

***Overview on
Taiwan Semiconductor
Industry
(2020 Edition)***



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I. Preface

This *Overview on Taiwan Semiconductor Industry* is a translated excerpt from an ITIS (Industrial Technology Information Services) publication, which provides an overview of Taiwan semiconductor industry in 2019. Also included is a directory of Taiwan semiconductor companies. These data should be valuable to those who wish to establish business relationship in Taiwan.

ITIS is a market research project, which is supported primarily by the Taiwan government. For semiconductor portion of the project, research was conducted in Industrial Economics & Knowledge Center of Industrial Technology Research Institute (IEK/ITRI).

Since the establishment of the Electronics Research and Service Organization of the Industrial Technology Research Institute (ERSO/ITRI) in early 1970's and its successive spin-offs of UMC and TSMC in 1980's, the semiconductor industry in Taiwan has been growing at a fast pace. Currently TSIA represents approximately 74.6% of worldwide IC foundry revenue, 56.5% of worldwide package and testing revenue, and 18.8% of worldwide design revenue. As the industry gains significant role in the global market place, information about Taiwan semiconductor industry is desirable worldwide. TSIA hopes this Overview on Taiwan Semiconductor Industry will serve as a useful reference for our global friends who seek to establish a closer connection with Taiwan semiconductor companies. We welcome your comments.

II. Taiwan Semiconductor industry in Year 2019

Overview of the Year

Taiwan IC industry revenue (including design, manufacturing, packaging, and testing) totaled NT\$2,665.6 billion (about US\$86.3B) in 2019, up 1.7 % from 2018, with NT\$692.8 billion (US\$22.4B) in design, a 8.0% increase, NT\$1,472.1 billion (US\$47.6B) in manufacturing, a 0.9% decrease, NT\$1,312.5 (US\$42.5B) in foundry, up 2.1% and NT\$159.6B (US\$5.2B) in memory and other manufacturing, down 20.4%, NT\$346.3 billion (US\$11.2B) in packaging, a 0.5% increase, and NT\$154.4 billion (US\$5.0B) in testing, a 4.0% growth from 2018. (Exchange rate NT\$/US\$ was 30.9.)

Table 1 Revenue of Taiwan IC Industry, 2019

NT\$B	19Q1	19Q1 /18Q4	19Q1 /18Q1	19Q2	19Q2 /19Q1	19Q2 /18Q2	19Q3	19Q3 /19Q2	19Q3 /18Q3	19Q4	19Q4 /19Q3	19Q4 /18Q4	2019	19/18
Industry Revenue	564.3	-17.9%	-6.4%	625.3	10.8%	-2.0%	721.7	15.4%	4.4%	754.3	4.5%	9.8%	2,665.6	1.7%
IC Design	147.8	-10.0%	7.7%	169.9	15.0%	4.7%	186.0	9.5%	4.7%	189.1	1.7%	15.1%	692.8	8.0%
IC Manufacturing	306.9	-22.0%	-14.1%	336.4	9.6%	-4.7%	402.6	19.7%	5.5%	426.2	5.9%	8.3%	1,472.1	-0.9%
Foundry	272.4	-22.1%	-12.2%	299.0	9.8%	0.1%	356.1	19.1%	9.1%	385.0	8.1%	10.1%	1,312.5	2.1%
Memory & Other Manufacturing	34.5	-21.6%	-26.4%	37.4	8.4%	-31.1%	46.5	24.3%	-15.9%	41.2	-11.4%	-6.4%	159.6	-20.4%
IC Packaging	75.3	-15.4%	-0.3%	81.0	7.6%	-6.9%	93.5	15.4%	0.5%	96.5	3.2%	8.4%	346.3	0.5%
IC Testing	34.3	-14.3%	3.3%	38.0	10.8%	5.6%	39.6	4.2%	0.8%	42.5	7.3%	6.3%	154.4	4.0%
Product Revenue	182.3	-12.5%	-1.0%	207.3	13.7%	-4.2%	232.5	12.2%	-0.2%	230.3	-0.9%	10.6%	852.4	1.3%
WW Revenue (US\$B) & Growth (%)	-	-	-	-	-	-	-	-	-	-	-	-	412.3	-12.0%

