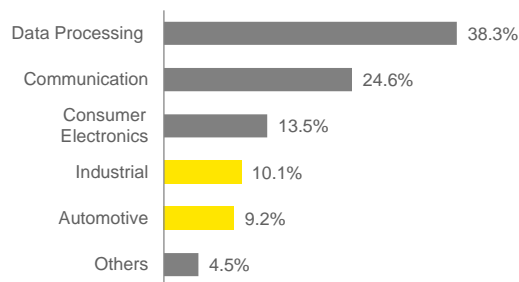
## Conclusion

Benchmarking has shown that the expected key figures of Micronas are in the range of the peer group. We, therefore, consider the business plan as appropriate and substantiated.

## Relevant market

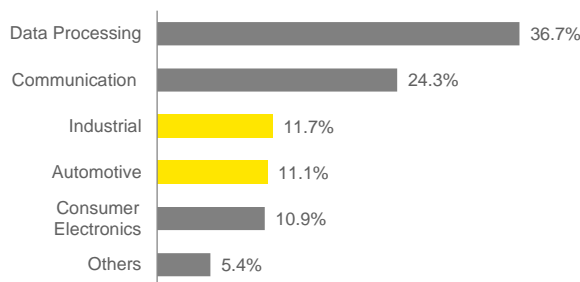
### Semiconductor industry, market share by application, 2015 (E)

Source: GMR Data



### Semiconductor industry, market share by application, 2020 (E)

Source: GMR Data



### Status Quo

- ▶ Semiconductor industry has demonstrated a solid growth over the past years. According to the Semiconductor Industry Association (SIA), a revenue growth of 2.3% is expected globally in 2015. Global revenues in 2015 are estimated at USD343.4 bn.
  - One of the biggest customers in automotive segment are manufacturers such as Continental AG, Denso, Bosch, Delphi, TRW Automotive, Hitachi Automotive Systems, Aisin Seiki.
  - In the segment Industrial key customers are producers such as Siemens, Danaher, Bosch, Mitsubishi Electric, Honeywell, Panasonic, United Technologies.

### Value drivers and perspectives

- ▶ According to SIA, in the years 2012-2017 an average growth rate (CAGR) of 4.6% is expected, which would lead to a global revenue of USD364.5 bn. In automotive an above average sales growth of approx. 40% from USD27.5 bn to USD41 bn is forecasted.
- ▶ The Asia-Pacific region (incl. China) will continue to demonstrate higher growth rates than other regions. This market is estimated at USD217.0 bn as of 2016 and, thus, contributes with more than 60% to the total semiconductor market. High growth is attributable to big local production capacities and increasing local demand for electronics.
- ▶ Growing demand for Advanced Driver Assistance Systems (ADAS) as well as electric and hybrid cars will open additional market potential for semiconductor manufacturers in the automotive segment. Based on the analysis of IC Insights, the automotive industry will show strong growth in the period 2014-2019 (CAGR 6.5%). The demand will be substantiated by the global legislation for enhanced emissions control and safety. In addition, state of the art solutions, such as vehicle cloud connectivity, personal portable devices and car infotainment systems are seen as further drivers of the increasing demand.
- ▶ Results of the market research from GMR Data are also pointing out at growing market shares for automotive and industrial sectors in 2015-2020 (see adjacent charts).
- ▶ Analysts are expecting continuing growth in the market segment Internet of Things (IoT), which would be driven by the growth in connected devices in the safety, automotive, mobile, smart home and medicine industries.

Source: publicly available data such as company press releases, data bases (Bloomberg, Capital IQ etc.), Thompson analyses, Factiva press articles; see additional references in the text.

## Valuation considerations

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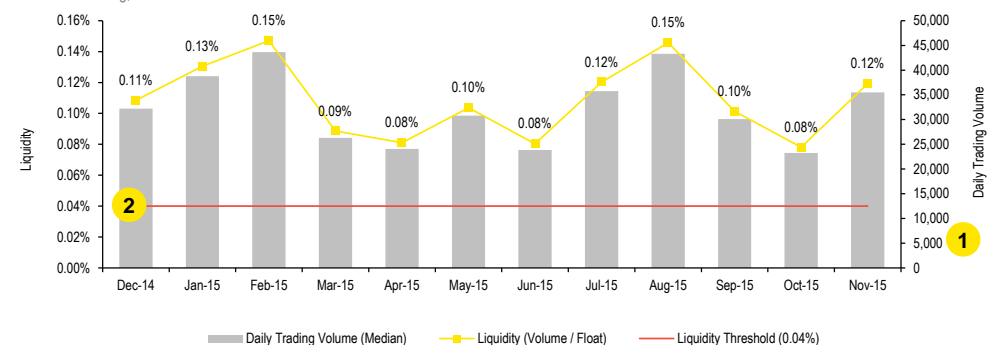
6. Liquidity analysis
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10. Market multiples

## Liquidity according to Swiss Takeover Board rules

- 1** The liquidity analysis shows that trades were recorded on all trading days.

### Trading volume and liquidity

Source: Bloomberg, EY



#### Notes to chart

- The graph shows the trading volume (monthly median) and liquidity over the observation period from December 2014 to November 2015. The data underlying the liquidity analysis was obtained from Bloomberg.
- The liquidity threshold is set at 0.04% by the Swiss Takeover Board. See in particular the Circular No. 2 "liquidity in the sense of the Takeover Law".

- 2** The analysis also shows that the monthly trading volume in each month was above the liquidity threshold of 0.04%. Micronas shares are, therefore, considered to be liquid.

### Conclusion

Based on the fact that Micronas shares are liquid, the share price is an important element in assessing the financial fairness of the offer. The VWAP (60) as of 11 December 2015 is CHF4.4.

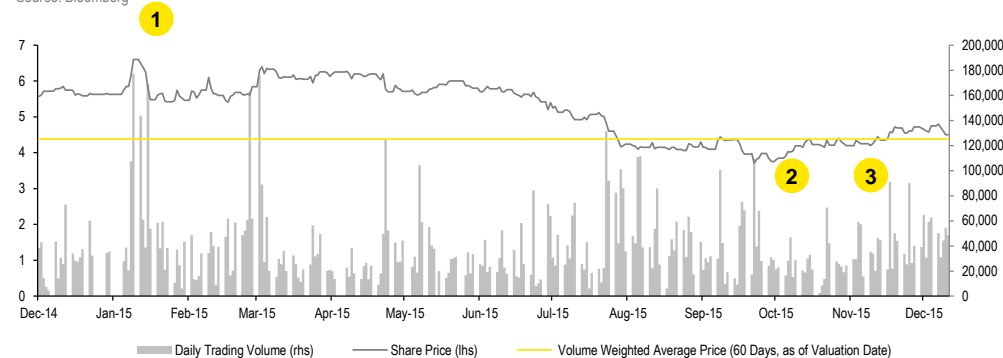
## Share price development

**1** The highest closing price of the last 12 months was observed on 09 January 2015 (CHF6.6).

**3** Compared to precedent months, higher trading volumes could be observed in November and the share price increased by 7.4% from 02 November 2015 to 11 December.

Share price development (December 2014 to December 2015)

Source: Bloomberg

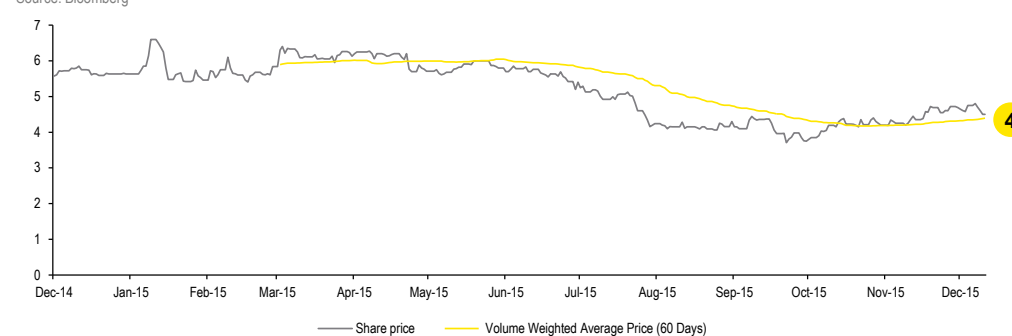


**2** The lowest closing price of the last 12 months was observed on 22 September 2015 (CHF3.7).

**4** As of 11 December 2015, the closing price was CHF4.5, whereas the volume weighted average price (VWAP60) was CHF4.4.

