

June 21, 2026 08:00 PM GMT

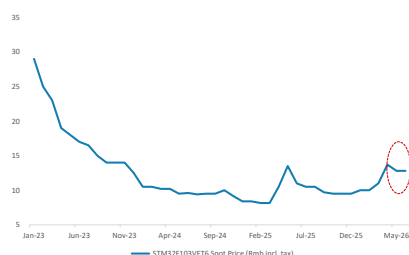
Greater China Technology Semiconductors | Asia Pacific

MCU: Supply tightness may drive prices up further

Key update:

- **Flat spot pricing in June**, both STMicro's 32-bit MCU and GigaDevice's (GD) 32-bit MCU spot prices were flat MoM at Rmb12.8 and to Rmb8.5, respectively. Recently, STMicro notified customers of a new round of price adjustments effective June 28, 2026. This is the 2nd price increase this year, following an earlier adjustment announced in March and implemented in April.
- **Supply tightness may continue in 2H26**. As mature node foundry suppliers allocate more capacity to AI power-related applications and bring limited new capacity online, we expect supply to remain tight for MCU design houses.
- **End-market demand largely the same**. Despite stronger demand from distributors because of low inventory and concerns about further price hikes in 2H26, consumer and industrial end-demand in June has largely been the same vs. last month.
- **We expect spot prices to rise again in 2H26, but driven by tight supply and increased foundry costs, instead of demand**. We prefer large MCU players (e.g., GigaDevice) and WiFi MCU vendors (Espressif) for their long-term edge AI opportunities, while we remain UW on Nuvoton and await GM recovery before turning more constructive.

Exhibit 1: STMicro - 32F103VET6 spot market price trend



Source: Bom.ai, Morgan Stanley Research

Exhibit 2: GigaDevice - 32F103VET6 spot market price trend



Source: Bom.ai, Morgan Stanley Research

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GREATER CHINA TECHNOLOGY SEMICONDUCTORS

Asia Pacific

Industry View

Attractive

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Valuation Methodology and Risks

Nuvoton Technology Corporation (4919.TW)

Base case, residual income model. We assume a 9.2% cost of equity (beta 1.2, risk-free rate 2.0% and risk premium 6.0%), a payout ratio of 55%, a medium-term growth rate of 7.0%, and a terminal growth rate of 3.5%.

Risks to Upside

- MCU up-cycle is more sustained than expected.
- China's MCU localization is faster than expected.
- Traction from auto and BMC business is greater.
- Margin improvement is more significant.

Risks to Downside

- MCU up-cycle ends earlier with severe pricing erosion.
- China's MCU localization is slower than expected.
- Traction from auto and BMC business is less.
- Margins contract amid more intensified competition.

GigaDevice Semiconductor Beijing Inc (603986.SS)

Our price target is our base case value, derived from our residual income model. Key assumptions: cost of equity of 8.9% (beta 1.1, risk-free rate 2% and risk premium 6%), a payout ratio of 40%, medium-term growth rate of 16.4%, and a terminal growth rate of 3.0%.

Risks to Upside

- NOR up-cycle driven by stronger demand
- Superior chip design, leading to increasing exposure to low-density NOR
- Faster-than-expected DRAM development

Risks to Downside

- NOR down-cycle driven by weaker demand
- Inferior chip design, leading to increasing exposure to mid-/high-density NOR
- Slower-than-expected DRAM development

Espressif Systems (688018.SS)

Base case, residual income model. We assume an 8.9% cost of equity (beta 1.1, risk-free rate 2.0% and risk premium 6.0%), a payout ratio of 40%, a medium-term growth rate of 18.5%, and a terminal growth rate of 4.5%.

Risks to Upside

- China's MCU localization goes faster than expected.
- Gains traction from new customers.
- Margin expansion is more significant.

Risks to Downside

- China's MCU localization pace is slower than expected.
- Traction from new customers is less than expected.
- Margins erode amid more intense competition.

