



公司簡介

MOCVD創造世界級之競爭力

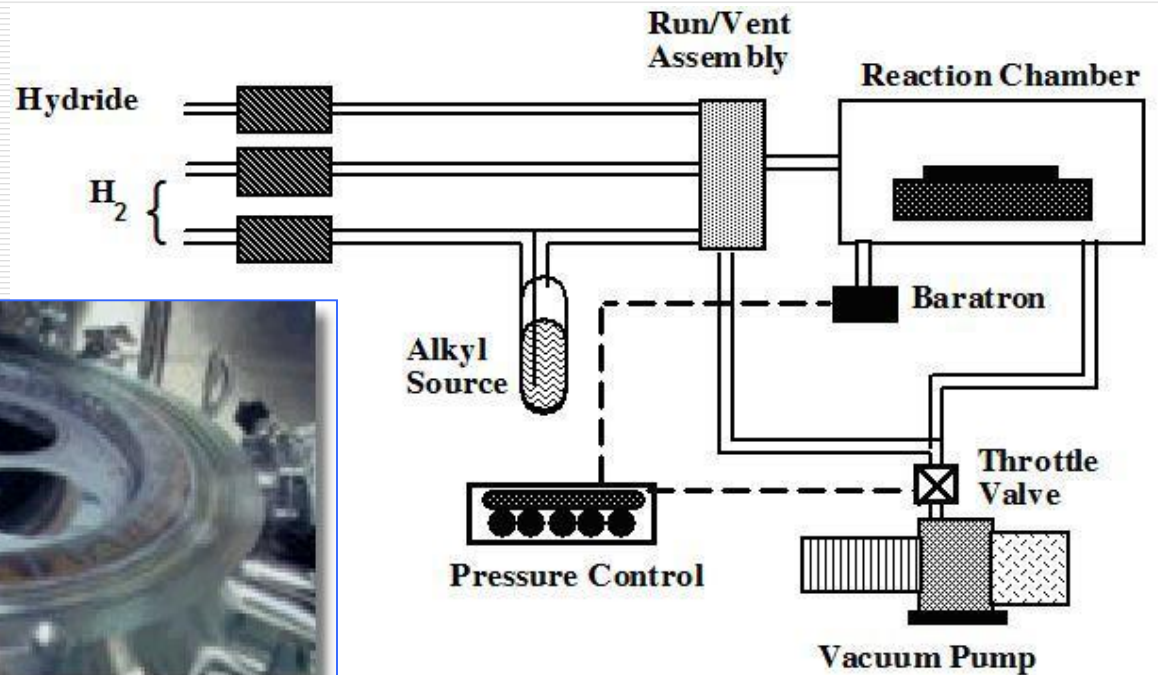




核心技術

MOCVD (有機金屬氣相沉積法)