VWAP60 development (December 2014 to December 2015)

Source: Bloomberg



### Notes to charts

- The charts show the share price development over a 52-week observation period.

## Analyst forecasts and estimates on target prices

**1** According to the analyst estimates, the current target price of one registered share is between CHF4.0 (Mirabaud) and CHF6.5 (Helvea), whereas the target price does not represent a precise estimate at the valuation date. The target price indicates a possible/expected value development over the next 12 months. Current share value estimates are lower.

**3** In the mid-term analysts estimate EBIT margins between 9.9 and 12.5%.

### Overview of forecast 2015-2018 and target prices

<b>1 Helvea, Baader Bank (CHF6.5), 22 October 2015</b>	<b>FY15F</b>	<b>FY16F</b>	<b>FY17F</b>	<b>FY18F</b>
Sales growth	(16.6%)	5.3%	8.5%	9.0%
Gross margin	28.0%	29.5%	31.8%	34.8%
EBITDA	8.5%	10.3%	13.3%	17.2%
EBIT	1.0%	3.1%	6.0%	<b>3</b> 9.9%
<b>Vontobel (CHF5.2), 12 August 2015</b>	<b>FY15F</b>	<b>FY16F</b>	<b>FY17F</b>	<b>FY18F</b>
Sales growth	(14.3%)	8.7%	8.3%	-
Gross margin	29.7%	36.0%	39.0%	-
EBITDA	10.7%	17.2%	20.4%	-
EBIT	1.8%	8.8%	12.5%	-
<b>Mirabaud (CHF4.0), 23 October 2015</b>	<b>FY15F</b>	<b>FY16F</b>	<b>FY17F</b>	<b>FY18F</b>
Sales growth	-	6.1%	8.0%	8.1%
Gross margin	-	-	-	40.0%
EBITDA	-	-	-	-
EBIT	0.6%	5.7%	9.1%	10.7%
<b>2 Median (5.2CHF)</b>				

Source: Analyst reports

#### Notes to table

- The table shows the key performance indicators (KPI) underlying the target price estimates.
- Due to Micronas weaker revenue and profit results in FY15, analysts have corrected their forecasts for financial figures downwards and partially reduced the target prices.
- Assumptions of Vontobel do not consider the revenue and profit warning for FY15B. Therefore, assumptions are based on more optimistic figures.

**2** The median of the analysts target prices is CHF5.2 and is, therefore, approximately 15% higher than the share price as of 11 December 2015 (CHF4.5).

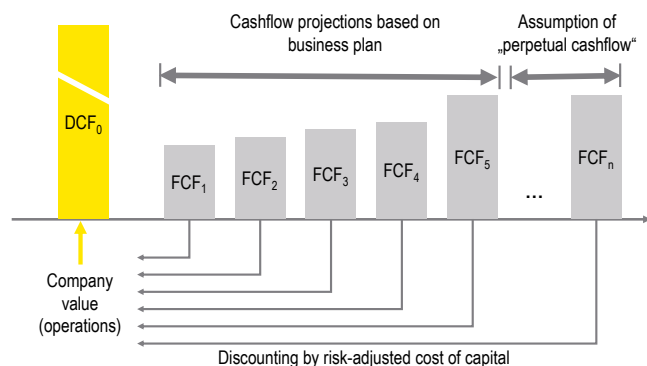
### Conclusion

Analyst estimates refer to the target prices over the next 12 months and demonstrate share value between CHF4.0 and CHF6.5 and a median of CHF5.2.

## Basic assumptions and business plan

### DCF method

Source: EY



#### Notes to graphic

- The DCF method determines the operating value of a company by discounting the expected free cash flows (FCF) at the weighted average cost of capital (WACC).
- The FCF represent the cash flows before financing activities and therefore the cash flows to which both, debt and equity holders, are entitled. To derive the equity value, the market value of the company's debt is deducted. Moreover, further assets/liabilities not covered in the FCF calculation are added/deducted.
- If a going concern is assumed, the explicit business planning period is followed by an assumption regarding a sustainable FCF. This sustainable cash flow is the basis to calculate the terminal value. The terminal value includes the present value of all FCF that follow the business plan period.

### DCF assumptions

- ▶ The following assumptions were made to perform our DCF analysis:
  - Valuation date: 11 December 2015
  - Planning period: FY15B to FY20F based on prospective figures provided by Management
  - Terminal value based on FY20N
  - Presentation currency: CHF
  - Tax rate: 30.5% (mid-term expected tax rate according to Management)
- ▶ The basis for Net Working Capital (NWC), net debt and other assets/liabilities are the preliminary unaudited figures as of 31 December 2015 (FY15B). According to Management, no material changes are expected in these figures, neither during auditing procedures nor for the time from 11 December 2015 to 31 December 2015. In our opinion, this assumption is appropriate.

### Business plan

- ▶ The DCF valuation is based on a business plan, which was prepared by the Management. The business plan covers current period (FY15B), budget period (FY16B) and business plan years (FY17F-FY20F). The business plan was developed bottom-up by segments and divisions.
- ▶ FY15B figures were presented to the Micronas board of directors in December 2015. FY16B figures are currently being prepared / discussed and have not been finally approved by the board of directors. FY17F-FY20F forecasts were redefined in close coordination with Micronas Management based on the approved Plan (SP2015) from summer 2015, which, however, contained overoptimistic assumptions, in particular for FY16B. For this purpose, budgeted, lower revenues for FY16B were updated with existing growth assumptions, which resulted in lower mid-term revenue expectations than projected in SP2015.
- ▶ Assumptions for the terminal value are based on EY assumptions (in particular EBIT(DA) margin and sustainable Capex level), which were developed in discussions with Management as well as based on the benchmarking data and analyst estimates.

## Main DCF valuation assumptions

### Overview of key DCF valuation assumptions

Parameter	Year(s)	Assumption	Source
Ø Revenue growth %	FY15B-FY20F	11.6%	Mgmt./EY
Ø EBITDA %	FY15B-FY20F	16.7%	Mgmt./EY
Ø EBIT %	FY15B-FY20F	7.0%	Mgmt./EY
EBIT %	FY20N	13.0%	Mgmt./EY
Capex / depreciation	FY20N	CHF15m	Mgmt./EY
Income tax rate %	FY15B-FY20N	30.5%	Mgmt.
TV calculation	FY20N	Gordon Growth	EY
TV growth rate	FY20N	1.5%	EY
WACC	FY15B-FY20N	10.4%	EY

Source: Management, EY

#### Notes to table:

- Gordon Growth Model: Perpetuity formula to determine the terminal value in the DCF method.

### Main DCF valuation assumptions

- Main assumptions of the financial plan are shown in the adjacent table and are further described in the following paragraphs.

#### Revenue

- The basis for the business plan are value drivers highlighted in the section Description of the company. In FY15B a growth decline of (16.6%) is expected, which is primarily attributable to currency exchange rate effects and reduced demand in the Japanese automotive market. Beginning from FY16B a yearly revenue growth between 8.0 and 15.0% underlies the business plan. Over the forecast period (FY15B to FY20F) an average revenue growth of 11.6% was applied.
- Micronas managed to reduce the currency exchange risk substantially by shifting customer contracts from Yen to Euro.
- Furthermore, it should be noted that the business plan does not consider any growth through acquisitions but is based on an organic growth, which should be achieved, inter alia, through innovative product portfolio (e.g. Hall sensors and system-on-chip solutions) and increased productivity of the 8" equipment.

#### EBITDA margin

- According to business plan the EBITDA margin should grow continuously and achieve 23.6% by FY20F (level of the peer group). Positive trend is mainly attributable to growing revenues and expected positive results from the planned optimization measures.
- Over the forecast period FY15B to FY20F an average EBITDA margin of 16.7% was applied.