(e): estimate

Source : TSIA, ISTI-ITRI (June 2020)

Note:

- IC Industry Revenue = IC design + Manufacturing + Packaging + Testing
- IC Production Revenue = IC Design + Memory and Other Manufacturing
- IC Manufacturing Revenue = Foundry + Memory and Other Manufacturing
- Only companies head-quartered in Taiwan are included in the revenue calculations.

Table 2 Revenue of Taiwan IC Industry, 2016-2020

NT\$B	2016	16/15	2017	17/16	2018	18/17	2019	19/18	2020 (e)	20/19
Industry Revenue	2,449.3	8.2%	2,462.3	0.5%	2,619.9	6.4%	2,665.6	1.7%	2,810.9	5.5%
IC Design	653.1	10.2%	617.1	-5.5%	641.3	3.9%	692.8	8.0%	722.3	4.3%
IC Manufacturing	1,332.4	8.3%	1,368.2	2.7%	1,485.6	8.6%	1,472.1	-0.9%	1,579.0	7.3%
Foundry	1,148.7	10.4%	1,206.1	5.0%	1,285.1	6.6%	1,312.5	2.1%	1,434.8	9.3%
Memory & Other Manufacturing	183.7	-16.8%	162.1	-11.8%	200.5	23.7%	159.6	-20.4%	144.2	-9.6%
IC Packaging	323.8	4.5%	333.0	2.8%	344.5	3.5%	346.3	0.5%	352.0	1.6%
IC Testing	140.0	6.5%	144.0	2.9%	148.5	3.1%	154.4	4.0%	157.6	2.1%
Product Revenue	836.8	2.9%	779.2	-6.9%	841.8	8.0%	852.4	1.3%	866.5	1.7%
WW Revenue (US\$B) & Growth (%)	338.9	1.1%	412.2	21.6%	468.8	13.7%	412.3	-12.0%	426.0	3.3%

(e): estimate

Source : TSIA, ISTI-ITRI (June 2020)

By the end of 2019, Taiwan Semiconductor industry consisted of 238 IC fabless design houses, 15 fabrication companies, 37 packaging and testing houses, 6 substrate suppliers, 11 wafer suppliers, 3 mask makers, and 4 lead frames companies (Figure 1).

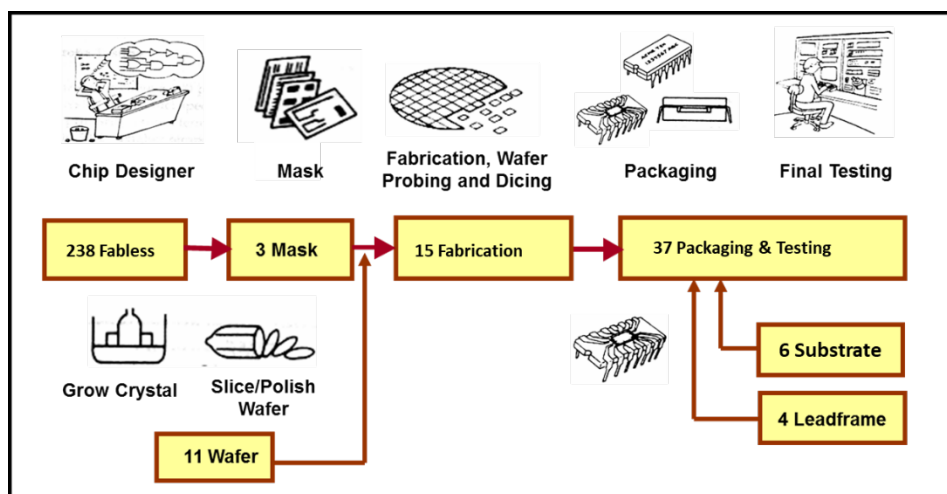


Fig. 1 Unique Infrastructure in Taiwan (2019)

