



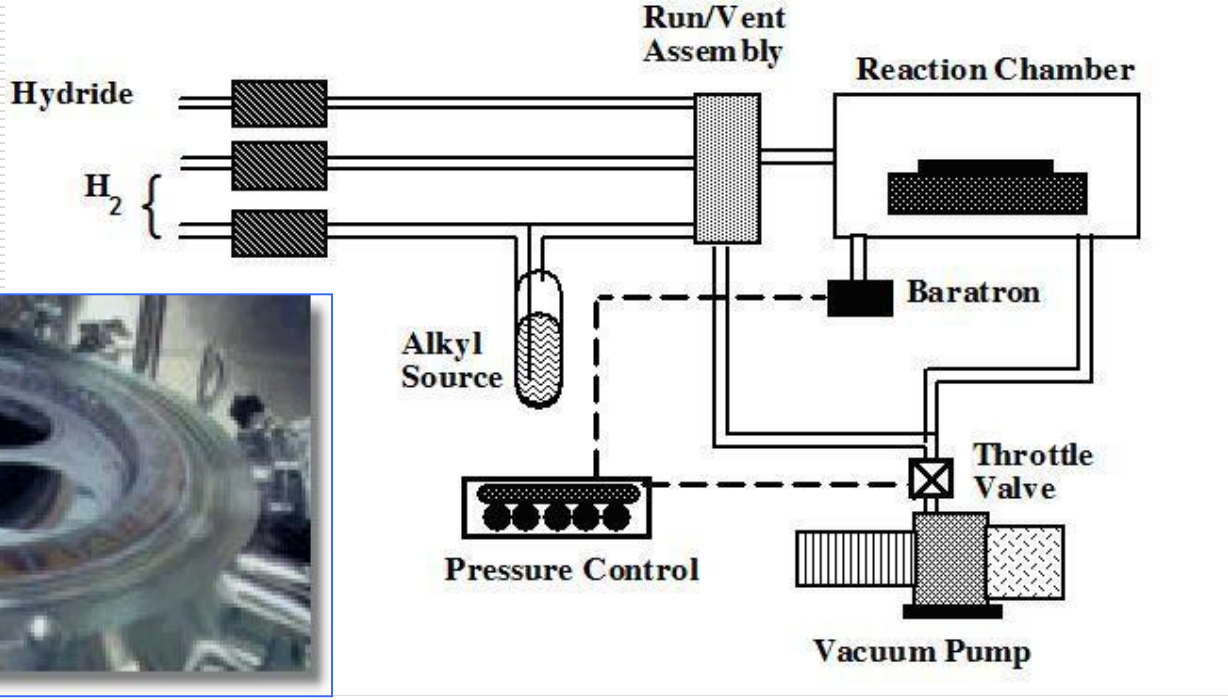
Company Profile

World-class leading edge with MOCVD

Core Technology

MOCVD（有機金屬氣相沉積法）

- Metal Organic Chemical Vapor Deposition



Core Technology

Production Reactor

MOCVD　Metal Organic Chemical Vapor Deposition

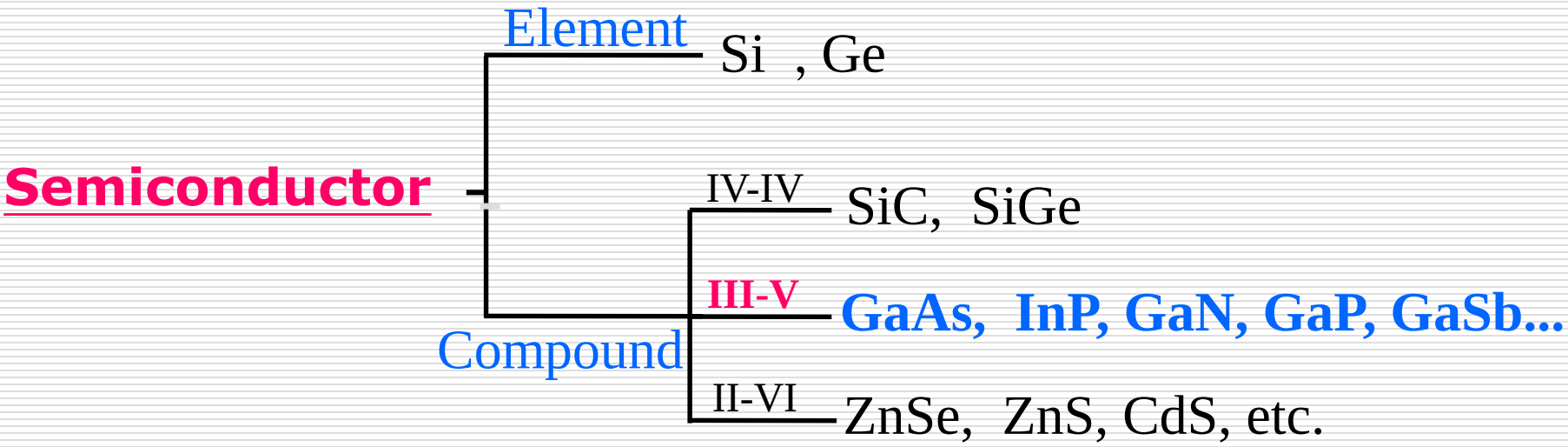
Way to Produce

Through the organic metal chemical vapor deposition method, the semiconductor film is grown on the substrate, and the epitaxial layer is accurately controlled through the real-time monitoring of the machine to complete the production of epitaxial wafers for different products such as GaAs 、 InP and GaN.

Production Principle

The epitaxial layer is heated by MOCVD in the cavity of the substrate, and an atomic layer is stacked layer by layer to form an epitaxial layer.