#### EBIT margin

- Similarly to the EBITDA margin, it is expected that the EBIT margin will grow continuously and will reach 14.1% by FY20F. The expected EBIT margin is, therefore, in the range of the peer group.

## Main DCF valuation assumptions

### Capex/ depreciation

- ▶ Based on the business plan, over the planning period FY15B to FY20F Capex were assumed to reach on average 12.0% of revenue. In the DCF valuation depreciation for FY15B to FY20F according to Management was considered, which consider the planned investments accordingly.
- ▶ In particular, for the years FY16B and FY17F higher investments are planned, which in our opinion is consistent with the expected margin improvements.

### Tax loss carryforwards

- ▶ The German GmbH has substantial tax loss carryforwards on the corporate and trade tax level. These tax loss carryforwards were considered in the DCF valuation accordingly/ value-related.
- ▶ Tax loss carryforwards also exist on the level of the Swiss holding, which, however, cannot be used reasonably prior to their expiration. These tax loss carryforwards were, therefore, not considered for the valuation.

### Non-operating assets and off-balance sheet liabilities

- ▶ According to Management, Micronas does not own material non-operating assets or off-balance sheet liabilities, except for a share of cash and cash equivalents and financial assets. The investment in X-FAB was deemed strategic and therefore necessary to generate the projected profits; thus it does not represent a non-operating asset.
- ▶ A majority of cash and liquid financial assets was classified as non-operating and was considered as value appreciating.

### Financial liabilities / interest bearing debt

- ▶ Only pension obligations in Germany were identified as relevant financial liability of Micronas.
- ▶ The balance sheet FY15B contains pension obligations in the amount of CHF141.275m. Pension liabilities are considered in the DCF calculation as financial liabilities and are deducted from the enterprise value.
- ▶ Interest payments, service costs and pension payments were considered consistently in the calculation of Cash Flows (for the operating Cash Flows only the service costs were considered, analogous to the Swiss Employer Contributions).

## Main DCF valuation assumptions

### Employee stock options

- ▶ To motivate employees, Micronas maintains an employee stock option plan. In case of a takeover, owners of the outstanding options have the right to sell the options back to Micronas at an intrinsic value (cash settlement).
- ▶ Intrinsic value is defined as the difference between the exercise price of the option (minimum 0) and the average share price over the 10 trading days following the announcement of the takeover.
- ▶ In the DCF valuation we have considered the cash settlement for those options that are in-the-money based on our valuation. For simplicity reasons we have used our concluded value from the DCF analysis in the calculation of cash settlement. In this particular case, employee options do not have substantial impact on our fairness opinion.

## Net working capital

- 1** Net working capital (NWC) is expected to reach 20.5% of revenue in FY15B. Based on the business plan and coordination with Management, NWC of 20.7% is applied for the upcoming years.

### 1 Net working capital development

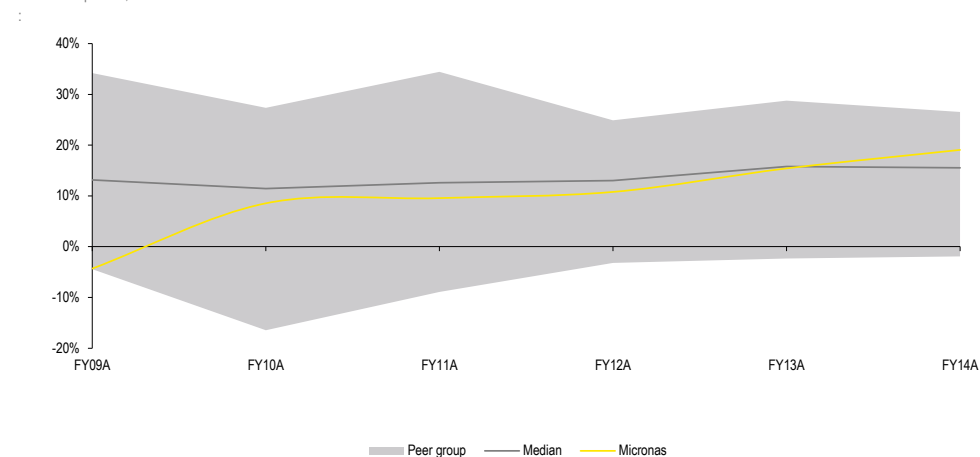
Currency: CHF 000	FY14A	FY15B	FY16B	FY17F	FY18F	FY19F	FY20F
Revenue	158,450	132,203	142,794	159,929	180,720	207,828	228,611
Net working capital (NWC)	29,436	27,070	29,522	33,065	37,363	42,967	47,264
NWC % of revenue	18.6%	20.5%	20.7%	20.7%	20.7%	20.7%	20.7%

Source: Micronas, EY

- 2** Historical NWC figures of Micronas were positioned in the middle range of peers.

### 2 Benchmarking, historical development of NWC

Source: Capital IQ, EY



## Assumptions for the terminal year FY20N

### Revenue weighted long-term inflation

Currency: (country)	% Total revenue	Long-term inflation
EUR (Germany)	78%	1.5%
JPY (Japan)	16%	3.3%
USD (USA)	6%	2.1%
<b>Total</b>	<b>100%</b>	<b>1.8%</b>

Source: Micronas, BMI, EY

### Revenue weighted risk-free rate (terminal growth rate)

Country	% Total revenue	Risk-free rate
Germany	78%	1.5%
Japan	16%	0.7%
USA	6%	2.3%
<b>Total</b>	<b>100%</b>	<b>1.5%</b>

Source: Micronas, Capital IQ, EY

### Terminal growth rate

- ▶ To account for Micronas' going concern assumption, an assumption regarding an indefinite growth rate has to be made. In general, the terminal growth rate equals the long-term expected inflation of the corresponding countries the target company is operating in. An indefinite growth rate equal to expected inflation would correspond to an assumption implying that the company's profits will remain constant in real terms. Long-term inflation can be applied as an indefinite growth rate, if this value does not exceed the risk-free applied in the valuation.
- ▶ We have calculated for Micronas a revenue weighted long-term inflation rate of 1.8%, which is higher than the revenue weighted risk-free rate of 1.5%. Therefore, a terminal growth rate of 1.5% was applied (see adjacent tables). The terminal growth rate of 1.5% was applied in the Gordon growth formula and on the projected revenue of FY20F in order to derive the revenue level of FY20N.

### EBITDA and EBIT margin

- ▶ Based on the average value of the last two planning years a sustainable EBIT margin of 13.0% was applied for the terminal value.
- ▶ A sustainable EBITDA margin of 19.5% results from the EBIT assumption and projected investments, respectively depreciation (see below).

### Capex/ depreciation and NWC

- ▶ In coordination with Management, long-term Capex of CHF15m were applied for the terminal value calculation. In the calculation we assume a ratio of 100% between Capex/ depreciation.
- ▶ Depreciation was set equal to Capex (constant 6.5% ratio of Capex to revenues). This assumption implies that fixed assets will remain constant over long-term, which is consistent with the assumption about the real growth of 0.0%.
- ▶ The ratio between NWC and revenue in FY20F (20.7%) was also applied to the revenue in FY20N.

## WACC

**1** The beta reflects the systematic risk of a share and can be observed on the capital markets. Unlevering according to the observed capital structure yields the asset beta. Unlevering adjusts for the effects of different capital structures. The adjusted (adjusted according to Blume) asset beta has been derived from peer group median value.

