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Greater China Technology Semiconductors | Asia Pacific

Positive read across to AI semi supply chain from NVIDIA Q2 FY24 earning call

NVIDIA reported its Q2 FY24 earnings, with its Q3-October revenue guidance of US \$16bn, in-line with Scenario 1: "NVIDIA's October revenue guidance beats consensus at above US\$13bn, and accordingly, TSMC share price moves up 5% ", in our recent [TSMC: Catalyst Driven Idea \(21 Aug 2023\)](#).

During the earnings call, NVIDIA stated its supply chain partners did an exceptional job to support AI GPU. The company also said supply would grow each quarter onward. It mentioned its H100 AI GPU shipment was not limited by CoWoS (Chip on Wafers on Substrate) capacity.

We therefore see revenue upside risk to the AI semi supply chain, in particular TSMC (2330.TW), which is the major wafer foundry and CoWoS advanced packaging prover for NVIDIA's AI GPU. Please refer to our recent [AI supply chain tracker](#) for details.

We also expect other AI semi supply chain companies including KYEC (2449.TW) (GPU chip test), Alchip (3551.TW, ASIC design), Aspeed (5274.TWO, sever BMC), and ASM Pacific (0522.HK, advanced packaging equipment), to react positively to this event.

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GREATER CHINA TECHNOLOGY SEMICONDUCTORS	
Asia Pacific	
Industry View	Attractive

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Valuation Methodology and Risks

ASMPT Ltd (0522.HK)

Base case, residual income model. Key assumptions: cost of equity 9.2% (2% risk-free rate, 5.5% equity risk premium, 1.3 beta), intermediate growth rate 7.0%, terminal growth rate 3.5%.

Risks to Upside

- Chinese OSAT companies' demand increases and they start expanding capacity.
- Advanced packaging tools adoption is stronger than expected; ASMPT gains market share.

Risks to Downside

- Global economic and semiconductor growth is slower than expected.
- Chinese OSAT companies' demand weakens and they stop expanding capacity.
- 3D sensing and triple cameras turn out to be fads that can be replaced by advanced software.

TSMC (2330.TW)

Base case, residual income model. Key assumptions: a cost of equity of 9.2% (beta of 1.2, risk-free rate of 2.0% and risk premium of 6.0%), an intermediate growth rate of 7.0%, a terminal growth rate of 3.5%, and a payout ratio of 80%.

Risks to Upside

- TSMC charges large customers more to keep its gross margin above 53% in 2024.
- Reduced capex intensity of N2 bodes well for free cash flow and long-term gross margin recovery.
- Variety of Apple-designed chips brings additional growth.
- Outsourcing from Intel CPU increases in 2024/2025.

Risks to Downside

- Inventory correction lasts into 2024.
- Demand for leading edge technologies weakens.
- Costs of overseas fabs grow.

King Yuan Electronics Co Ltd (2449.TW)

Base case, residual income model. Key assumptions: cost of equity of 9.8%, intermediate-term growth rate of 5.5%, terminal growth rate of 3.0% and cash dividend payout ratio of 65%.

Risks to Upside

- Shipments rise for core customers such as MediaTek.
- Assembly business turns profitable with strong memory market.
- IDM outsourcing to OSAT rises.

Risks to Downside

- Huawei cannot continue shipping base stations worldwide owing to component short-

ages.

- Assembly business remains loss-making owing to a dampened memory market.
- Shipments drop for core customers such as MediaTek.

Alchip Technologies Ltd (3661.TW)

Base case value, derived from a residual income model. We assume the cost of equity is constant at 10.4% (2.0% risk-free rate, 6% risk premium, 1.40 beta). Our intermediate growth rate and terminal growth rates are 15.5% and 5.0%, respectively.

Risks to Upside

- Demand for Chinese GPUs and AI chipsets takes off earlier than expected.
- NRE demand accelerates.
- Alchip wins more US hyperscaler HPC projects.

Risks to Downside

- China's HPC localization progress slows down.
- AI chipset progress is much slower to develop.
- NRE demand decelerates.
- Pricing competition intensifies.