- Metal Organic Chemical Vapor Deposition





核心技術

生產
機台

MOCVD有機金屬化學氣相沉積法
Metal Organic Chemical Vapor Deposition

生產
方式

透過有機金屬化學氣相沉積法，在基板上生長半導體薄膜的方式，同時透過機台即時監控，精確控制磊晶層，完成砷化鎵、磷化銦、氮化鎵等不同產品磊晶片生產。

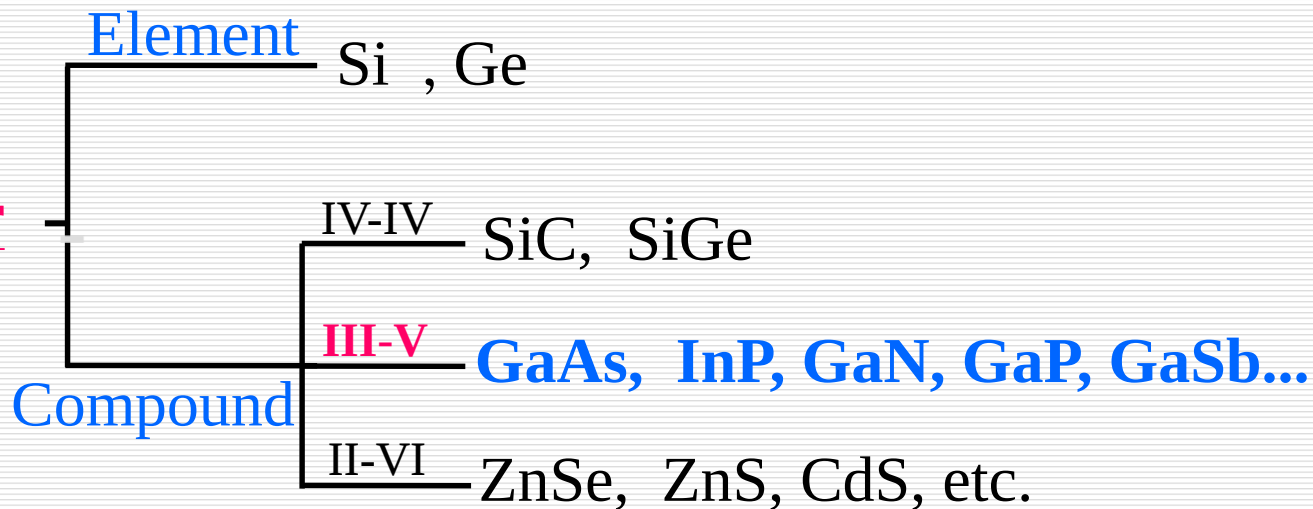
生產
原理

磊晶層是由MOCVD在腔體中加熱基板，一個原子層，層層堆疊，行成磊晶層。



半導體分類（依使用材料）

Semiconductor



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 鉍 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.

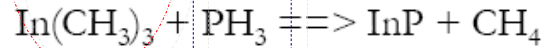
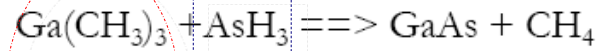
四元化合物 Quaternary : AlGaInP, InGaAsP, etc.

五元化合物 Pentanary : AlGaInAsN, etc.



磊晶過程中之化學反應

化學反應式：



主要原物料：

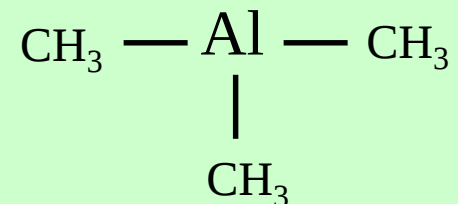
MO Source + **Hydride** + Carrier Gas : **H₂**

TEAl : Tri-ethyl-Aluminum (C_2H_5)₃Al
TMGa : Tri-Methyl-Gallium (CH_3)₃ Ga
TMIn : Tri-Methyl-Indium (CH_3)₃In
DETe : Di-ethyl-Tellurium (C_2H_5)₂Te
DEZn : Di-ethyl-Zinc (C_2H_5)₂Zn
CP₂Mg : Bis (cyclo-penta-dienyl) Magnesium 環戊二烯鎂

AsH₃ : Arsine
PH₃ : Phosphine
SiH₄ : Silane
Si₂H₆ : Disilane
H₂Se : Hydrogen Selenide
CBr₄ : Carbon Tetrabromide

TMAI Tri - Methyl - Aluminum (CH_3)₃Al

三 甲 基 鋁





化合物半導體材料特性

1. High Electron Mobility 高電子移動速率 (5.7x higher than CMOS)
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

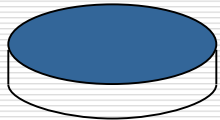
適用於微電子產品—HBT、pHEMT、BiHEMT、GaN on XX
光電子產品— PIN (PD、APD)、VCSEL、LD、SC、
CW-Laser、 GaN on XX



微電子產品 產業供應鏈

Freiberger, Sumitomo, AXT

6 "GaAs Substrate

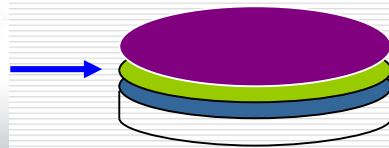


GaAs Epi- Wafer
磊晶片



MOCVD Reactor

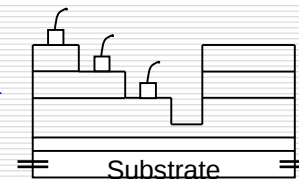
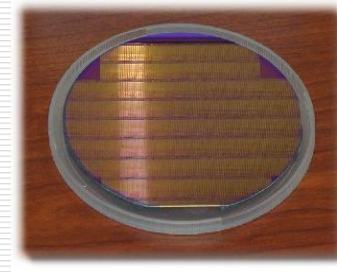
**VPEC is a Pure
Epi Provider**