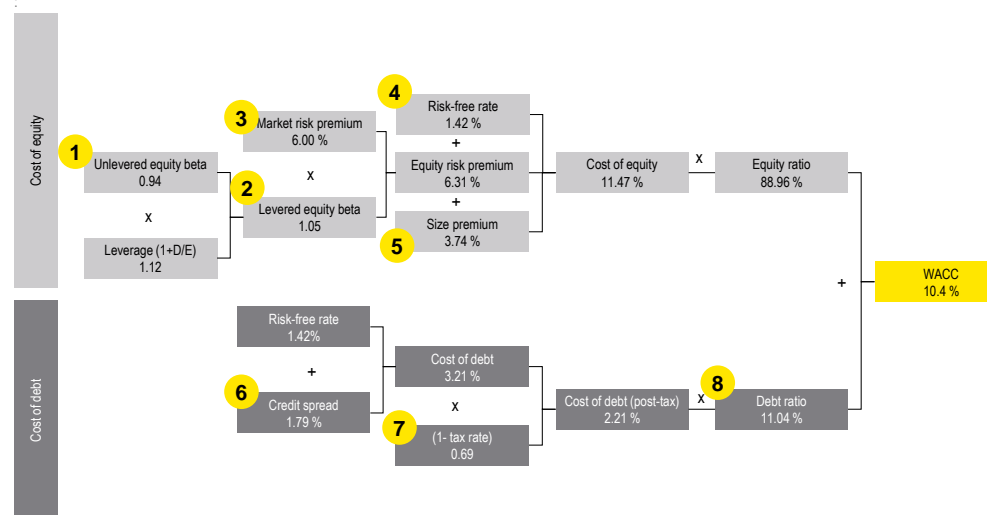
**3** The market risk premium (MRP) approximates the difference between the return on the stock market and the risk free rate. Average MRP is based on market studies and equals 6%.

**5** Empirical studies have shown that smaller companies realize higher returns as compared to larger ones. These higher returns cannot be explained by the CAPM and go along with higher risks for which the market requires compensation. Size premium for Micro-Cap (Ibbotson SBBi Classic Yearbook 2015- Morningstar).

**7** The tax rate equals the tax rate expected by management in the mid-term (30.5%). The tax rate is applied to calculate the tax shield due to financing costs.

### Micronas WACC as per 11.12.2015

Source: Capital IQ, EY



Notes to graphic

- The WACC describes the weighted average return required by debt and equity providers. Cost of equity is derived from the Capital Asset Pricing Model (CAPM).
- The risk-free rate was calculated based on regional risk-free rates and weighted by regional revenues.

**2** The equity beta is obtained by relevering the asset beta according to Micronas target capital structure. Relevering is done according to Practitioner's method.

**4** Expected nominal return on risk-free investments based on 5-year historical average of the yield of a 10-year government bond in the corresponding country of each currency (i.e. revenue weighted).

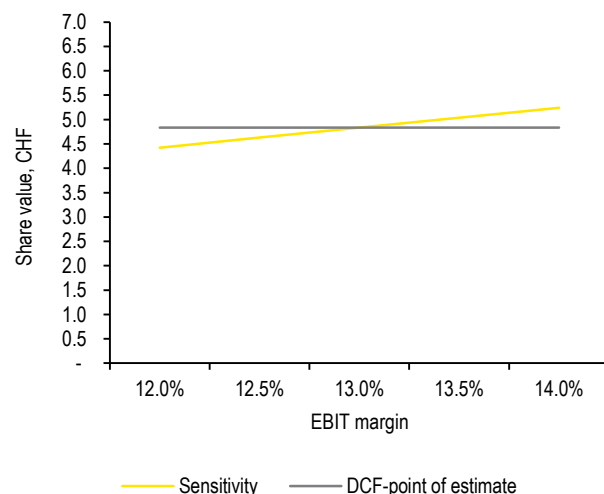
**6** The credit spread was derived from Barclays Europe Aggregate Index - BBB.

**8** The debt (equity) ratio covers the median proportion of debt (equity) of the peer group. It is used to derive the weight of the cost of debt (equity) in the WACC calculation.

## Valuation and sensitivity analysis

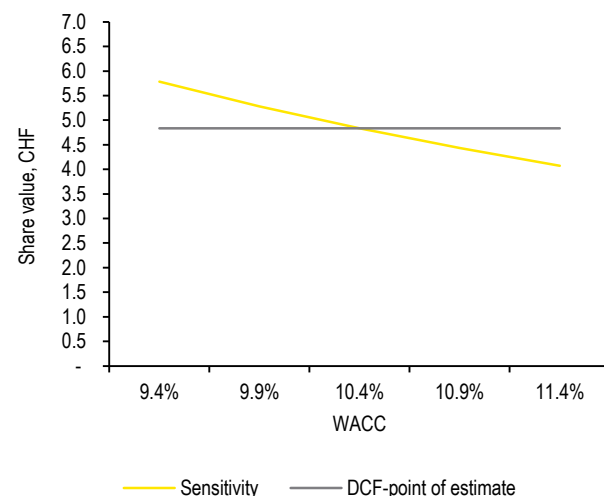
### Sensitivity analysis: share value/ EBIT margin

Source: Micronas, EY



### Sensitivity analysis: share value/ WACC

Source: Micronas, EY



### Share value

- ▶ The table below provides an overview of the results from the DCF valuation for Micronas.
- ▶ Based on the previously mentioned underlying assumptions, Management information, own valuation considerations and benchmarking, we have valued Micronas at CHF135.441m (equity value) as of 11 December 2015 by applying the DCF method. Taking into account 29'757'930 issued shares, excluding 1,736,026 treasury shares and a possible cash settlement for in-the-money employee stock options, we have calculated a value per share of CHF4.8.

#### Valuation Micronas (DCF)

Currency: CHF 000

Sum of present values of FCFs	12,772
Terminal value	143,387
Present value of tax loss carryforwards	19,864
<b>Enterprise value</b>	<b>176,023</b>
Net financial debt	(40,579)
Cash settlement for the "in-the-money" employee stock	(3)
<b>Equity value</b>	<b>135,441</b>
Number of shares	28,021,904
<b>Share price</b>	<b>4.8</b>

Source: Micronas, EY

### Sensitivity analysis

- ▶ In order to corroborate the findings obtained through the DCF, we performed sensitivity analyses on Micronas' share value. This analysis effectively demonstrates the sensitivity of the share value in relation to variations in the model's underlying assumptions.

Changing WACC and EBIT margin (ceteris paribus) by +/- 1% points each causes the share value to fluctuate between CHF4.1 and CHF5.8.

- ▶ Adjacent graphics show the results of the sensitivity analysis.

#### Conclusion

Based on the DCF method we have determined a point of estimate of CHF4.8 and a value range between CHF4.1 and CHF5.8 per Micronas share.

## Market multiples

**1** Our valuation considerations are based on EBITDA FY15B (for transaction multiples) and FY16B (for trading multiples). Analysis of revenue and EBIT margins did not yield reliable values, which could be applied for benchmarking.

**3** Transaction multiple analysis is based on 35 transactions. Trading multiple analysis is based on data from 17 comparable companies. Please refer to the appendix for further details on transactions and comparable companies.

### Share value based on market multiples

Currency: CHF 000

	<b>1</b> EBITDA FY15B	EBITDA FY16B
Multiple type	Transaction	Trading
Basis	10,762	14,437
Multiple <b>3</b>	13.9x	<b>2</b> 10.3x
<b>Enterprise value (excl. cash and tax loss carryforwards)</b>	<b>149,191</b>	<b>148,734</b>
Cash & cash equivalents	115,696	115,696
Present value of tax loss carryforwards	19,864	19,864
<b>Enterprise value (incl. cash and tax loss carryforwards)</b>	<b>284,751</b>	<b>284,294</b>
Financial liabilities	(141,275)	(141,275)
Cash settlement for the "in-the-money" employee stock	(12)	(12)
<b>Equity value</b>	<b>143,464</b>	<b>143,007</b>
Implied multiple (DCF)	16.4x	12.2x
Total number of shares for valuation	28,021,904	28,021,904
<b>Value per share (CHF) <b>4</b></b>	<b>5.1</b>	<b>5.1</b>

Source: Capital IQ, Micronas, EY

**2** On average, comparable companies demonstrate higher margins than Micronas. Furthermore, the geographical footprint of the comparables and their size are not identical to those of Micronas, implying different growth expectations.

**4** According to the market multiple approach, the value per one registered share of Micronas is CHF5.1.

### Conclusion

Based on the market multiple approach we have determined a value of CHF5.1 per one registered Micronas share.

