



Your best solution

**ATECOM
TECHNOLOGY CO., LTD.**

ATECOM

Atecom Technology Co., Ltd.

is the manufacturer and supplier of semiconductor materials established at Taipei of Taiwan in 1998.

We manufacture and cooperate with our partners for various crystal materials like silicon ingots /wafers, epitaxial wafers ,diffusion wafers , Solar wafers , sapphire and Ge wafers.

In the meantime, we are expanding our product lines to serve our customer requests for compound semiconductor like SiC, GaN, InP and GaAs wafers for applications to optoelectronics, MEMS, LED , power devices, solar modules and IC's.



ATECOM

HQ/Branch

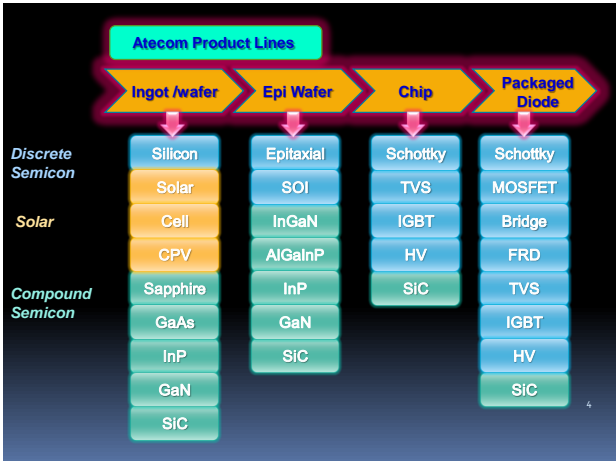
- Taipei : 25 people
- USA : 5 people
- Europe : 3 people
- China : ShenZhen, ShangHai 8 people
- 4 joint venture companies with partners : CY,HL,SP,JR
- Turnover: US10M



Major Customer at each country

- Taiwan : UMC, Mosel, Vishay General Semi, VIS, Maxchip, Episil, Hermes, Tynstek, Optotech, Taiwan Semi, Everlight, Epistar, NEO, Motech, SAS, AUO, E-TON,
- Japan : Phenitech, NTT ,Rohm ,Omron ,Panasonic ,Hitachi, NIEC
- Korea : LG, Hyundai, KEC, AUK, Magachip, Soul Semi,
- USA : Microsemi (6 divisions), IR, Powerex, Ultrasil, Analog Devices, Semitron, GE, XFAB, IXYS, INTEL, Semtech, Macom, Skyworks, OSI, Diodes, Suniva, etc.
- Europe : ABB, Infineon, Semikron, Fagor, First Sensor, Dynex, Integral, Diotec, Vishay (Austria, Israel, Italy), Altis, Semifab, Bosch, Westcode, IXYS GmbH

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ISO 9001:2000/2008 Certificate




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Business Product lines

Semiconductor

- Silicon Ingot/Wafer
- Silicon Epitaxial Wafer
- Silicon Diffusion Wafer
- Silicon SOI Wafer
- Silicon Processing Wafer/Chip (SKY/MOSFET/TVS/GPP/IGBT/FR)



Compound

- LED/Windows - Sapphire Wafer/EPI/Chip
- LED/Microwave - GaAs Wafer/EPI/Chip
- Compound Wafer - Ge Wafer/EPI
- Compound Wafer - InP Wafer/EPI/Chip
- Compound Wafer - SiC Wafer/EPI

Research

- Compound Wafer - GaN Wafer/EPI
- Compound Wafer - Graphene Wafer

Semiconductor

> Silicon Ingot / Wafer

Growth method : CZ, CFZ, MCZ, FZ, NTD
 Type/Dopant : N/Arsenic/Sb/Phos/Red Phos, P/Boron
 Diameter : 2", 3", 4", 5", 6", 8", 12"
 Orientation : <100>, <111>, <110>
 Surface : as cut, etched, lapped, polished.
 Other specs per customer requirement
 Capacity : 3" 100k pcs/m, 4"-5" 500k pcs/m,
 6"-12" 150kpcs/m



Semiconductor

> Solar Wafers – Mono/Multi

Monocrystalline

Dimension : 125*125 & 156*156 & 156.75*156.75 mm
 Ingot Growth : CZ/CFZ
 Pseudo Mono wafer
 Type / Dopant : P / Boron and N / Phos.
 Orientation : <100>
 Thickness : 200 +/- 20um
 Lifetime : >100us
 Resistivity : 0.5-3 ohm-cm
 Capacity : 20,000,000-30,000,000 pcs/m