IC Fabless Companies

There were 238 design houses in Taiwan (Table 3) in 2019. Driven by the growing demand for AIoT, Touch/Display Integration (TDDI) IC and TWS, Taiwan IC design revenue was \$692.8 billion, an 8.0% increase from the previous year. Taiwan still follows behind the US as the world's second strongest presence in this field, and accounts for 18.8% of worldwide IC design market. That percentage is expected to raise up to 19.3% in 2020, continuing to benefit from the US-China trade war.

Taiwan IC design companies invested NT\$125.5 billion in R&D in 2019, which represented 18.1% of total Taiwan fabless revenue. The R&D expense is expected to increase to NT\$128.0 billion in 2020.

Table 3 Major Indices of Taiwan IC Design Business

	2016	2017	2018	2019	2020(e)
# of Companies	240	240	238	238	236
Revenue(NT\$B)	653.1	617.1	641.3	692.8	722.3
Growth (%)	10.2%	-5.5%	3.9%	8.0%	4.3%
WW Market Share	19.4%	18.0%	17.0%	18.8%	19.3%
WW Ranking	2	2	2	2	2
Value Added (NT\$B)	163.9	158.9	179.6	218.9	225.0
Value Added Rate (%)	25.1%	25.7%	28.0%	31.6%	31.2%
R&D Employee (p)	29,887	29,555	30,005	30,300	30,250
R&D Expense (NT\$B)	109.0	108.0	115.5	125.5	128.0
R&D Expense/ Revenue (%)	16.7%	17.5%	18.0%	18.1%	17.7%
Workforce(P)	42,000	41,000	41,500	41,800	41,750
Average revenue per workforce (NT\$M)	15.6	15.1	15.5	16.6	17.3

Note: (e) stands for estimate

Source : TSIA, ISTE-ITRI (June 2020)

Table 4 Top 10 Fabless Companies in Taiwan, 2019

NT\$B					
2019 Ranking	2018 Ranking	Companies	2019 Revenue	2018 Revenue	Growth (%)
1	1	Mediatek	246.2	238.2	3.4%
2	2	Novatek	64.4	54.8	17.5%
3	4	Realtek	60.7	45.8	32.5%
4	3	PHISON	44.7	40.8	9.6%
5	5	Himax	20.7	21.8	-5.0%
6	6	Silicon Motion	14.1	15.9	-11.3%
7	9	Raydium	13.9	13.5	3.0%
8	10	Sitronix	13.8	11.6	19.0%
9	8	ESMT	12.0	11.0	9.1%
10	7	Global Unichip	10.7	10.3	3.9%

Note: Based on companies' combined revenue.

Source : Company Statement; TSIA, ISTI-ITRI (June 2020)

Table 4 shows the top 10 Taiwan Fabless Companies in 2019. Mediatek remained at the top and generated a revenue of NT\$246.2B in 2019, an increase of 3.4% from 2018, but still accounted for 35.5% of Taiwan's IC Design revenue. Novatek came second, generating a revenue of NT\$64.4B, while Realtek came third with a revenue of NT\$60.7B, a drastic growth of 32.5%.

IC Manufacturing

As of 2019, there were 15 IC wafer fabrication companies in Taiwan, including foundry companies such as TSMC, UMC, PSMC (formerly Powerchip), Vanguard, Epasil, Mosel, Lite-on Semiconductor, AMPI, Maxchip, Win Semiconductors, Nuvoton and AWSC; memory manufacturers such as Winbond, MXIC, and Nanya Technology. Inotera was acquired by Micron in 2016 and was not included in this list.