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(as of May 31, 2026)

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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
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Equal-weight/Hold	1571	43%	369	40%	23%	723	44%
Not-Rated/Hold	3	0%	0	0%	0%	1	0%
Underweight/Sell	551	15%	86	9%	16%	201	12%
Total	3,667		920			1632	

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

Espressif Systems (688018.SS) - As of 06/18/26 GMT in CNY
Industry : Greater China Technology Semiconductors



Stock Rating History: 7/19/21 : U/I; 10/12/21 : U/C; 10/4/22 : U/A; 2/22/23 : U/I; 5/15/23 : O/I; 7/7/23 : O/A; 7/21/24 : O/I; 7/14/25 : O/A

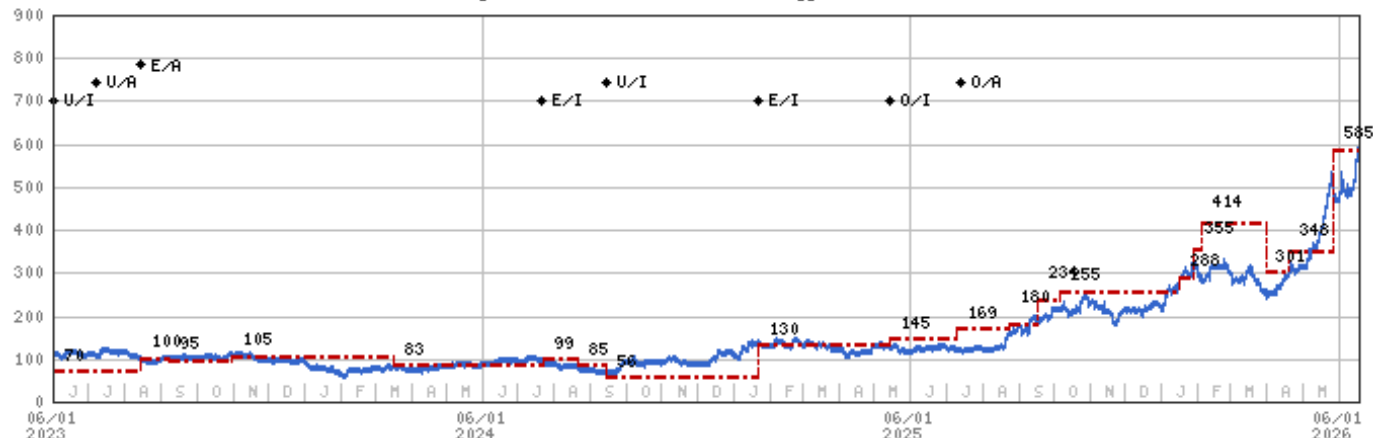
Price Target History: 7/19/21 : 72.89; 1/19/22 : 54.66; 3/12/22 : 47.38; 5/11/22 : 28.43; 10/18/22 : 24.05; 2/22/23 : 34.26; 5/15/23 : 58.31; 8/14/23 : 61.95; 10/23/23 : 54.66; 3/18/24 : 47.38; 7/23/24 : 66.33; 10/23/24 : 75.51; 1/15/25 : 140.31; 3/27/25 : 147.96; 7/8/25 : 150.71; 10/28/25 : 157.14; 3/2/26 : 134.29; 4/17/26 : 125

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target --- No Price Target Assigned (NA)
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Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View
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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GigaDevice Semiconductor Beijing Inc (603986.SS) - As of 06/18/26 GMT in CNY
Industry : Greater China Technology Semiconductors



Stock Rating History: 6/1/21 : O/I; 10/12/21 : O/C; 10/19/21 : E/C; 12/3/21 : O/C; 7/13/22 : E/C; 10/4/22 : E/A; 10/18/22 : U/A; 2/22/23 : U/I; 7/7/23 : U/A; 8/14/23 : E/A; 7/21/24 : E/I; 9/15/24 : U/I; 1/22/25 : E/I; 5/15/25 : O/I; 7/14/25 : O/A