IDM : Qorvo, Skyworks

**Fabless : Avago,
Qualcomm, Richwave,**

**Microelectronics
IC Process**



**Foundry :
WIN, AWSC**



**Wireless
Communication**



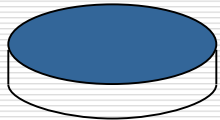
IC Package & Testing



光電子產品 產業供應鏈

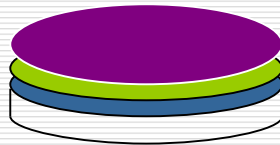
AXT, Freiburger, JX

2~4 "InP Substrate

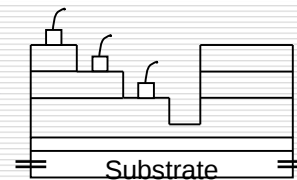
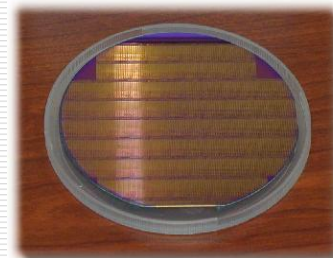


MOCVD Reactor

InP Epi- Wafer
磊晶片



Optoelectronics
IC Process



AI Data center



Optical Transceiver

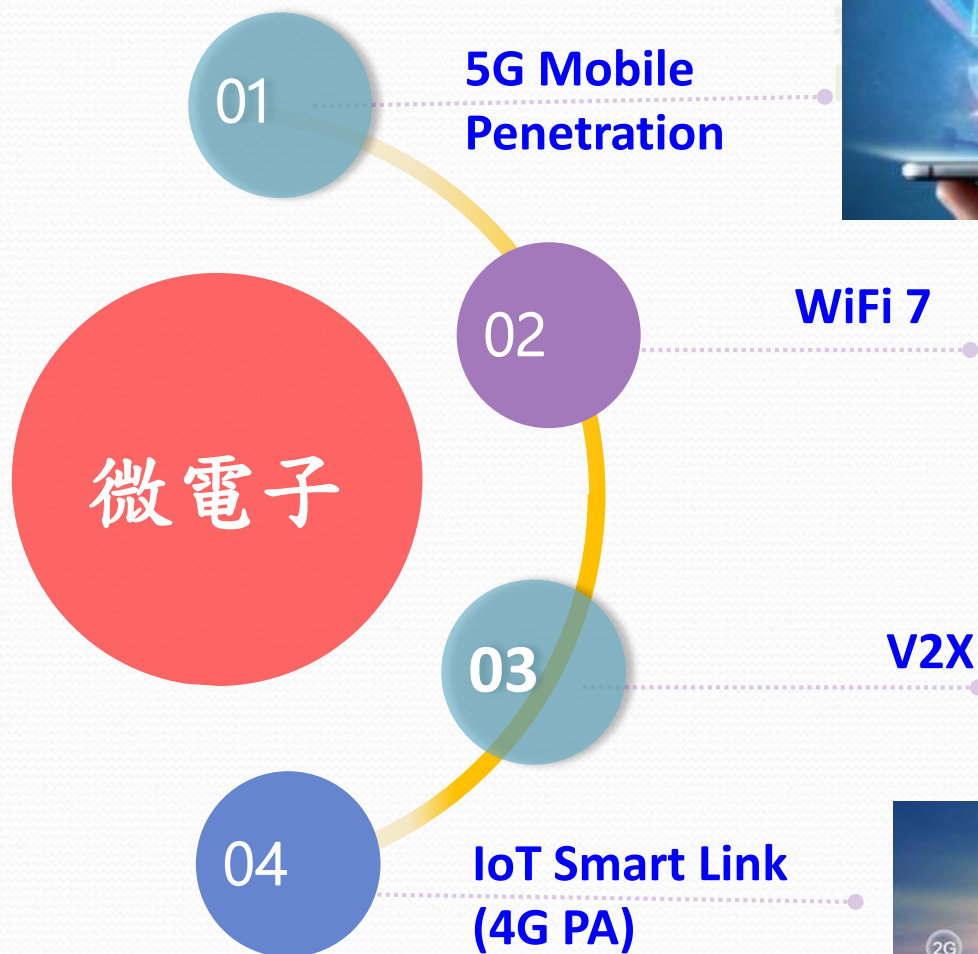
VPEC is a Pure Epi Provider



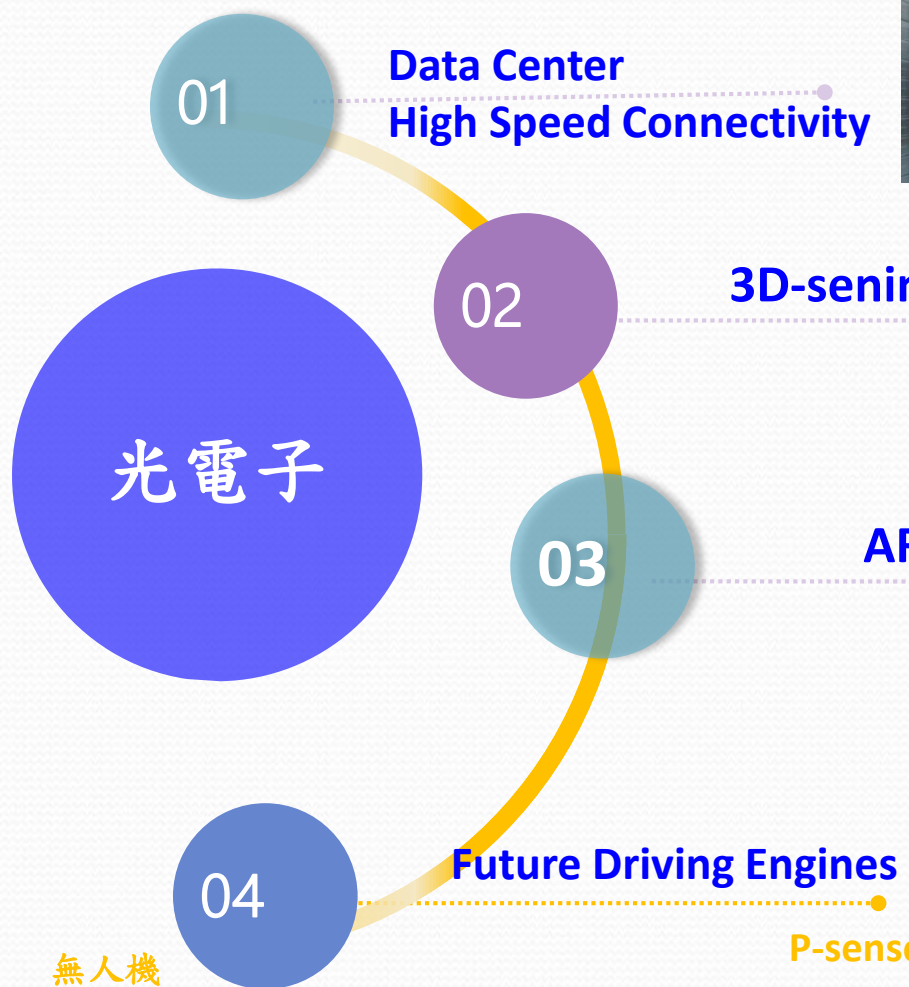
2023年-2026上半年度損益情形

	2026 H1	%	2025	%	2024	%	2023	%
Revenue	1,924,683	100%	3,380,143	100%	3,241,217	100%	2,694,104	100%
