

PAM-XIAMEN specializes in GaN-based ultra high brightness blue and green light emitting diodes (LED) and laser diodes (LD). We offer *GaN Free-standing wafer* and GaN Templates.

Freestanding GaN Substrate Product Specifications

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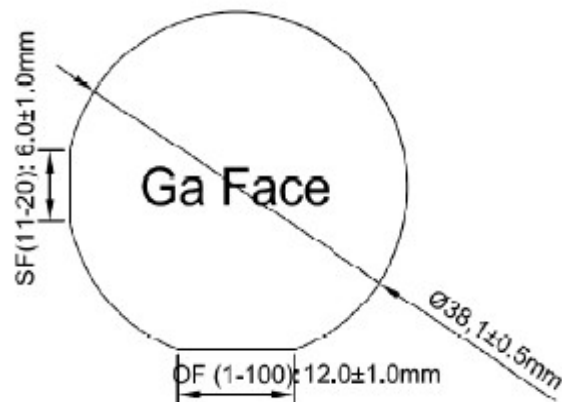
2" GaN Free-standing Substrate

Item	PAM-FS-GaN50-N	PAM-FS-GaN50-SI
Conduction Type	N-type	Semi-insulating
Size	2"(50.8) \pm 1mm	
Thickness	260 \pm 20 μ m	
Orientation	C-axis(0001) \pm 0.5 $^{\circ}$	
Primary Flat Location	(1-100) \pm 0.5 $^{\circ}$	
Primary Flat Length	16 \pm 1mm	
Secondary Flat Location	(11-20) \pm 3 $^{\circ}$	
Secondary Flat Length	8 \pm 1mm	
Resistivity(300K)	<0.5 Ω ·cm	>10 6 Ω ·cm
Dislocation Density	<5 \times 10 6 cm $^{-2}$	
Marco Defect Density	A grade \leq 2cm $^{-2}$ B grade $>$ 2cm $^{-2}$	
TTV	\leq 15 μ m	
BOW	\leq 20 μ m	
Surface Finish	Front Surface:Ra<0.2nm.Epi-ready polished Back Surface:1.Fine ground 2.Rough grinded	
Usable Area	\geq 90 %	



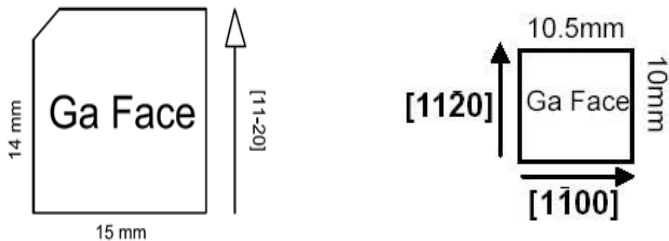
1.5" GaN Free-standing Substrate

Item	PAM-FS-GaN38-N	PAM-FS-GaN38-SI
Conduction Type	N-type	Semi-insulating
Size	1.5"(38.1) \pm 0.5mm	
Thickness	260 \pm 20um	
Orientation	C-axis(0001) \pm 0.5°	
Primary Flat Location	(1-100) \pm 0.5°	
Primary Flat Length	12 \pm 1mm	
Secondary Flat Location	(11-20) \pm 3°	
Secondary Flat Length	6 \pm 1mm	
Resistivity(300K)	<0.5 Ω ·cm	>10 ⁶ Ω ·cm
Dislocation Density	<5 \times 10 ⁶ cm ⁻²	
Marco Defect Density	A grade \leq 2cm ⁻² B grade>2cm ⁻²	
TTV	\leq 15um	
BOW	\leq 20um	
Surface Finish	Front Surface:Ra<0.2nm.Epi-ready polished Back Surface:1.Fine ground 2.Rough grinded	
Usable Area	\geq 90 %	



15mm,10mm,5mm GaN Free-standing Substrate

Item	PAM-FS-GaN15-N	PAM-FS-GaN10-N	PAM-FS-GaN5-N	PAM-FS-GaN15-SI	PAM-FS-GaN10-SI	PAM-FS-GaN5-SI
Conduction Type	N-type			Semi-insulating		
Size	14.0mm*15mm	10.0mm*10.5mm	5.0*5.5mm			
Thickness	230+/-20um, 280+/-20um					
Orientation	C-axis(0001)+/-0.5°					
Primary Flat Location						
Primary Flat Length						
Secondary Flat Location						
Secondary Flat Length						
Resistivity(300K)	<0.5Ω·cm			>10 ⁶ Ω·cm		
Dislocation Density	<5x10 ⁶ cm ⁻²					
Marco Defect Density	0cm ⁻²					
TTV	<=15um					
BOW	<=20um					
Surface Finish	Front Surface:Ra<0.2nm.Epi-ready polished Back Surface:1.Fine ground 2.Rough grinded					
Usable Area	≥ 90 %					



Note:

Validation Wafer: Considering convenience of usage, PAM-XIAMEN offer 2" Sapphire Validation wafer for below 2" size Freestanding GaN