## Fairness opinion

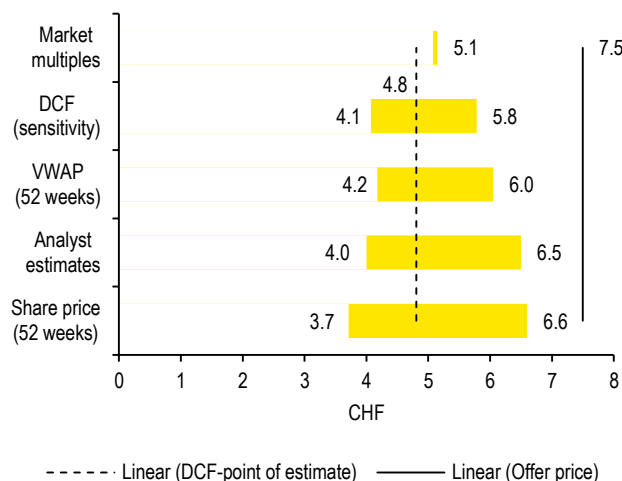
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### 11. Overall conclusion

## Fairness Opinion

### Overview of valuation results

Source: EY



### Fairness Opinion

- The adjacent graph summarizes the results of our analyses per registered share. Based on the applied methods and our valuation considerations, a value range of CHF3.7 to CHF6.6 was determined for one registered share with a nominal value of CHF0.05. DCF analysis, as a core valuation method, resulted in a point of estimate of CHF4.8.
- The offer of CHF7.5 per registered share corresponds to a premium of 70.5% over the VWAP(60) of CHF4.4 and a premium of 66.7% over the current closing price of CHF4.5.
- From a financial point of view, the offer price of CHF7.5 is considered fair.
- The fairness opinion has been completed on 21 December 2015.

### Conclusion

From a financial point of view, the offer is considered fair.

Ernst &amp; Young AG

Louis Siegrist  
Partner

Hannes Schobinger, CFA  
Senior Manager

## Appendices

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- 12. Appendix A: Abbreviations
- 13. Appendix B: Information basis
- 14. Appendix C: Market data

# Abbreviations

<b>AG</b>	Joint stock company (Aktiengesellschaft)
<b>CAPEX</b>	Capital expenditures
<b>CAPM</b>	Capital Asset Pricing Model
<b>CHF</b>	Swiss franc
<b>DCF</b>	Discounted Cash Flow
<b>EBIT</b>	Earnings before interest and taxes
<b>EBITDA</b>	Earnings before interest, taxes, depreciation and amortization
<b>EUR</b>	Euro, Currency of the Eurozone
<b>EY</b>	Ernst & Young AG, Maagplatz 1, CH-8010 Zurich, Switzerland
<b>FCF</b>	Free Cash Flow
<b>FYXXA / FYXXB / FYXXF / FYXXN</b>	Financial year 20XX actual / budgeted/ forecasted / normalized
<b>JPY</b>	Japanese Yen, Currency of Japan
<b>Micronas</b>	Micronas Semiconductor Holding AG, Technopark, Technoparkstrasse 1, CH-8005 Zurich, Switzerland
<b>LFY</b>	Last financial year
<b>LTM</b>	Last twelve months
<b>NFY</b>	Next financial year
<b>NWC</b>	Net working capital
<b>TV</b>	Terminal value
<b>SIA</b>	Semiconductor Industry Association
<b>SIX</b>	SIX Swiss Exchange
<b>TDK</b>	TDK Corporation, Shibaura Renasite Tower 3-9-1, Shibaura Minato-ku, Tokyo, 108-0023, Japan
<b>USD</b>	US American Dollar, Currency of the USA
<b>EV</b>	Enterprise value
<b>VWAP</b>	Volume weighted average price
<b>WACC</b>	Weighted average cost of capital

# Information basis

## Contact persons at Micronas

Name	Position
Matthias Bopp	Chief Executive Officer (CEO)
Daniel Wäger	Chief Financial Officer (CFO)

## Overview of received documents

Document name	Date	File type
20151110_Micronas Company Presentation 2015_E.pdf	18 November 2015	PDF
Strategieview 2015-07.pdf	18 November 2015	PDF
Bilanz SP Planning 2016 2020 oDb.xlsm	18 November 2015	Excel
20151113_Details Stock Option Plan.pdf	18 November 2015	PDF
20151110_BoD Reporting October 2015 fin.pdf	18 November 2015	PDF
20151023_Mirabaud.pdf	18 November 2015	PDF
20151023_Baader.pdf	18 November 2015	PDF
20150812_Vontobel.pdf	18 November 2015	PDF
20070611_Helvea.pdf	18 November 2015	PDF
02 2015-11-16 Business Financials v3.pdf	24 November 2015	PDF
06 2015-11-16 IPR v3.pdf	24 November 2015	PDF
2015 NWC CAPEX.PDF	24 November 2015	PDF
20151124_Order Backlog.pdf	24 November 2015	PDF
BoD Reporting October 2015.pdf	24 November 2015	PDF
Forecasts 2015.pdf	24 November 2015	PDF
Impairment Test X-Fab_2014 v3.pdf	24 November 2015	PDF
Information from CFO- Mail.pdf	24 November 2015	PDF
RS_lp 2015 09.xlsx	24 November 2015	Excel
Semiconductor Holding AG- Marken.pdf	24 November 2015	PDF
Tax losses MSHolding.pdf	24 November 2015	PDF
TESLA Litigation v1.pdf	24 November 2015	PDF
Verlustvorträge.xlsm	24 November 2015	Excel
Mykonos_Besserungsverpflichtung_V.2.0.pdf	07 December 2015	PDF

## Peer group

### Peer group: Beta

Company	Ticker	Country	Currency	Filing date	Market cap	Minority interests	Total debt	Debt / total capital	Adjusted beta	Unlevered Beta
ams AG	SWX:AMS	Austria	EUR	09/2015	2,043	-	145	6.63%	1.288	1.203
Analog Devices, Inc.	NasdaqGS:ADI	United States	USD	10/2015	17,766	-	906	4.85%	1.092	1.039
Atmel Corporation	NasdaqGS:ATML	United States	USD	09/2015	3,556	3	64	1.78%	1.414	1.389
ELMOS Semiconductor AG	XTRA:ELG	Germany	EUR	09/2015	287	1	37	11.36%	0.846	0.750
First Sensor AG	XTRA:SIS	Germany	EUR	09/2015	122	1	48	27.92%	0.451	0.325
Infineon Technologies AG	XTRA:IFX	Germany	EUR	09/2015	14,940	1	1,793	10.72%	1.036	0.925
LEM Holding SA	SWX:LEHN	Switzerland	CHF	09/2015	879	-	40	4.36%	0.989	0.946
Melexis NV	ENXTBR:MELE	Belgium	EUR	09/2015	1,807	0	21	1.16%	1.132	1.119
Microchip Technology Inc.	NasdaqGS:MCHP	United States	USD	09/2015	9,067	-	2,688	22.87%	1.039	0.801
MTS Systems Corporation	NasdaqGS:MTSC	United States	USD	10/2015	895	-	21	2.31%	1.331	1.301
NXP Semiconductors NV	NasdaqGS:NXPI	Netherlands	USD	10/2015	19,224	268	5,050	20.58%	1.922	1.526
ON Semiconductor Corp.	NasdaqGS:ON	United States	USD	10/2015	4,086	23	1,408	25.52%	1.479	1.102
Sensata Technologies Holding NV	NYSE:ST	Netherlands	USD	09/2015	7,433	-	2,668	26.41%	1.143	0.841
STMicroelectronics NV	ENXTPA:STM	Switzerland	USD	09/2015	5,857	66	1,748	22.79%	1.165	0.900
Fujitsu Limited	TSE:6702	Japan	JPY	09/2015	1,360,912	141,651	1,024,546	40.54%	1.028	0.611
Intel Corporation	NasdaqGS:INTC	United States	USD	09/2015	161,720	-	21,229	11.60%	0.912	0.807
Texas Instruments Inc.	NasdaqGS:TXN	United States	USD	09/2015	57,020	-	4,132	6.76%	1.148	1.070
Micronas Semiconductor Holding AG	SWX:MASN	Switzerland	CHF	06/2015	133	-	-	0.00%	0.806	0.806
Low								0.00%	0.451	0.325
High								40.54%	1.922	1.526
Average								13.79%	1.123	0.970
<b>Median</b>								<b>11.04%</b>	<b>1.112</b>	<b>0.935</b>