Multicrystalline

Diameter : 125 * 125 & 156 * 156 mm
 Ingot Growth : DS
 Full Square Multi
 Lifetime : >2
 Capacity : 6,000,000-7,000,000 pcs/m



Semiconductor

> Epitaxial Wafer

Diameter : 3", 4", 5", 6", 8"
 Type : P/P+, P/P++, N/P/P, N/N+, N/N/N+, P/N/N+,
 N/N/+,
 Thickness : < 150 um
 Resistivity : 0.005 ~ 80 ohm-cm
 (for special proposal could be up to 1000 ohm-cm)
 Epi Layer : Single or Multiple layers
 Capacity : 3" 30k pcs/m, 4"-5" 70k pcs/m,
 6"-8" 100k pcs/m



Compound

> SiC Wafer/Ingot

Diameter : 2", 3", 4"
 Orientation : (0001)
 Type : N/4H,SI/4H,SI/6H
 Thickness : 350~550 um, customizable
 Growth Method: PVT
 MPD : <100
 Surface : EPI-Ready Polish Wafer
 Capacity : Phase 1 : 5k~10k pcs/m
 Phase 2 : 30~50k pcs/m



Compound

> SiC EPI wafer

Diameter : 4" and 6"
 Polytype: 4H
 Conductivity: N-type or P-type
 Surface: (0001) Silicon-face
 Carrier Concentration : 5E15~1E19 cm⁻³
 Thickness: 0.5~20 um



Semiconductor

> Ge Wafer – CPV Solar cell substrate

Diameter : 4", 6", ,ingot can be larger
 Orientation : (100)
 Type : P/Ga or N/As
 Thickness : 180~260 um, customizable
 Growth Method: CZ,VGF
 EPD : <1000
 Surface : Single Side Polish Wafer
 Capacity : Phase 1 : 5k~10kpcs/m
 Phase 2 : 100~150 kpcs/m



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- SOI wafer – MEMS
 - Diameter: 4"~8"
 - Type: N-type / P-type
 - Resistivity: 0.001~10000 ohm.cm
 - Device thickness: 100nm~100um
 - BOX layer: 100nm~3um
 - Handle thickness >300um
 - Surface: Polished
- Capacity : 6in 10k pcs/m
8in 5k pcs/m



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Compound

➤ Sapphire Wafer/Ingots

- Diameter : 2", 4", 6"
- Orientation : (C-Plane 0001)
- Flat : (11-20), (10-10)
- Thickness : 2"/330~430 um, 4"/650 um
- Single Crystal Purity : 99.996%
- Surface : Single or Double Side Polished
- PSS : Pattern Sapphire Substrate
- Capacity : Phase 1 : 50 kpcs/m
Phase 2 : 150 kpcs/m



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Compound

GaN/Sapphire EPI Wafer – LED Application

- Sapphire EPI – LED
- Active Area: InGaN
- Surface Area: GaN
- Surface contact dopant: Mg/Zn/C/SiP
- Thickness: $8 \pm 3 \mu\text{m}$
- Wave length range (AD): 430 ~ 480 nm
- Total Thickness: $430 \pm 30 \mu\text{m}$
- Edge exclusion: 3mm
- Capacity : 2in 8k-10k pcs/month



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Compound

➤ GaAs Wafer/Ingots

- Diameter : 2", 3", 4"
- Orientation : (100)
- Flat : (0-1-1), (0-11)
- Thickness : 350~650 um, customizable
- Growth Method: LEC, HB, VB, VGF
- Hall Mobility : 1500 for dopant, 10000 for non-dopant
- Surface : Single or Double Side Polish Wafer
- Capacity : Phase 1 : 25~35 kpcs/m
Phase 2 : 100~120 kpcs/m



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Compound

➤ GaAs EPI Wafer

- Diameter : 2", 4" is sampling now
 - Orientation : (100)
 - Flat : (0-1-1), (0-11),
 - Thickness : 350~490 um/2"; 650 um/4"
 - Hall Mobility : 1500 for dopant, 10000 for non-dopant
 - Surface : Single or Double Side Polish Wafer
- Capacity : Phase 1 : 25~35 kpcs/m
Phase 2 : 40~50 kpcs/m



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➤ InP Wafer – Optical/LD/PD

- Diameter : 2", 3"
- Orientation : (100)
- Type : S-dopant/Fe-dopant
- Thickness : SEMI standard
- Growth Method: LEC, VGF is under develop
- EPD : <1000
- Surface : Single Side Polish Wafer
- Capacity : Phase 1 : 3k~5kpcs/m
Phase 2 : 10~15 kpcs/m