Communication remained the largest application area in foundry business and comprised around 55.6% of foundry revenue in 2019. Memory market was impacted by the global economic slowdown, the US-China trade war, and tariffs issues in the first half of 2019 but showed improvement in the second half.

Capital expense was NT\$800.0 billion, which accounted for 54.3% of total Taiwan manufacturing revenue and a 36% increase from the year before. This drastic increase can be attributed to the increase in investments towards advanced process technology.

Table 5 Major Indices of Taiwan IC Fabrication Business

	2016	2017	2018	2019	2020(e)
# of Companies	16	15	15	15	15
Revenue(NT\$B)	1,332.4	1,368.2	1,485.6	1,472.1	1,579.0
Growth (%)	8.3%	2.7%	8.6%	-0.9%	7.3%
WW Market Share (Foundry)	70.7%	73.2%	75.6%	74.6%	75.7%
WW Ranking (Foundry)	1	1	1	1	1
Value Added (NT\$B)	888.4	932.7	1,022.1	973.0	1,077.6
Value Added Rate (%)	66.7%	68.2%	68.8%	66.1%	66.0%
Capital Investment (NT\$B)	466.0	432.5	401.8	800.0	751.9
Capital Investment /Revenue (%)	35.0%	31.6%	27.0%	54.3%	47.6%
R&D Employee (p)	9,131	8,339	8,414	8,497	8,590
R&D Expense (NT\$B)	135.4	116.4	117.3	118.7	120.2
R&D Expense/ Revenue (%)	10.2%	8.5%	7.9%	8.1%	7.6%
Workforce(P)	88,960	83,392	83,475	83,559	83,977
Average revenue per workforce (NT\$M)	15.0	16.0	18.0	18.0	19.0

Source : TSIA, ISTI-ITRI (June 2020)

TSMC remained the top IC manufacturing company in Taiwan in 2019, with NT\$1,070.0 billion in revenue, up 3.7% from 2018. UMC remained number two, with revenue decreased by 2.0% down to NT\$148.2 billion.

Table 6 Top 10 Fabrication Companies in Taiwan, 2019

NT\$B

2019 Ranking	2018 Ranking	Companies	2018 Revenue	2019 Revenue	Growth (%)
1	1	TSMC	1,031.5	1,070.0	3.7%
2	2	UMC	151.3	148.2	-2.0%
3	3	Nanya	84.7	52.8	-37.6%
4	4	Winbond	51.2	48.7	-4.8%
5	5	Powerchip	49.9	36.0	-27.9%
6	6	MXIC	37.0	35.1	-5.2%
7	7	Vanguard	28.9	28.3	-2.1%
8	8	Win Semiconductors	17.3	21.4	23.4%
9	9	Lite-On	12.1	11.1	-8.2%
10	10	Nuvoton	10.0	10.4	3.7%

Source : Company Statement, TSIA, ISTI-ITRI (June 2020)

IC Packaging & Testing

As of 2019, there were 37 packaging and testing companies in Taiwan. Revenue reached NT\$500.7 billion, which represented 56.5% of worldwide packaging and testing revenue and ranked number one worldwide, followed by China and the United States.

Table 7 Major Indices of Taiwan Packaging and Testing Industry

	2016	2017	2018	2019	2020(e)
# of Companies	37	37	37	37	37
Revenue (NT\$B)	463.8	477.0	493.0	500.7	509.6
Growth (%)	5.1%	2.8%	3.4%	1.6%	1.8%
WW Market Share	55.5%	55.84%	55.76%	56.5%	56.7%
WW Ranking	1	1	1	1	1
Value-Added (NT\$B)	223.1	228.0	232.7	237.8	238.5
Value-Added Rate (%)	48.1%	47.8%	47.2%	47.5%	46.8%
Capital Investment (NT\$B)	95.0	97.5	107.2	104.0	101.0
Capital Investment/ Revenue (%)	20.5%	20.4%	21.7%	21.0%	19.8%
R&D Employee (p)	4,200	4,220	4,230	4,250	4,210
R&D Expense (NT\$B)	15.2	15.5	15.7	16.5	15.2
R&D Expense/Revenue (%)	3.3%	3.2%	3.2%	3.3%	3.0%
Workforce (p)	97,200	98,800	99,200	99,800	99,100
Average revenue per workforce (NT\$M)	4.8	4.8	5.0	5.0	5.1