Aspeed Technology (5274.TWO)

Base case, residual income model. Key assumptions:

- Cost of equity of 9.8% (2.0% risk-free rate, 6% risk premium, 1.3 beta)
- Medium-term growth rate of 15%
- Terminal growth rate of 5.2%
- Cash payout ratio of 85%

Risks to Upside

- Stronger cloud demand
- Faster-than-expected spec migration
- Mild competition

Risks to Downside

- Softening cloud demand
- Slower-than-expected spec migration
- Intensified competition
- Further policy tightening in China

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(as of July 31, 2023)

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Stock Rating Category	Coverage Universe		Investment Banking Clients (IBC)			Other Material Investment Services Clients (MISC)	
	Count	% of Total	Count	% of Total IBC	% of Rating Category	Count	% of Total Other MISC
Overweight/Buy	1347	37%	276	43%	20%	609	39%
Equal-weight/Hold	1659	46%	294	46%	18%	717	46%
Not-Rated/Hold	3	0%	0	0%	0%	1	0%
Underweight/Sell	604	17%	69	11%	11%	227	15%
Total	3,613		639			1554	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

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Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

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Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

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Stock Price, Price Target and Rating History (See Rating Definitions)

Alchip Technologies Ltd (3661.TW) - As of 8/22/23 in TWD
Industry : Greater China Technology Semiconductors



Stock Rating History: 8/1/18 : /I; 11/16/18 : /C; 9/5/19 : /I; 11/8/19 : O/I; 12/4/19 : O/A; 4/23/20 : O/I; 4/12/21 : E/I; 5/14/21 : O/I; 10/12/21 : O/C; 10/4/22 : O/A; 2/22/23 : O/I; 7/7/23 : O/A

Price Target History: 11/8/19 : 269; 12/9/19 : 290; 4/30/20 : 328; 6/17/20 : 408; 6/22/20 : 448; 7/3/20 : 600; 8/3/20 : 780; 11/17/20 : 880; 2/19/21 : 1180; 4/12/21 : 780; 9/23/21 : 980; 10/8/21 : 1090; 10/30/21 : 1190; 2/10/22 : 1280; 3/7/22 : 1420; 10/18/22 : 1280; 3/13/23 : 1340; 4/26/23 : 1380; 5/10/23 : 1480; 6/12/23 : 1800; 7/3/23 : 2130; 7/7/23 : 2280; 8/14/23 : 2330

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target --- No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —
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Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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ASMP Ltd (0522.HK) - As of 8/22/23 in HKD
Industry : Greater China Technology Semiconductors



Stock Rating History: 8/1/18 : O/I; 9/21/18 : E/I; 11/16/18 : E/C; 9/5/19 : O/I; 12/4/19 : O/A; 3/20/20 : U/A; 4/23/20 : U/I; 10/26/20 : E/I; 1/12/21 : O/I; 10/12/21 : E/C; 10/4/22 : E/A; 2/22/23 : U/I; 3/2/23 : U/I; 5/2/23 : E/I; 6/12/23 : O/I; 7/7/23 : O/A
Price Target History: 7/23/18 : 120; 9/21/18 : 85; 9/5/19 : 105; 3/20/20 : 77; 10/26/20 : 86; 1/12/21 : 115; 1/21/21 : 131; 4/30/21 : 138; 5/20/21 : 123; 10/12/21 : 95; 1/24/22 : 88; 7/12/22 : 72; 2/22/23 : 56; 3/2/23 : 60; 5/2/23 : 66; 6/12/23 : 88

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Aspeed Technology (5274.TWO) - As of 8/22/23 in TWD
Industry : Greater China Technology Semiconductors



Stock Rating History: 8/1/18 : E/I; 11/16/18 : E/C; 3/3/19 : O/C; 7/5/19 : E/C; 9/5/19 : E/I; 12/4/19 : E/A; 4/23/20 : E/I; 4/29/20 : O/I; 10/12/21 : O/C; 5/20/22 : E/C; 10/4/22 : E/A; 1/11/23 : U/A; 2/22/23 : U/I; 7/7/23 : E/A