Source: Capital IQ

Date of analysis: 11 December 2015

Figures for market capitalization, minority interests and total debt are in millions

# Peer group

## Peer group: Trading Multiples, FY16

Company	Ticker	Country	Currency	Market cap	Minority interests	Cash & cash equivalents	Total debt	Enterprise value (EV)	EBITDA	EV / EBITDA
ams AG	SWX:AMS	Austria	EUR	2,043	-	224.91	145	2,574.64	228	11.3x
Analog Devices, Inc.	NasdaqGS:ADI	United States	USD	17,766	-	3,028.93	906	16,678.82	1,555	10.7x
Atmel Corporation	NasdaqGS:ATML	United States	USD	3,556	3	218.74	64	3,408.58	241	14.1x
ELMOS Semiconductor AG	XTRA:ELG	Germany	EUR	287	1	45.46	37	268.70	52	5.2x
First Sensor AG	XTRA:SIS	Germany	EUR	122	1	11.54	48	159.16	21	7.4x
Infineon Technologies AG	XTRA:IFX	Germany	EUR	14,940	1	2,013.00	1,793	14,949.94	1,761	8.5x
LEM Holding SA	SWX:LEHN	Switzerland	CHF	879	-	13.24	40	892.94	59	15.1x
Melexis NV	ENXTBR:MELE	Belgium	EUR	1,807	0	109.82	21	1,817.74	144	12.6x
Microchip Technology Inc.	NasdaqGS:MCHP	United States	USD	9,067	-	2,001.54	2,688	10,263.53	976	10.5x
MTS Systems Corporation	NasdaqGS:MTSC	United States	USD	895	-	53.30	21	923.69	98	9.4x
NXP Semiconductors NV	NasdaqGS:NXPI	Netherlands	USD	19,224	268	2,492.00	5,050	22,597.36	2,193	10.3x
ON Semiconductor Corp.	NasdaqGS:ON	United States	USD	4,086	23	557.60	1,408	5,283.76	724	7.3x
Sensata Technologies Holding NV	NYSE:ST	Netherlands	USD	7,433	-	258.21	2,668	10,283.02	853	12.1x
STMicroelectronics NV	ENXTPA:STM	Switzerland	USD	5,857	66	1,969.64	1,748	6,017.92	1,006	6.0x
Fujitsu Limited	TSE:6702	Japan	JPY	1,360,912	141,651	1,309.00	1,024,546	21,853.28	n.a.	n.a.
Intel Corporation	NasdaqGS:INTC	United States	USD	161,720	-	21,208.00	21,229	162,590.55	24,274	6.7x
Texas Instruments Inc.	NasdaqGS:TXN	United States	USD	57,020	-	2,735.00	4,132	59,739.38	5,478	10.9x
Micronas Semiconductor Holding AG	SWX:MASN	Switzerland	CHF	133	-	126.34	-	150.88	18	8.2x
Low										5.2x
High										15.1x
Average										9.8x
Median										10.3x

Source: Capital IQ

Date of analysis: 27 November 2015

Figures for market capitalization, minority interests, cash &amp; cash equivalents, total debt, EV and EBITDA are in millions

## Peer group

### Description of peer group for Beta and Trading Multiples

<p><b>ams AG</b> ams AG designs, manufactures, and sells sensor and analog solutions including analog ICs worldwide.</p> <p><b>ELMOS Semiconductor AG</b> Elmos Semiconductor AG develops, manufactures, and distributes microelectronic components and system parts, and technological devices in Germany and internationally.</p> <p><b>LEM Holding SA</b> LEM Holding SA provides solutions for measuring electrical parameters.</p> <p><b>MTS Systems Corporation</b> MTS Systems Corporation supplies test systems and position sensors in the Americas, Europe, and Asia.</p> <p><b>Sensata Technologies Holding NV</b> Sensata Technologies Holding N.V., through its subsidiaries, develops, manufactures, and sells sensors and controls.</p> <p><b>Intel Corporation</b> Intel Corporation designs, manufactures, and sells integrated digital technology platforms worldwide.</p>	<p><b>Analog Devices, Inc.</b> Analog Devices, Inc. designs, manufactures, and markets a portfolio of solutions that leverage analog, mixed-signal, and digital signal processing technology, including integrated circuits (ICs), algorithms, software, and subsystems.</p> <p><b>First Sensor AG</b> First Sensor AG develops and manufactures sensor solutions worldwide.</p> <p><b>Melexis NV</b> Melexis NV designs, develops, tests, and markets mixed signal semiconductors, sensor integrated circuits (ICs), and programmable sensor IC systems for automotive, computer, consumer, industrial, and medical markets worldwide.</p> <p><b>NXP Semiconductors NV</b> NXP Semiconductors N.V., a semiconductor company, provides high performance mixed signal and standard product solutions for radio frequency (RF), analog, power management, interface, security, and digital processing products worldwide.</p> <p><b>STMicroelectronics NV</b> STMicroelectronics N.V. designs, develops, manufactures, and markets various semiconductor integrated circuits and discrete devices worldwide.</p> <p><b>Texas Instruments Inc.</b> Texas Instruments Incorporated designs, manufactures, and sells semiconductors to electronics designers and manufacturers worldwide.</p>	<p><b>Atmel Corporation</b> Atmel Corporation designs, develops, manufactures, and sells semiconductor integrated circuit products primarily in the United States, Asia, Europe, South Africa, and Central and South America.</p> <p><b>Infineon Technologies AG</b> Infineon Technologies AG, together with its subsidiaries, designs, develops, manufactures, and markets semiconductors and system solutions in Germany and internationally.</p> <p><b>Microchip Technology Inc.</b> Microchip Technology Incorporated develops, manufactures, and sells semiconductor products for various embedded control applications.</p> <p><b>ON Semiconductor Corp.</b> ON Semiconductor Corporation manufactures and sells semiconductor components for various electronic devices worldwide.</p> <p><b>Fujitsu Limited</b> Fujitsu Limited, an information and communication technology (ICT) company, provides a range of technology products, solutions, and services worldwide.</p> <p><b>Micronas Semiconductor Holding AG</b> Micronas Semiconductor Holding AG provides sensor-based system solutions for automotive and industrial electronics worldwide.</p>
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Source: Capital IQ