Source : TSIA, IST-ITRI (June 2020)

Table 8 Top 10 IC Packaging and Testing Companies

NT\$B

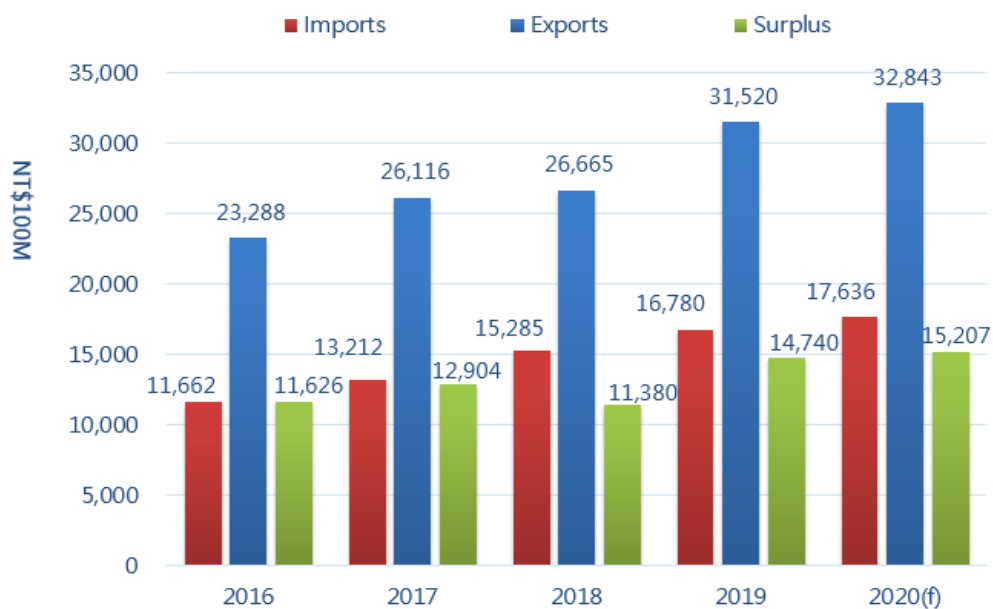
2019 Ranking	2018 Ranking	Companies	2019 Ranking	2018 Ranking	Growth (%)
1	1	ASE	151.3	152.6	0.9%
2	2	SPIL	87.4	89.0	1.8%
3	3	PTI	68.0	66.5	-2.2%
4	4	KYEC	20.8	25.5	22.6%
5	5	Chipbond	18.7	20.4	9.1%
6	6	Chipmos	18.5	20.3	9.7%
7	7	OSE	15.2	17.5	15.1%
8	8	Signure	9.5	10.0	5.3%
9	9	FATC	8.8	9.5	8.0%
10	10	OSE	8.6	6.7	-22.1%

Source : Company Statement; TSIA, ISTI-ITRI (June 2020)

Table 8 shows the top 10 Taiwan packaging and testing companies in 2019. Total revenue of top 5 (ASE, SPIL, PTI, KYEC, and Chipbond) companies comprised 69.5% of total Taiwan packaging and testing revenue and revenue of top 10 comprised 82.0%, demonstrating the dominance of the top companies in the industry.