Price Target History: 6/27/18 : 872.73; 8/22/18 : 706.36; 9/26/18 : 642.73; 11/5/18 : 550.91; 1/7/19 : 514.55; 3/3/19 : 763.64; 6/20/19 : 690.91; 7/5/19 : 575.45; 10/3/19 : 635.45; 1/24/20 : 908.18; 4/29/20 : 1194.55; 5/25/20 : 1509.09; 8/3/20 : 1309.09; 1/5/21 : 1818.18; 3/24/21 : 1781.82; 4/23/21 : 2036.36; 6/3/21 : 2322.73; 11/16/21 : 3090.91; 4/8/22 : 3636.36; 5/20/22 : 2181.82; 7/13/22 : 2182; 7/19/22 : 1700; 10/12/22 : 1595; 1/11/23 : 1515; 7/7/23 : 2600; 8/8/23 : 2300

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target — No Price Target Assigned (NA)

Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —

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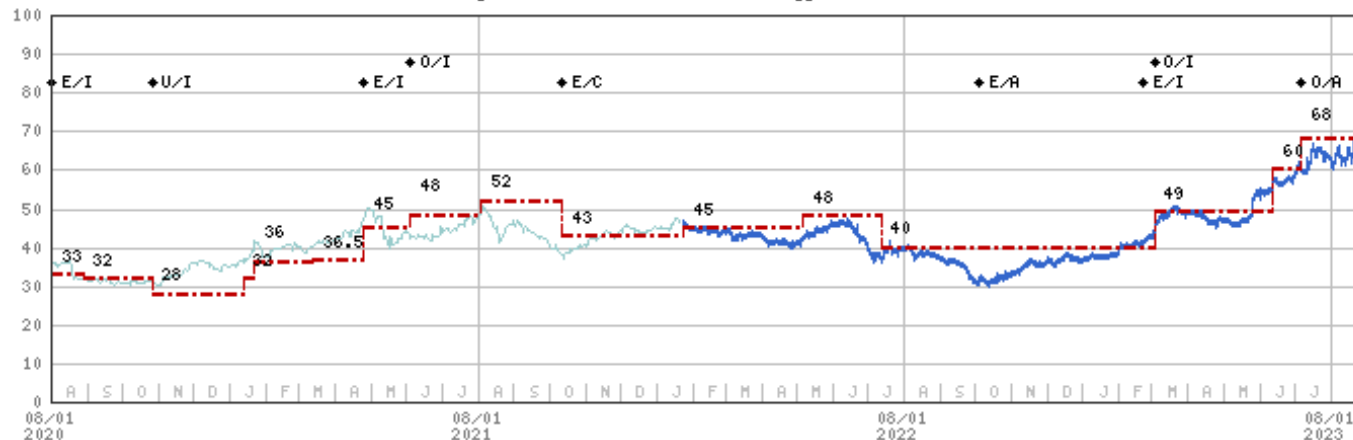
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)

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King Yuan Electronics Co Ltd (2449.TW) - As of 8/22/23 in TWD
 Industry : Greater China Technology Semiconductors