Semiconductor（by Material）



Period	Column II	III	IV	V	VI
2	Be 鈹 Beryllium	B 硼 Boron	C 碳 Carbon	N 氮 Nitrogen	O 氧 Oxygen
3	Mg 鎂 Magnesium	Al 鋁 Aluminum	Si 矽 Silicon	P 磷 Phosphorus	S 硫 Sulfur
4	Zn 鋅 Zinc	Ga 鎵 Gallium	Ge 鍺 Germanium	As 砷 Arsenic	Se 硒 Selenium
5	Cd 鎘 Cadmium	In 銦 Indium	Sn 錫 Tin	Sb 銻 Antimony	Te 碲 Tellurium
6	Hg 汞 Mercury	Tl 鉈 Thallium	Pb 鉛 Lead		

二元化合物 Binary : GaAs, InP, GaP,GaN, etc.

三元化合物 Ternary : InGaAs, InGaP, AlGaAs, etc.

四元化合物 Quaternary : AlGaInP, InGaAsP, etc.

五元化合物 Pentanary : AlGaInAsN, etc.

Chemical Reaction During Epitaxy

化學反應式：

$Ga(CH_3)_3 + AsH_3 \Longrightarrow GaAs + CH_4$

$In(CH_3)_3 + PH_3 \Longrightarrow InP + CH_4$

主要原物料:

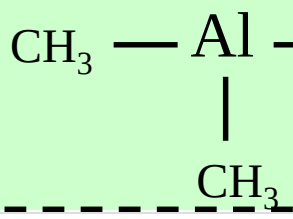
MO Source + **Hydride** + Carrier Gas：**H2**

TEAl : Tri-ethyl-Aluminum (C_2H5)$_3$Al
TMGa : Tri-Methyl-Gallium (CH_3)$_3$ Ga
TMIn : Tri-Methyl-Indium (CH3)$_3$In
DETe : Di-ethyl-Tellurium (C_2H5)$_2$Te
DEZn : Di-ethyl-Zinc (C_2H5)$_2$Zn
CP_2Mg : Bis (cyclo-penta-dienyl) Magnesium 環戊二烯鎂

AsH_3 : Arsine
PH_3 : Phosphine
SiH_4 : Silane
Si_2H_6 : Disiline
H_2Se : Hydrogen Selenide
CBr_4 : Carbon Tetrabromide

TMAl Tri - Methyl - Aluminum (CH_3)$_3$Al

三 甲基 鋁



Advantages of Compoundsemiconductor

1. High Electron Mobility高電子移動速率(5.7x higher than CM0S)
2. High Frequency Response高頻率響應
3. Wide Band Width　寬幅之頻寬
4. High Linearity高線性度
5. High Power高功率
6. Alternative Choice of Material材料選擇多元性
7. 抗輻射

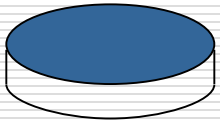
適用於**微電子產品**－HBT、pHEMT、BiHEMT、GaN on XX

光電子產品－ PIN（PD、APD）、VCSEL、LD、SC

GaAs in Wireless Communication Supply Chain

Sumitomo, Freiberg, AXT

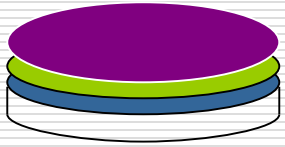
2~6 ”GaAs Substrate



MOCVD Reactor

GaAs Epi- Wafer

磊晶片

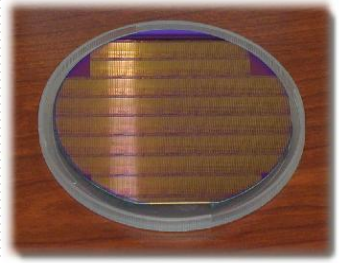


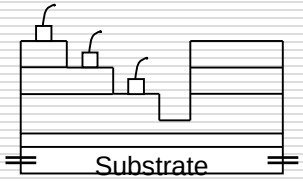
VPEC is a Pure Epi Provider

IDM：Qorvo, Skyworks

Fabless ：Avago, Qualcomm, Richwave,

Microelectronics IC Process





Foundry：

WIN, AWSC

Wireless Communication

IC Package & Testing

2021-2024 H1 Financial Result

	2024H1	%	2023	%	2022	%	2021	%
Revenue	1,712,996	100%	2,694,104	100%	2,603,629	100%	3,608,521	100%
Gross margin	688,277	40%	1,108,914	41%	1,089,007	42%	1,519,713	42%
Operating Profit	404,254	24%	542,069	20%	579,950	22%	1,056,519	29%
Non-operating income & expense	68,027	4%	-347	0%	87,533	3%	-3,842	0%
Tax	-78,494	-5%	-91,490	-3%	-122,755	-5%	-197,596	-5%
Net income	393,787	23%	450,232	17%	544,728	21%	855,081	24%
EPS	2.13		2.43		2.95		4.62	

2024 Outlook

Wireless RF

01 5G Mobile Penetration

02 WiFi 7

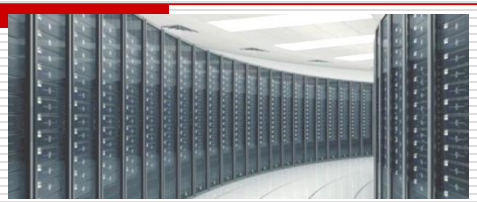
03 V2X

04 IoT Smart Link (4G PA)

2024 Outlook

Opto electronics

01 Data Center High Speed Connectivity



PD for 800G
VCSEL for 400G

02 3D-sening

VCSEL / PD

03 AR/VR

VCSEL

VCSEL for 800G

LEO Solar Cell

04 Future Driving Engines

AI glass

Silicon Photonics

P-sensor 、 3D Sensing & ToF

Car LiDAR (LD/PD)