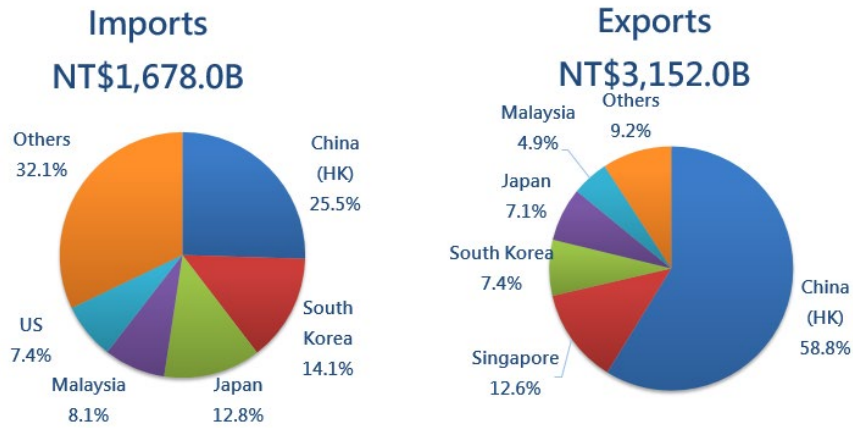
III. Taiwan IC Market

In 2019, imported ICs increased 9.8% to NT\$1,678.0 billion (NT\$1,528.5 in 2018) and exported ICs increased 18.2% to NT\$3,152.0 billion (NT\$2,666.5B in 2018). Major import countries of Taiwan in 2019 were China (including HK), South Korea, Japan, Malaysia, and the US. Major export countries of Taiwan were China (including HK), Singapore, South Korea, Japan, and Malaysia. Surplus was NT\$1,474.0 billion in 2019, up 29.5% on-year and is expected to increase by 3.2% to reach NT\$1,520.7 billion in 2020 despite the effects of COVID-19.



Source : Taiwan Customs ; TSIA, ISTI-ITRI (June 2020)

Figure 2 Import/Export Value of Taiwan IC Market



Source : Taiwan Customs ; TSIA, ISTI-ITRI (June 2020)

Figure 3 Major Import/Export Regions of Taiwan IC Market

In 2019, Taiwan imported the most from China (including HK) (25.5%) followed by South Korea (14.1%), Japan (12.8%), Malaysia (8.1%), and the US (7.4%). Other countries combined stood for 32.1% of imports.

In terms of exports, Taiwan exported the most to China (including HK) with 58.8%, followed by Singapore (12.6%), South Korea (7.4%), Japan (7.1%) and Malaysia (4.9%). Other countries combined stood for 9.2% of exports.

IV. Outlook

Due to the effects of Covid-19 and the US-China conflict, global demand is expected to slow down in 2020. However, Taiwan's IC industry has an advantage, possessing the most advanced technology in the field. As a result, these conflicts are not expected to greatly affect Taiwan's industry in 2020.

Taiwan Semiconductor revenue (including design, manufacturing, packaging, and testing) is expected to reach NT\$2,810.9 billion in 2020, up 5.5% from 2019, with NT\$722.3 billion in design, a 4.3% increase, NT\$1,579.0 billion in manufacturing, a 7.3% increase, and NT\$509.6 billion in packaging and testing, a 1.8% increase.