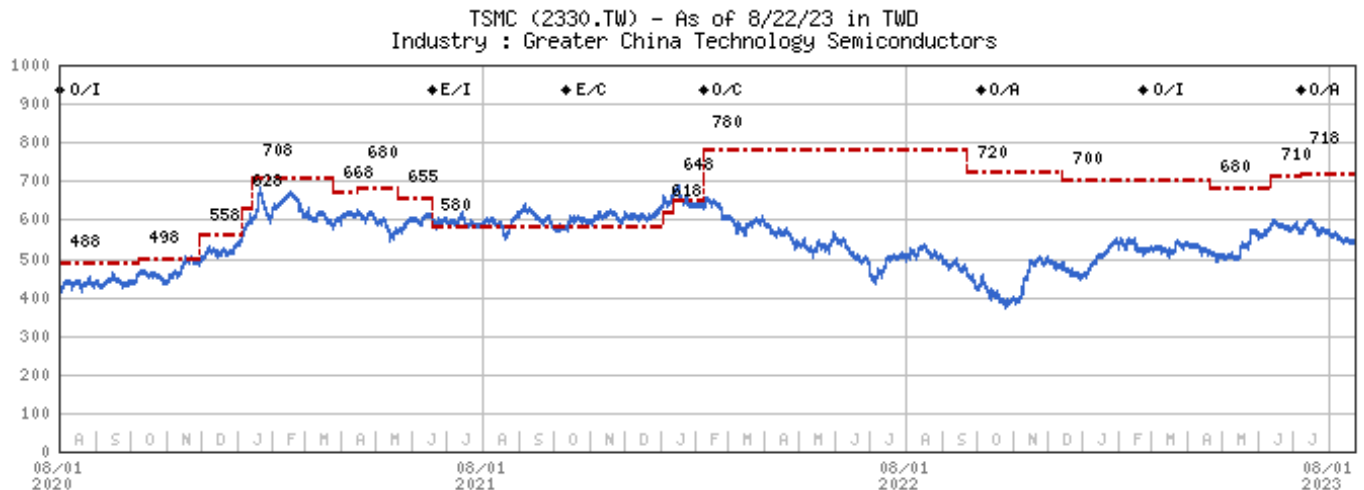


Stock Rating History: 8/1/18 : /I; 11/16/18 : /C; 9/5/19 : /I; 9/24/19 : O/I; 12/4/19 : O/A; 4/23/20 : O/I; 5/18/20 : E/I;
 10/26/20 : U/I; 4/25/21 : E/I; 6/4/21 : O/I; 10/12/21 : E/C; 10/4/22 : E/A; 2/22/23 : E/I; 3/3/23 : O/I; 7/7/23 : O/A
 Price Target History: 9/24/19 : 40; 11/8/19 : 43; 3/20/20 : 40; 5/18/20 : 33; 8/28/20 : 32; 10/26/20 : 28; 1/12/21 : 32;
 1/21/21 : 36; 3/13/21 : 36.5; 4/25/21 : 45; 6/4/21 : 48; 8/3/21 : 52; 10/12/21 : 43; 1/24/22 : 45; 5/6/22 : 48; 7/12/22 : 40;
 3/3/23 : 49; 6/12/23 : 60; 7/7/23 : 68

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Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)

Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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INDUSTRY COVERAGE: Greater China Technology Semiconductors

COMPANY (TICKER)	RATING (AS OF)	PRICE* (08/23/2023)
Charlie Chan		
ACM Research Inc (ACMR.O)	O (03/07/2023)	US\$16.36
Advanced Micro-Fabrication Equipment Inc (688012.SS)	U (02/22/2023)	Rmb129.32
Alchip Technologies Ltd (3661.TW)	O (05/14/2021)	NT\$2,390.00
Andes Technology Corp (6533.TW)	O (08/04/2022)	NT\$444.50
ASE Technology Holding Co. Ltd. (3711.TW)	O (07/07/2023)	NT\$109.50
Jiangsu Changjiang Electronics Tech (600584.SS)	E (07/07/2023)	Rmb30.08
Maxscend Microelectronics Co Ltd (300782.SZ)	U (01/11/2021)	Rmb112.20
MediaTek (2454.TW)	U (04/18/2023)	NT\$671.00
Nanya Technology Corp. (2408.TW)	E (10/04/2022)	NT\$63.50
Phison Electronics Corp (8299.TWO)	O (04/11/2023)	NT\$383.00
Silergy Corp. (6415.TW)	U (05/20/2021)	NT\$259.50
SMIC (0981.HK)	U (02/22/2023)	HK\$17.38
TSMC (2330.TW)	O (02/07/2022)	NT\$552.00
UMC (2303.TW)	O (09/14/2020)	NT\$43.40
Universal Scientific Ind. (Shanghai) (601231.SS)	O (08/04/2015)	Rmb14.00
Vanguard International Semiconductor (5347.TWO)	U (09/21/2022)	NT\$68.40
Will Semiconductor Co Ltd Shanghai (603501.SS)	O (07/07/2023)	Rmb88.61
WIN Semiconductors Corp (3105.TWO)	U (02/04/2021)	NT\$128.50
Daisy Dai, CFA		
Empyrean Technology Co Ltd (301269.SZ)	O (06/26/2023)	Rmb103.02
Hangzhou Silan Microelectronics Co. Ltd. (600460.SS)	O (07/07/2023)	Rmb24.10
Shanghai Anlogic Infotech Co Ltd (688107.SS)	E (11/01/2022)	Rmb42.99
Shanghai Fudan Microelectronics (1385.HK)	E (10/18/2022)	HK\$18.74
Unigroup Guoxin Microelectronics Co Ltd (002049.SZ)	U (01/10/2023)	Rmb82.80
Yangjie Technology (300373.SZ)	O (06/10/2022)	Rmb32.79
Zhejiang Tony Electronic Co Ltd (603595.SS)	E (06/05/2023)	Rmb30.25
Daniel Yen, CFA		
3Peak (688536.SS)	U (11/01/2022)	Rmb164.90
ASMedia Technology Inc (5269.TW)	E (05/30/2023)	NT\$892.00
Aspeed Technology (5274.TWO)	E (07/07/2023)	NT\$2,315.00