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Compound

➤ GaN Wafer – LED/LD/Power device

Diameter : 2", 4"

Product : Free-Standing Substrate/Temp

Orientation : C-axis(0001)

Type : N/SI

Thickness : 300 um for substrate, 15~90um for Temp

Growth Method: HVPE

Surface : EPI-Ready Polish Wafer

Capacity : Phase 1 : 0.5k~1k pcs/m

Phase 2 : 3~5k pcs/m



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Compound

➤ AlGaInP/GaAs LED/Chip – Red/Yellow/Orange/Green

High-Dopant level		P-GAP			
Window level		P-AlGaInP			
		MQW			
Emitting Area		N-AlGaInP			
DBR		GaAs/AlAs			
Substrate		N-GaAs 350um			
parameter	Condition	Min.	Typ.	Max.	Unit
Forward Voltage (V _f)	I _f =10mA	1.35	--	--	V
Forward Voltage (V _f)	I _f =20mA	--	--	2.2	V
Reverse Current (I _r)	V _r =10V	--	--	2	μA
Wavelength (λ _e)	I _f =20mA	615	--	645	nm
FWHM (Δλ)	I _f =20mA	--	10	--	nm

Item	Unit	Red	Orange	Yellow	Yellow/Green
Wave Length (λ _e)	nm	615-622/OR	595-602/YO	580-587/LY	565-575/YG
Wave Length (λ _e)	nm	620-627/LR	600-607/LO	585-592/SY	
Wave Length (λ _e)	nm	625-632/SR	605-612/SO	590-597/DY	
Wave Length (λ _e)	nm	630-637/DR	610-617/DO		
Wave Length (λ _e)	nm	635-645/LR			
Wave Length (λ _e)	nm	655-665/LR			

Level	LG	LH	LI	LJ	LK	LL	LM	LN	LO
Iv avg(mcd)	40	50	60	70	80	90	100	110	120

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➤ GaN/Sapphire EPI Wafer – Blue LED/Chip

p-GaN	Active Area: InGaN	430 nm~ Ad - 440 nm
p-AlGaIn	Surface Area: GaN	440 nm~ Ad - 450 nm
InGaInGaIn(active area)	Surface contact dopant: Mg/Zn/C/SiP	450 nm~ Ad - 460 nm
In-GaN	Thickness: 8 ± 3 μm	460 nm~ Ad - 470 nm
i-GaN	Wave length range (λ _e): 430 ~ 480 nm	470 nm~ Ad - 480 nm
i-GaN	Total Thickness: 430 ± 30 μm	480 nm~ Ad - 490 nm
Sapphire (Substrate)	Edge exclusion: 3mm	

Item	Unit	Blue	Description			
Wave Length (λ _e)	nm	430 - 480	I _f = 20mA			
V _f	V	< 3.4	Forward Voltage			
Base on Chip Size		10x23 mil	6x9 mil			
Iv	mW	A	0 - 10	A	0 - 10	I _f = 20mA
		B	10 - 20	B	10 - 13	
		C	20 - 23	C	13 - 14	
		D	23 - 24	D	14 - 15	
		E	24 - 25	E	15 - 16	
		F	25 - 26	F	16 - 17	
		G	26 - 27	G	17 - 18	
		H	27 - 28	H	> 18	
		I	> 28			

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➤ GaN HEMT epitaxial wafer – Microwave Power Device

Diameter : 2", 3", 4"

Product : III-Nitride based HEMT epitaxial wafer

Orientation : C-axis(0001)

Substrate Type: Sapphire, SiC

Structural specifications: AlGaIn/GaN , customizable

Electrical specifications:

sheet resistance 280Ω/□ to 500Ω/□, customizable

mobility ≥ 1800cm²/V·s

sheet density ≥ 8E+12cm⁻²

Growth Method: MOCVD

Capacity : 200 pcs/m



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Graphene —RF or Digital Circuit

Size : 10x10 mm², 20x20 mm², 2", 3"

Substrate : S.I.-SiC Si-face (0001)

Type : n/p

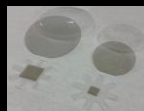
Layer number : 1~3

Hall Mobility : ~1000cm²/V·s for n type

~1500cm²/V·s for p type

Sheet Density : ~1E+13cm⁻²

Capacity : 40 pcs/m



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Contact Information



Address : 4F-3, No.58, Hsingshan Rd., Neihu Dist
Taipei, Taiwan, R.O.C.



Tel. : +886-2-27942800

Fax : +886-2-27949800



E-Mail : sales@atecom.com.tw