V. Directory of Taiwan Semiconductor Companies

Fabless

5V Technologies

TEL:886-2-27888118

FAX:886-2-27887366

www.5vtechnologies.com

AAT

TEL:886-3-6209588

FAX:886-3-6209599

www.aat-ic.com

ACARD

TEL:886-2-85122290

FAX:886-2-85122548

www.acard.com

AccFast

TEL:886-3-6662756

FAX:886-3-6662758

www.accfast.com.tw

AIC

TEL: 886-3-5772500

FAX:886-3- 5772510

www.analog.com.tw

AiT

TEL:886-2-26961202

FAX:886-2-26961201

www.ait-ic.com

Airoha

TEL: 886-3-6128800

FAX:886-3- 6118833

www.airoha.com.tw

Alchip Technologies

TEL: 886-2-27992318

FAX:886-2-27997389

www.alchip.com

Alcor Micro

TEL:886-2-26535000

FAX:886-2-26534000

www.alcormicro.com

AlfaPlus

TEL:886-3-5163270

FAX:886-3-5163267

www.alfaplus.com.tw

ALI

TEL:886-2-87522000

FAX:886-2-87511001

www.ali.com.tw

Alpha

TEL:886-3-5736660

FAX:886-3-5736661

www.ealpha.com.tw

Altus

TEL:886-37-586860

www.altus-tech.com

Amazing Microelectronic

TEL:886-2-82278989

FAX:886-2-82278969

www.amazingic.com

AMIC

TEL:886-3-5679966

FAX:886-3-5679977

www.amictechnology.com

AMICCOM

TEL:886-3-5601717

FAX:886-3-5601715

www.amiccom.com.tw

Amtek

TEL:886-2-29998989

FAX:886-2-29992929

www.amtek-semi.com

AnaGlobe

TEL:886-3-5613650

FAX:886-3-5612310

www.anaglobe.com.tw

ANDES

TEL:886-3-5726533

FAX:886-3-5726535

www.andestech.com

ANPEC

TEL:886-3-5642000

FAX:886-3-5642050

www.anpec.com.tw

AnSC

TEL:886-3-6669898

FAX:886-3-5632246

www.ansc.com.tw

AP Memory
TEL:886-3-5601588
FAX:886-3-5601518
www.apmemory.com.tw

Appo Tech
TEL: 886-3-5719960
FAX: 886-3-5719969
www.appotech.com

Asolid
TEL:886-3-5736032
FAX:886-3-5736300
www.asolid-tek.com

ATECH
TEL:886-2-82215488
FAX:886-2-82215489
www.8tec.com

AVID
TEL:886-3-5795222
FAX:886-3-5787789
www.avid.com.tw

AXElite
TEL:886-3-5776662
FAX:886-3-5788661
www.axelite.com.tw

CDT
TEL:886-2-22994908
FAX:886-2-22990133
www.cdt.com.tw

CHESEN
TEL:886-2-82265589
FAX:886-2-82265181
www.chesen.com.tw

APEC
TEL:886-3-6215899
FAX:886-3-6215999
www.a-power.com.tw

ASIX
TEL:886-3-5799500
FAX:886-3-5799558
www.asix.com.tw

ASPEED
TEL:886-3-5789568
FAX:886-3-5789586
www.aspeedtech.com

AuMOS
TEL:886-3-5790567
FAX:886-3-5775909
www.aumos.com.tw

Avisonic
TEL:886-3-5778077
FAX:886-3-6661301
www.avisonic.com

BiTEK
TEL:886-2-77082528
FAX:886-2-77081258
www.bitek.com.tw

CFP
TEL:886-2-22326558
FAX:886-2-22327558
www.cfpt.com.tw

Chip Goal
TEL:886-3-5169219
FAX:886-3-5169197
www.chipgoal.com

APLUS
TEL:886-2-27829266
FAX:886-2-27829255
www.aplusinc.com.tw

Asmedia
TEL:886-2-22196088
FAX:886-2-22196080
www.asmedia.com.tw

ASUKA
TEL:886-3-6667117
FAX:886-3-6667104
www.asuka-mobile-tv.coms

AverLogic
TEL:886-2-87523988
FAX:886-2-87523989
www.averlogic.com

AviQ
TEL:886-3-5225019
FAX:886-3-5225839
www.aviqtech.com

BEST SOLUTION INC.
TEL:886-2-26558797
FAX:886-2-26558796
www.bestsolution.com.tw

Champion
TEL:886-3-5679979
FAX:886-3-5679909
www.championmicro.com.tw

Chip Hope
TEL:886-2-82271166
FAX:886-2-822711296
www.chiphope.com

CHIPMAST

TEL:886-3-5510850
FAX:886-3-5510860
www.chipmast.com.tw

C-Media

TEL:886-2-87731100
FAX:886-2-87732211
www.cmedia.com.tw

CTC

TEL:886-3-5311161
FAX:886-3-5338403
www.ctcasic.com.tw

DenMOS

TEL:886-3-5665886
FAX:886-3-5665809
www.denmos.com.tw

E-CMOS

TEL:886-3-5785888
FAX:886-3-5783630
www.ecmos.com.tw

Egis Technology

TEL:886-2-26589768
FAX:886-2-26588368
www.egistec.com

eMemory

TEL:886-3-5601168
FAX:886-3-5601169
www.ememory.com.tw

ESMT

TEL:886-3-5781970
FAX:886-3-5644432
www.esmt.com.tw

CHiPLUS

TEL:886-3-5637887
FAX:886-3-5637877
www.chiplus.com/tw/

CMSC

TEL:886-3-5634866
FAX:886-3-5634863
www.cmssc.com.tw

CYRUSTEK