## Peer group

### Peer group: Transaction Multiples

Closing date	Target/ Issuer	Primary industry of the target	Country of the target	Buyer/ Investor	Percent sought (%)	Implied equity value (CHF mm, historical rate)	Implied EV/ EBITDA
na	Fairchild Semiconductor International Inc.	Semiconductors	United States	ON Semiconductor Corp.	100%	2,445	11.2x
na	Anadigics, Inc.	Semiconductors	United States	Gaas Labs, LLC	100%	31	nmf
na	Pericom Semiconductor Corp.	Semiconductors	United States	Montage Technology Group Limited	100%	425	15.1x
11/24/2015	Pericom Semiconductor Corp.	Semiconductors	United States	Diodes Incorporated	100%	379	13.9x
na	MagnaChip Semiconductor Corporation	Semiconductors	Luxembourg	Pleasant Lake Partners; Pleasant Lake Offshore Master Fund L.P.	90%	335	nmf
9/28/2015	Ikanos Communications, Inc.	Semiconductors	United States	Qualcomm Atheros, Inc.	100%	50	nmf
na	OmniVision Technologies, Inc.	Semiconductors	United States	Shanghai Pudong Science and Technology Investment Co., Ltd.; CITIC Capital Partners; Gold Stone Investment Co., Ltd.; Hua Capital Management Ltd.	100%	1,708	11.8x
9/4/2014	Innovaciones Microelectrónicas, S.L.	Semiconductors	Spain	e2v Technologies plc	100%	32	na
9/19/2014	First Sensor AG	Semiconductors	Germany	FS Technology Holding S.à.R.L.	2%	126	10.2x
8/15/2014	Aptina Imaging Corporation	Semiconductors	United States	ON Semiconductor Benelux B.V.	100%	364	na
5/29/2014	Integrated Memory Logic Limited	Semiconductors	United States	Exar Corp.	100%	196	6.7x
4/10/2014	INCIDE S.A. (nka:IXYS San Sebastian)	Semiconductors	Spain	IXYS Corp.	100%	2	na
4/30/2014	Sensor Holding Corporation	Electronic Equipment and Instruments	United States	Semiconductor Components Industries, LLC	100%	84	na
10/1/2013	Volterra Semiconductor Corporation	Semiconductors	United States	Maxim Integrated Products, Inc.	100%	539	20.1x
6/13/2013	MCB Industrie SAS	Electronic Components	France	Vishay Intertechnology Inc.	100%	21	na
8/20/2012	Frontier Silicon (Holdings) Ltd	Semiconductors	United Kingdom	Toumaz Limited	100%	40	na
11/20/2012	Ramtron International Corp.	Semiconductors	United States	Cypress Semiconductor Corporation	95%	102	15.7x
7/29/2011	Iteris, Inc., Vehicle Sensor Business	Auto Parts and Equipment	United States	Bendix Commercial Vehicle Systems LLC	100%	10	na
8/1/2011	Sensor-Nite N.V.	Auto Parts and Equipment	Belgium	Sensata Technologies, Inc.	100%	272	na
6/3/2011	Moog Crossbow, Inc.	Electronic Equipment and Instruments	United States	Moog Inc.	100%	27	na
9/23/2011	National Semiconductor Corporation	Semiconductors	United States	Texas Instruments Inc.	100%	6,165	12.1x
4/25/2011	Provigent Inc.	Semiconductors	United States	Broadcom Corp.	100%	284	na
4/19/2011	Conexant Systems Inc.	Semiconductors	United States	Golden Gate Private Equity, Inc	100%	197	7.8x
na	Conexant Systems Inc.	Semiconductors	United States	Standard Microsystems Corporation	100%	199	7.8x

Source: Capital IQ

Date of analysis: 27 November 2015

Figures for implied equity value are in millions

## Peer group

### Peer group: Transaction Multiples

5/24/2011	Atheros Communications, Inc. (nka:Qualcomm Atheros, Inc.)	Semiconductors	United States	QUALCOMM Incorporated	100%	3,285	20.8x
na	Atmel Corporation	Semiconductors	United States	Dialog Semiconductor Plc	100%	4,208	23.7x
10/14/2014	Schrader International, Inc.	Auto Parts and Equipment	United States	Sensata Technologies B.V.	100%	911	19.5x
10/9/2014	Measurement Specialties Inc.	Electronic Manufacturing Services	United States	TE Connectivity Ltd.	100%	1,280	22.3x
5/30/2014	Wema Group Holding AS	Electrical Components and Equipment	Norway	Measurement Specialties Inc.	100%	59	21.9x
9/30/2014	Custom Sensors & Technologies, Inc.	Electronic Equipment and Instruments	United States	PAI Partners; The Carlyle Group LP; Schneider Electric S.A. (nka:Schneider Electric SE); PAI Europe VI, L.P.; Carlyle Europe Partners IV, L.P.	100%	803	na
5/31/2013	Hamlin Electronics L.P.	Electronic Components	United States	Littelfuse Inc.	100%	135	na
12/21/2012	D&R Technology, LLC	Electronic Components	United States	CTS Corporation	100%	58	na
9/17/2013	MEMSIC, Inc.	Semiconductor Equipment	United States	IDG Capital Partners; IDG-Accel China Growth Fund II	81%	97	nmf
4/27/2012	Schrader Electronics Ltd. and Schrader International, Inc.	Auto Parts and Equipment	United States	Madison Dearborn Partners, LLC	100%	480	6.8x
10/31/2011	Gentech International Ltd.	Electronic Equipment and Instruments	United Kingdom	Measurement Specialties Inc.	100%	9	na
Low							6.7x
High							23.7x
Average							14.6x
<b>Median</b>							<b>13.9x</b>

Source: Capital IQ

Date of analysis: 27 November 2015

Figures for implied equity value are in millions

# Peer group

## Description of peer group for Transaction Multiples

### Fairchild Semiconductor International Inc.

Fairchild Semiconductor International, Inc. designs, develops, manufactures, and markets power analog, power discrete, and non-power semiconductor solutions worldwide. It operates through three segments: Mobile, Computing, Consumer, and Communication (MCCC); Power Conversion, Industrial, and Automotive (PCIA); and Standard Discrete and Standard Linear (SDT).

### MagnaChip Semiconductor Corporation

MagnaChip Semiconductor Corporation, together with its subsidiaries, designs and manufactures analog and mixed-signal semiconductor products for consumer, computing, communication, industrial, automotive, and Internet of things applications worldwide. It offers display solution products, such as source and gate drivers, and timing controllers that cover a range of flat panel displays used in ultra-high definition, high definition, full high definition, light emitting diode (LED), 3D, and organic light emitting diode televisions and displays, notebooks, and mobile communications and entertainment devices.

### Innovaciones Microelectrónicas, S.L.

Innovaciones Microelectrónicas, S.L., doing business as AnaFocus, S.L., engages in the design and manufacture of CMOS system-on-chip solutions. The company offers standard off-the-shelf and customized high-performance CMOS image-sensors and vision-sensors for industrial, professional, scientific, medical, and high-end surveillance markets.

### Integrated Memory Logic Limited

Integrated Memory Logic Limited, a fabless semiconductor company, designs, manufactures, and markets application specific analog, power management, and mixed signal integrated circuits primarily for display, mobile systems, and lighting markets.

### Anadigics, Inc.

ANADIGICS, Inc. designs, manufactures, and sells radio frequency (RF) semiconductor solutions for infrastructure and mobile communications, and data transmission markets. The company's product portfolio includes line amplifiers, reverse path amplifiers, front-end integrated circuits (FEICs), and power amplifiers (PAs).

### Ikanos Communications, Inc.

Ikanos Communications, Inc. designs, develops, markets, and sells semiconductors and integrated firmware products for the connected home worldwide. It offers various digital subscriber line (DSL) processors and other semiconductor offerings for a range of power carrier infrastructure and customer premises equipment devices. The company also provides gateway processors to address a range of devices for value-added carrier services and high-speed access to the connected home.

### First Sensor AG

First Sensor AG develops and manufactures sensor solutions worldwide. The company offers optical and opto-electronic sensor components, including pin photodiodes, avalanche photodiodes, avalanche photodiode arrays, position-sensitive diodes, quadrant photodiodes, wavelength-sensitive diodes, InGaAs detectors, silicon photomultiplier, and detectors for ionizing radiation; laser diodes and light-emitting diodes; optoelectronic modules, such as hybrids with photodiode and amplifier, detector modules with amplifiers and signal evaluation, and high-voltage modules; and gamma-probe and PET-probe systems.

### INCIDE S.A. (nka:IXYS San Sebastian)

IXYS San Sebastian, a fabless house, designs and manufactures mixed-signal ICs for high-end automotive, industrial, and medical applications, etc. It focuses on analog and mixed signal designs.

### Pericom Semiconductor Corp.

Pericom Semiconductor Corporation designs, manufactures, and markets digital, analog, and mixed-signal integrated circuits (ICs); and frequency control products (FCPs) used in electronic systems worldwide. The company's products are used to transfer, route, and time digital and analog signals within and between computer, networking, datacom, and telecom systems.

### OmniVision Technologies, Inc.

OmniVision Technologies, Inc. designs, develops, manufactures, and markets semiconductor image-sensor devices worldwide. The company's principal products comprise CameraChip image sensors, which capture an image electronically and are used in various consumer and commercial mass-market applications; and CameraCubeChip imaging devices that are image sensors with integrated wafer-level optics.

### Aptina Imaging Corporation

Aptina Imaging Corporation manufactures CMOS imaging products. It offers image signal processors/system-on-chip solutions and image sensors. The company's products are used for automotive, DSLR, DSC/DVC, medical, mobile, PC camera, surveillance, gaming, scanning, video conferencing, and industrial applications, as well as in consumer electronic devices, such as tablets, laptops, digital cameras, and wearables.