Bestechnic Shanghai Co Ltd (688608.SS)	O (04/23/2021)	Rmb111.50
Chipsea Technologies Shenzhen Corp (688595.SS)	U (05/15/2023)	Rmb27.17
Egis Technology Inc (6462.TWO)	U (04/23/2020)	NT\$80.80
Espressif Systems (688018.SS)	O (05/15/2023)	Rmb108.32
GigaDevice Semiconductor Beijing Inc (603986.SS)	E (08/14/2023)	Rmb90.10
Macronix International Co Ltd (2337.TW)	U (10/19/2021)	NT\$31.20
Montage Technology Co Ltd (688008.SS)	E (05/04/2023)	Rmb48.43
Novatek (3034.TW)	E (02/22/2023)	NT\$385.00
Nuvoton Technology Corporation (4919.TW)	O (07/19/2021)	NT\$121.50
Parade Technologies Ltd (4966.TWO)	E (07/21/2023)	NT\$790.00
Realtek Semiconductor (2379.TW)	O (02/22/2023)	NT\$415.00
Shenzhen Goodix Technology Co Ltd (603160.SS)	E (07/07/2023)	Rmb51.43
Sino Wealth Electronic (300327.SZ)	O (07/19/2021)	Rmb25.40
Winbond Electronics Corp (2344.TW)	O (03/02/2023)	NT\$25.70
WPG Holdings (3702.TW)	U (04/09/2021)	NT\$55.50
Dylan Liu		
ASMP T Ltd (0522.HK)	O (06/12/2023)	HK\$77.70
Chipbond Technology Corp (6147.TWO)	E (06/20/2023)	NT\$66.80
Faraday Technology Corp (3035.TW)	O (04/06/2023)	NT\$340.50
Global Unichip Corp (3443.TW)	O (05/04/2023)	NT\$1,465.00
King Yuan Electronics Co Ltd (2449.TW)	O (03/03/2023)	NT\$76.00
M31 Technology Corp (6643.TWO)	O (06/26/2023)	NT\$941.00
VeriSilicon Microelectronics Shanghai (688521.SS)	E (04/06/2023)	Rmb59.80
Ray Wu, CFA		
Advanced Wireless Semiconductor Co (8086.TWO)	E (03/29/2023)	NT\$94.60
China Resources Microelectronics Limited (688396.SS)	U (07/08/2022)	Rmb55.10
Episil Technologies Inc (3707.TWO)	O (06/05/2023)	NT\$75.00
GlobalWafers Co Ltd (6488.TWO)	E (02/22/2023)	NT\$460.00
Hua Hong Semiconductor Ltd (1347.HK)	O (02/04/2022)	HK\$18.86
NAURA Technology Group Co Ltd (002371.SZ)	E (11/23/2022)	Rmb251.12
Powerchip Semiconductor Manufacturing Co (6770.TW)	U (07/12/2021)	NT\$27.45
RichWave Technology Corp. (4968.TW)	E (07/12/2022)	NT\$145.00
SG Micro Corp. (300661.SZ)	E (09/27/2022)	Rmb72.48
Shanghai Awinic Technology (688798.SS)	U (09/27/2022)	Rmb62.81
SICC Co Ltd (688234.SS)	E (06/05/2023)	Rmb50.60
Silicon Motion (SIMO.O)	E (08/12/2021)	US\$55.62
StarPower Semiconductor Ltd (603290.SS)	O (03/01/2022)	Rmb191.70
Suzhou Novosense Microelectronics Co Ltd (688052.SS)	U (04/25/2023)	Rmb128.58
UPI Semiconductor Corp. (6719.TW)	E (04/18/2023)	NT\$213.50
Wafer Works Corp (6182.TWO)	E (11/07/2022)	NT\$42.00

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* Historical prices are not split adjusted.