TEL:886-3-5910216
FAX:886-3-5910217
www.cyrustek.com.tw

DIGIWELL

TEL:886-3-5782910
FAX:886-3-5639464
www.digiwell.com.tw

EE Solutions

TEL:886-3-5678568
FAX:886-3-5678611
www.e2-solutions.com.tw

ELAN

TEL:886-3-5639977
FAX:886-3-5639966
www.emc.com.tw

ENE

TEL:886-3-6662888
FAX:886-3-6662999
www.ene.com.tw

Etoms

TEL:886-3-6661766
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www.etomscorp.com

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FAX:886-3-5970671
www.testserv.com.tw

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FAX:886-3-6662858
www.viseratech.com

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FAX:886-4-25342025
www.spil.com.tw

True Test

TEL:886-3-5973838
FAX:886-3-5973737
www.truetest.com.tw

Walton

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FAX:886-7-8114732
www.walton.com.tw

Silicon Wafer**EPISIL**

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FAX:886-3-5776289
www.tech.episil.com

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FAX:886-4-23588968
www.niching.com.tw

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TEL:886-3-3852130
FAX:886-3-3852120
www.sanchih.com.tw

FST

TEL:886-5-6816950
FAX:886-5-6812865
www.fstech.com.tw

Precision

TEL:886-3-5632255
FAX:886-3-5632148
www.epi.episil.com

Sellingware

TEL:886-3-5601066
FAX:886-3-5601077
www.sellingware.com.tw

GlobalWafers

TEL:886-3-5772255
FAX:886-3-5781706
www.sas-globalwafers.com

PSi

TEL:886-3-5641888
FAX:886-3-5670888
www.psi.com.tw

Shin-Etsu

TEL:886-3-5983111
FAX:886-3-5982204
www.shinetsu.com.tw

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TEL:886-3-5772233

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www.saswafer.com**Waferworks**

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FAX:886-3-4815002

www.waferworks.com**Mask****PDMC**

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FAX:886-3-5678158

www.pdmc.com.tw**TCE**

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FAX:886-3-3649911

www.tce.com.tw**TMC Mask Corp.**

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FAX:886-3-5780752

www.tmcnet.com.tw**Discrete****LITE-ON**

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www.liteon-semi.com**Mospec**

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www.mospec.com.tw**Prosperity**

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www.rectron.com.tw**Taiwan Semiconductor**

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www.ts.com.tw**Vishay**

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www.vishay.com**Zowie**

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www.zowie.com.tw**Opto-Semiconductor**

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www.aocepi.com

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www.csbright.com.tw

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www.everlight.com

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www.ledtech.com.tw

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FAX:886-2-77036285

www.ligitek.com

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FAX:886-2-87982868

www.liteon.com

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FAX:886-3-5783696

www.opto.com.tw

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www.tyntek.com.tw

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www.uocnet.com

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www.incentia.com.tw

Mentor Graphics

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Silvaco Taiwan

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www.silvaco.com

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