### Sensor Holding Corporation

Sensor Holding Corporation, through its subsidiaries, manufactures image sensor devices. The company caters to industrial end-markets, including machine vision, surveillance, traffic monitoring, medical, and scientific imaging and photography. The company is based in the United States. As of April 30, 2014, Sensor Holding Corporation operates as a subsidiary of Semiconductor Components Industries LLC.

Source: Capital IQ

## Peer group

### Description of peer group for Transaction Multiples

#### Volterra Semiconductor Corporation

Volterra Semiconductor Corporation designs, develops, and markets analog and mixed-signal power management semiconductors for computing, storage, networking, and consumer markets. Its products include integrated voltage regulator semiconductors, integrated power protection and distribution semiconductors, and scalable voltage regulator semiconductor chipsets that transform, regulate, deliver, and monitor the power consumed by electronic systems.

#### Ramtron International Corp.

Ramtron International Corporation, a fabless semiconductor company, designs, develops, and markets specialized semiconductor memory and integrated semiconductor solutions.

#### Moog Crossbow, Inc.

Moog Crossbow, Inc. manufactures and supplies sensor technology to military programs and asset tracking operations. It offers asset tracking and environmental sensing products, such as cellular-based GPS devices, cloud computing products, and readers and infrastructure products; inertial products, including GPS/IMU systems, embedded card-level AHRS/IMU, vertical gyro systems, and tilt sensors; flight management systems/vehicle management computers; and targeting systems.

#### Conexant Systems Inc.

Conexant Systems Inc. operates as a fabless semiconductor company. It offers an IP portfolio in DSP, analog, and mixed signal technologies with embedded software to deliver silicon and software solutions for enhancing audio and imaging capabilities at home, work, and other areas.

#### MCB Industrie SAS

MCB Industrie SAS provides resistors and precision sensors. The company offers power resistors, such as thick film, wirewound, water cooled, high energy disk, stainless steel, and sheathed resistors; and position sensors, including rotary potentiometers, linear potentiometers, membrane sensors, and magnetic sensors.

#### Iteris, Inc., Vehicle Sensor Business

As of July 29, 2011, Vehicle Sensor Business of Iteris, Inc. was acquired by Bendix Commercial Vehicle Systems, LLC. Iteris, Inc., Vehicle Sensor Business engages in the manufacturing of vehicle sensor systems.

#### National Semiconductor Corporation

National Semiconductor Corporation, a semiconductor company, designs, develops, manufactures, and markets analog and mixed-signal integrated circuits and sub-systems. The company's product portfolio includes power management circuits, audio and operational amplifiers, analog-to-digital or digital-to-analog converters, communication interface circuits, lighting and display circuits, adaptive voltage scaling circuits, and radio frequency integrated circuits, as well as power references, regulators, and switches.

#### Atheros Communications, Inc. (nka:Qualcomm Atheros, Inc.)

Qualcomm Atheros, Inc. develops semiconductor system solutions for communication products. The company's products include solutions for wireless local area network (WLAN), mobile WLAN, Ethernet, Bluetooth, global positioning system (GPS), powerline communications, passive optical networking, and broadband multiplexing. It offers reference designs used in designing networking cards and routers, broadband gateways, mobile devices, and handsets.

#### Frontier Silicon (Holdings) Ltd

Frontier Silicon (Holdings) Ltd manufactures semiconductor. The company was incorporated in 2003 and is based in Watford, United Kingdom. As of August 20, 2012, Frontier Silicon (Holdings) Ltd operates as a subsidiary of Toumaz Limited.

#### Sensor-Nite N.V.

Sensor-Nite N.V. designs and produces electronic and electro-mechanical sensor systems and subsystems for automotive applications. The company designs exhaust gas temperature and emission sensors; and high temperature exhaust gas sensors for applications, such as cars, SUV's, trucks, boats, heavy duty machines, snow-mobiles, jet skis, and buses.

#### Provigent Inc.

As of April 25, 2011, Provigent Inc. was acquired by Broadcom Corp. Provigent Inc. develops Systems-on-a-Chip (SoC) solutions for the broadband wireless transmission industry. The company offers mixed signal semiconductors for microwave backhaul systems.

#### Atmel Corporation

Atmel Corporation designs, develops, manufactures, and sells semiconductor integrated circuit products primarily in the United States, Asia, Europe, South Africa, and Central and South America. It operates in four segments: Microcontroller, Nonvolatile Memory, Automotive, and Multi-Market and Other.

Source: Capital IQ

# Peer group

## Description of peer group for Transaction Multiples

### Schrader International, Inc.

Schrader International, Inc. manufactures valves, mechanical and electronic system components, and sensing technologies for customers in the Asia-Pacific, Europe, North America, South America, and Africa. It offers tire pressure monitoring systems (TPMS) sensors for original equipment manufacturers (OEM)/aftermarket replacement sectors; air compressors accessories, couplers/plugs, and gas-powered/industrial/mid-line/professional air compressors; and application-specific integrated circuits, industrial belt monitoring products, liquid sensing technology products, oxygen monitoring sensors, and TPMS receivers.

### Custom Sensors & Technologies, Inc.

Custom Sensors & Technologies, Inc. designs and manufactures sensing, control, and motion products. The company offers automation products, cockpit control products, control devices, electrical protection products, inertial sensors, linear and rotary variable differential transformer sensors, motors and actuators, pneumatics, position sensors, pressure sensors, solid state relays, components, and switches.

### MEMSIC, Inc.

MEMSIC, Inc. provides semiconductor sensor and system solutions based on integrated micro electro-mechanical systems (MEMS) technology and mixed signal circuit design. Its sensor products primarily include accelerometers and magnetic sensors. The company's sensors are used for motion and direction sensing applications; and accelerometer products are used to measure tilt, shock, vibration, and acceleration, as well as in various applications, such as mobile phones, automotive safety systems, and video projectors.

### Measurement Specialties Inc.

Measurement Specialties, Inc. designs, develops, and manufactures sensors and sensor-based systems for original equipment manufacturers and end users. Its sensor products comprise pressure components, sensors, and transducers; load cells; linear variable differential transformers, rotary position transducers, and magneto-resistive sensors and magnetic encoders; long stroke linear displacement, magnetostrictive, and hi-rel rotary sensors; traffic and custom piezoelectric film sensors; accelerometers; relative humidity sensors; fluid monitoring sensors; thermistors and resistance temperature detectors; pulse oximetry and X-ray detection sensors; angular rate measurement sensors; and static and dynamic torque/force sensors.

### Hamlin Electronics L.P.

Hamlin Electronics L.P. develops, manufactures, and sells position and movement sensing solutions. The company provides magnetic sensors that include reed switches, reed sensors, Hall Effect sensors, and reed relays, as well as bare and packaged magnetic actuators. It serves automotive, industrial, consumer product, and other industries worldwide.

### Gentech International Ltd.

Gentech International Ltd. engages in the design, manufacture, and supply of sensing and switching products. It provides side entry, top or bottom, and solid state liquid level sensors; flow switches; position sensors; and SCR sensors for manufacturers developing selective catalytic reduction systems to monitor diesel emission fluids level. The company also offers custom design, development, and manufacturing services for switching and sensing products to original equipment manufacturers. It serves its clients in construction, automotive, agricultural, HVAC, food and beverage, marine, water treatment, off highway, and recreation industries.

### Wema Group Holding AS

Wema Group Holding AS designs, manufactures, and distributes products for the automotive, marine, agriculture, construction equipment, and caravan and mobile homes. The company offers level sensor solutions for fuel, water, waste, AdBlue, and black water tanks; a range of temperature sensors, pressure sensors, and gauge products; and alarms and smoke detectors. It also manufactures automatic pump switches, leakage alarms, back up alarms, and temperature and pressure senders.

### D&R Technology, LLC

D&R Technology, LLC engages in the custom design and manufacturing of non contact sensors, non contact switches, and electromechanical assemblies. Its non contact sensors include speed/direction, current sensing, linear and rotary position, angular position, proximity, and temperature sensors for various applications, such as wheel speed, gear tooth speed and direction, transmission position and speed, throttle position, pedal position, fluid level, steering position, and belt tension applications.

Source: Capital IQ

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