Gross margin	738,137	38%	1,219,726	36%	1,278,964	39%	1,108,914	41%
Operating Profit	450,464	23%	669,263	20%	721,214	22%	542,069	20%
Non-operating income & expense	29,836	2%	-1,912	0%	96,460	3%	-347	0%
Tax	-71,627	-4%	-119,409	-4%	-146,619	-5%	-91,490	-3%
Net income	408,673	21%	547,942	16%	671,055	21%	450,232	17%
EPS	2.20		2.97		3.63		2.43	

2027 Outlook



2027 Outlook



PD for 800G
VCSEL for 400G & 800G



VCSEL / PD



VCSEL

機器視覺



低軌道衛星



無人機



Future Driving Engines

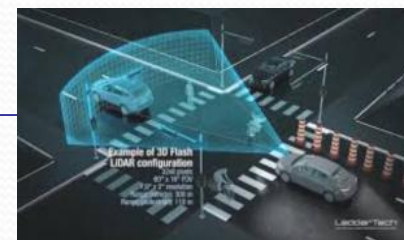
P-sensor、3D Sensing、ToF

AI glass

HAMR HDD



車用光達(LD/PD)



AI終端覺醒：感知×運算×機動



AI glass



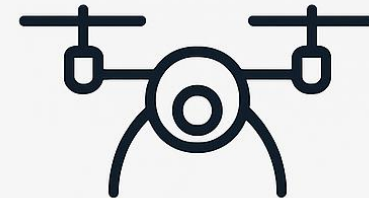
Micro LED
Wi-Fi 7
ToF

AI datacenter



CW-laser
VCSEL
PD

Drone



Solar Cell
Wi-Fi 7