Price Target History: 5/27/21 : 175; 7/19/21 : 222; 8/12/21 : 233; 9/17/21 : 208; 10/19/21 : 150; 12/3/21 : 222; 4/29/22 : 192; 7/5/22 : 168; 7/13/22 : 120; 8/27/22 : 122; 9/28/22 : 105; 10/18/22 : 72; 5/2/23 : 70; 8/14/23 : 100; 9/8/23 : 95; 10/31/23 : 105; 3/18/24 : 83; 7/23/24 : 99; 8/21/24 : 85; 9/15/24 : 56; 1/22/25 : 130; 5/15/25 : 145; 7/11/25 : 169; 8/25/25 : 180; 9/18/25 : 234; 10/7/25 : 255; 1/16/26 : 288; 1/28/26 : 355; 2/5/26 : 414; 3/31/26 : 301; 4/20/26 : 348; 5/28/26 : 585

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Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View

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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Nuvoton Technology Corporation (4919.TW) - As of 06/18/26 GMT in TWD
Industry : Greater China Technology Semiconductors



Stock Rating History: 7/19/21 : O/I; 10/12/21 : O/C; 10/4/22 : O/A; 2/22/23 : O/I; 7/7/23 : O/A; 7/21/24 : O/I; 8/2/24 : U/I; 10/29/24 : O/I; 7/14/25 : O/A; 8/6/25 : E/A; 11/10/25 : U/A

Price Target History: 7/19/21 : 155; 8/5/21 : 200; 1/17/22 : 212; 5/6/22 : 242; 7/12/22 : 168; 5/15/23 : 143; 8/14/23 : 152; 2/7/24 : 148; 8/2/24 : 81; 10/29/24 : 115; 5/7/25 : 85; 8/6/25 : 60; 11/10/25 : 48; 4/17/26 : 98

