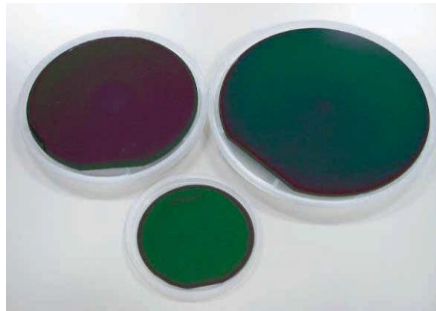


## NTT-AT GaN HEMT epiwafer on Si/SiC/Sapphire/GaN



### Applications

#### Power electronics

Switching devices  
(AC-DC/DC-DC converter, Motor, Automobile)

#### High-frequency communication systems

Power amplifier  
(Wireless system base station)

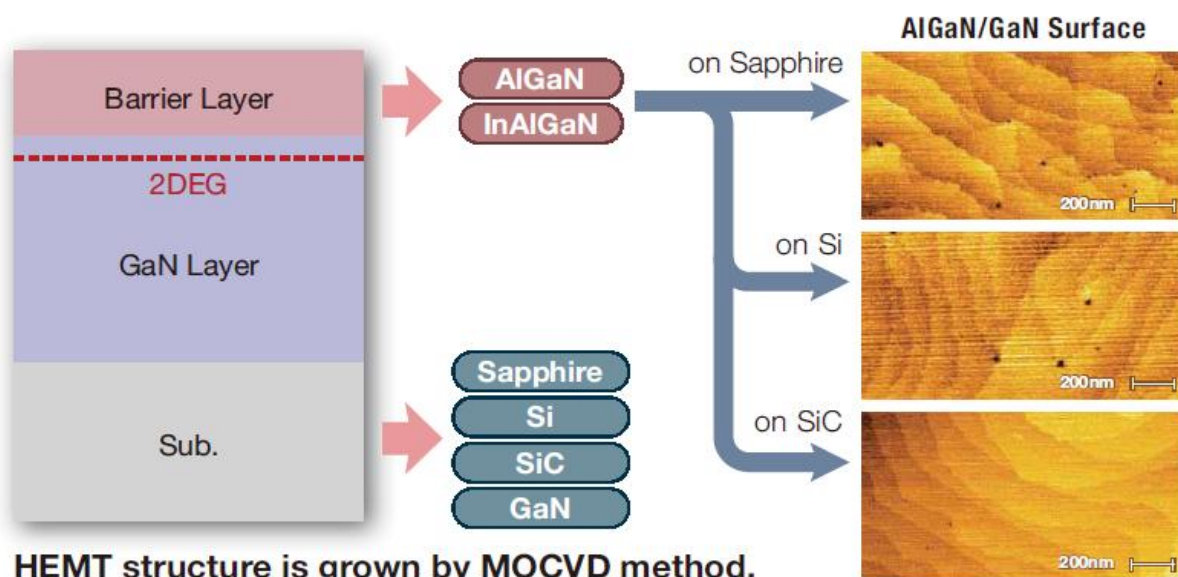
### Benefit

High power density ; High efficiency ; Small figure ; Low cost

### GaN HEMT Epi Products

Epi	Size	Substrate
AlGaIn/GaN HEMT Epi	2~4 inch	Sapphire
	2~6 inch	Si
	2~4 inch	SiC
	2 inch	GaN

### Layer Structure and AFM Images of HEMT epi surface



## GaN on Si Layer Structure

Cap Layer	
Material	GaN
Doping	Doped or un-doped
Thickness	0-5 (nm)
Barrier	
Material	AlGaN
Al content	10-50%
Doping	Doped or un-doped
Thickness	< 50 (nm)
Buffer	
Material	(Al) GaN
Thickness	1-5 ( $\mu$ m)
Features	
Sheet resistance: 200-800 Ohm/sq.	
Sheet carrier density: $5E12-2E13$ ( $cm^{-2}$ )	
Electron mobility: 1,200-2,200 $cm^2/Vs$	
Breakdown voltage: 200-1800 V (depending on the device structure)	