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) —

Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View

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* (06/18/2026)
Charlie Chan		

ACM Research Inc (ACMR.O)	O (03/07/2023)	US\$96.19
Advanced Micro-Fabrication Equipment Inc (688012.SS)	O (11/06/2023)	Rmb351.00
Advanced Wireless Semiconductor Co (8086.TWO)	U (07/14/2025)	NT\$162.50
Alchip Technologies Ltd (3661.TW)	O (05/14/2021)	NT\$4,380.00
ASE Technology Holding Co. Ltd. (3711.TW)	O (09/15/2024)	NT\$613.00
Cambricon Technology Corporation (688256.SS)	O (04/27/2026)	Rmb1,320.00
Global Unichip Corp (3443.TW)	E (05/28/2026)	NT\$4,860.00
GlobalWafers Co Ltd (6488.TWO)	E (05/19/2026)	NT\$1,100.00
Gudeng Precision (3680.TWO)	O (11/25/2025)	NT\$517.00
Hua Hong Semiconductor Ltd (1347.HK)	E (03/12/2026)	HK\$159.20
Iluvatar CoreX Semiconductor Co., Ltd. (9903.HK)	O (04/27/2026)	HK\$520.00
King Yuan Electronics Co Ltd (2449.TW)	O (03/03/2023)	NT\$308.50
Maxscend Microelectronics Co Ltd (300782.SZ)	U (01/11/2021)	Rmb99.80
MediaTek (2454.TW)	O (11/28/2025)	NT\$4,390.00
MetaX Integrated Circuits (688802.SS)	E (04/27/2026)	Rmb732.50
Nanya Technology Corp. (2408.TW)	O (05/28/2026)	NT\$459.50
NAURA Technology Group Co Ltd (002371.SZ)	O (11/06/2023)	Rmb704.22
OmniVision Integrated Circuits Group Inc (603501.SS)	E (11/17/2025)	Rmb90.12
Phison Electronics Corp (8299.TWO)	E (02/25/2026)	NT\$2,330.00
SG Micro Corp. (300661.SZ)	E (11/03/2025)	Rmb131.55
Silergy Corp. (6415.TW)	U (05/19/2026)	NT\$629.00
SMIC (0981.HK)	O (10/21/2025)	HK\$75.75
TSMC (2330.TW)	O (02/07/2022)	NT\$2,410.00
UMC (2303.TW)	O (05/19/2026)	NT\$145.50
Vanguard International Semiconductor (5347.TWO)	E (01/14/2026)	NT\$166.50
WIN Semiconductors Corp (3105.TWO)	U (07/14/2025)	NT\$519.00
Daisy Dai, CFA		
ASMP Ltd (0522.HK)	O (07/24/2025)	HK\$210.00
China Resources Microelectronics Limited (688396.SS)	U (03/02/2026)	Rmb73.78
Elan Microelectronics Corp (2458.TW)	O (10/03/2025)	NT\$172.00
Empyrean Technology Co Ltd (301269.SZ)	E (01/17/2025)	Rmb105.01
Hangzhou Silan Microelectronics Co. Ltd. (600460.SS)	U (08/25/2025)	Rmb40.83
Innoscence (2577.HK)	E (10/13/2025)	HK\$63.05
JCET Group Co Ltd (600584.SS)	E (01/16/2026)	Rmb81.76
Shanghai Fudan Microelectronics (1385.HK)	O (03/07/2025)	HK\$29.48
SICC Co Ltd (688234.SS)	O (03/20/2026)	Rmb149.66
StarPower Semiconductor Ltd (603290.SS)	E (05/14/2026)	Rmb130.98
Unigroup Guoxin Microelectronics Co Ltd (002049.SZ)	U (01/10/2023)	Rmb80.00
Universal Scientific Ind. (Shanghai) (601231.SS)	O (11/05/2025)	Rmb37.08
Yangjie Technology (300373.SZ)	O (06/10/2022)	Rmb114.10
Daniel Yen, CFA		
AP Memory Technology Corp (6531.TW)	O (07/11/2025)	NT\$1,025.00
ASMedia Technology Inc (5269.TW)	U (10/03/2025)	NT\$1,455.00
Aspeed Technology (5274.TWO)	O (06/09/2025)	NT\$18,485.00
Egis Technology Inc (6462.TWO)	E (01/28/2026)	NT\$112.50
Espressif Systems (688018.SS)	O (05/15/2023)	Rmb122.40
GigaDevice Semiconductor Beijing Inc (603986.SS)	O (05/15/2025)	Rmb586.04
Macronix International Co Ltd (2337.TW)	O (09/18/2025)	NT\$169.00
Montage Technology Co Ltd (6809.HK)	O (03/18/2026)	HK\$420.60
Montage Technology Co Ltd (688008.SS)	O (03/18/2026)	Rmb262.50
Novatek (3034.TW)	U (02/04/2026)	NT\$516.00
Nuvoton Technology Corporation (4919.TW)	U (11/10/2025)	NT\$196.50
Parade Technologies Ltd (4966.TWO)	O (05/27/2026)	NT\$675.00
Powerchip Semiconductor Manufacturing Co (6770.TW)	O (10/27/2025)	NT\$74.20
Realtek Semiconductor (2379.TW)	E (01/30/2026)	NT\$819.00

Shenzhen Goodix Technology Co Ltd (603160.SS)	U (07/14/2025)	Rmb59.74
Winbond Electronics Corp (2344.TW)	O (05/28/2026)	NT\$218.50
WPG Holdings (3702.TW)	O (03/16/2026)	NT\$112.00
WT Microelectronics Co. Ltd. (3036.TW)	O (01/27/2026)	NT\$222.50
Duan Liu		
Dosilicon Co Ltd (688110.SS)	U (09/06/2024)	Rmb152.91
Shenzhen Longsys Electronics Co Ltd (301308.SZ)	E (02/25/2026)	Rmb571.68
Tiffany Yeh		
AllRing Tech Co. (6187.TWO)	O (09/23/2025)	NT\$1,155.00
FOCI Fiber Optic Communications Inc (3363.TWO)	O (01/15/2025)	NT\$685.00
Himax Technologies Inc (HIMX.O)	E (02/04/2026)	US\$16.95
Hon Precision (7769.TW)	O (04/17/2026)	NT\$6,975.00
MPI Corporation (6223.TWO)	O (04/17/2026)	NT\$6,420.00
Silicon Motion (SIMO.O)	O (05/06/2024)	US\$307.12
WinWay Technology Co Ltd (6515.TW)	O (04/17/2026)	NT\$9,450.00

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* Historical prices are not split adjusted.