

Gallium Nitride (GaN) Components

ANMD-MRS7-067 · Advanced Semiconductor Applications

A Global Sustainability Due Diligence & Market Research Study

History 2020–2024 · Base Year 2025 · Forecast 2025–2032 · Outlooks 2035 / 2040 / 2050 · Currency US\$

WHY THIS REPORT

Gallium nitride components are the high-frequency, high-efficiency edge of wide-bandgap power and RF — the GaN HEMTs and GaN-on-Si devices that switch faster and run cooler than silicon in chargers, data-centre power, solar micro-inverters and 5G RF front-ends. This decision-grade study sizes the global market three ways — value, unit volume and GHz/W performance — across component type, substrate and application, across seven regions and four scenarios to 2032, with outlooks to 2050.

SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone, not an afterthought. GaN's core contribution is energy-loss reduction and material/enclosure savings from higher density across chargers, power and RF, translating into avoided emissions and resource use.

Mapped Sustainable Development Goals:

SDG 7 Affordable & Clean Energy	SDG 9 Industry, Innovation & Infrastructure	SDG 12 Responsible Consumption	SDG 13 Climate Action
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Measurable sustainability outcomes assessed:

- Energy-loss reduction across chargers, power and RF
- Material and enclosure savings from higher density
- Avoided emissions and resource use
- Fab energy, gallium sourcing and end-of-life as material risks

Framework alignment: Double materiality mapped to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, with greenwashing and SDG-washing screens applied throughout.

WHAT'S INSIDE AT A GLANCE

53 Chapters	9 Report Parts	7 Regions Covered	40+ Country Markets
2025–32 Forecast Horizon	4 Forward Scenarios	25+ Companies Profiled	4 SDGs Mapped

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. North America leads power-GaN innovation; Asia Pacific is the volume and China-capacity engine; Europe and integrated players bridge power and RF; other regions assessed on their own merits.

MARKET OVERVIEW

From fast chargers into power and RF — where GaN-on-Si cost decline unlocks mass-market adoption.

GaN is scaling from chargers into power and RF. Demand is driven by fast chargers and adapters, data-centre and telecom power, solar micro-inverters and 5G RF — with GaN-on-Si cost decline central to broader adoption. The market is read three ways — value, unit volume and GHz/W performance — and forecast under four scenarios, each region reported separately.

- **North America leads power-GaN innovation** — United States, on chargers, data-centre power and conversion
- **Asia Pacific is the volume and China-capacity engine** — China, Japan and Taiwan, on a vast consumer-charger and telecom base
- **Europe and integrated players bridge power and RF** — Germany and France, spanning power GaN and adjacent RF
- **GaN-on-Si cost is the differentiator** — manufacturing on silicon wafers drives the cost decline that unlocks mass-market power adoption

REGIONAL OUTLOOK

Across seven reporting regions, the report separates leading markets from high-growth and emerging ones — each profiled in full rather than aggregated into Rest of World.

Region	Stage	Lead Markets & Drivers
North America	Power-GaN leader	United States — chargers & DC power
Asia Pacific	Volume & China capacity	China, Japan, Taiwan — chargers, telecom
Europe	Power-RF bridge	Germany, France — power & RF GaN
Latin America	Emerging	Brazil, Mexico — consumer electronics, telecom
Africa	Frontier	South Africa, Nigeria — telecom RF, off-grid power
Middle East	Frontier	UAE, Saudi Arabia — 5G build-out, solar conversion

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Fast chargers & compact adapters • Data-centre & telecom power efficiency • 5G RF front-end demand • Solar micro-inverters & conversion • GaN-on-Si cost decline	• Reliability & qualification at high voltage • GaN-vs-silicon cost crossover • Limited high-voltage range vs SiC • Supply & IP concentration • Thermal-management constraints

SEGMENTATION SNAPSHOT

By Component Type	Power GaN (HEMT) · GaN RF · integrated / IC GaN
By Substrate	GaN-on-Si · GaN-on-SiC · GaN-on-GaN
By Application	Chargers & adapters · data-centre power · solar micro-inverters · 5G RF · automotive
By End User	Consumer-electronics OEMs · telecom · data-centre · automotive
By Voltage Class	Low-voltage · 100–650 V
By Business Model	Device sale · IP licensing · foundry · co-design

TABLE OF CONTENTS — PARTS & CHAPTERS

The full report is organised into nine parts across 53 chapters, listed below. Detailed sub-headings, country tables and directories are provided in the full report.

Part I — Report Foundation, Discovery and Strategic Intelligence

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- › Chapter 2. Industry Discovery Summary — Gallium Nitride (GaN) Components
- › Chapter 3. Executive Intelligence and Decision Dashboard
- › Chapter 4. Strategic Findings, Materiality and Investment Verdict Preview

Part II — Market Intelligence, Sizing, Forecasting and Segmentation

- › Chapter 5. Industry Overview and Market Evolution
- › Chapter 6. Market Dynamics
- › Chapter 7. Global Market Size and Forecast, 2020–2032
- › Chapter 8. Market Segmentation Analysis
- › Chapter 9. End-User and Demand-Side Intelligence
- › Chapter 10. Pricing, Cost and Commercial Model Intelligence

Part III — Regional and Country Intelligence

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- › Chapter 21. Category-Specific Intelligence Module
- › Chapter 22. Research, Innovation and Funding Landscape

Part V — Company, Competition, Patent and Project Intelligence

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Part VIII — Scenario, Future Intelligence and Final Due Diligence Verdict

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- › Chapter 45. Bottom-Line Verdict and Strategic Recommendations
- › Chapter 46. Implementation Roadmap and Stakeholder Playbooks

Part IX — Annexes, Directories and Reference Material

- › Chapter 47. Methodology Annex
- › Chapter 48. Corporate Directory and Company Intelligence Annex
- › Chapter 49. Patent Directory and Patent Intelligence Annex
- › Chapter 50. Project Intelligence Annex
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- › Chapter 52. Sustainability KPI Annex
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COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans power-GaN innovators, integrated IDMs and GaN-RF specialists. Deal activity — IP consolidation, foundry partnerships and OEM design wins — signals a market consolidating around low-cost GaN-on-Si platforms and integrated GaN ICs.

Representative players profiled in the full report:

Infineon Technologies AG · Navitas Semiconductor Corporation · Power Integrations, Inc. · Texas Instruments Incorporated · STMicroelectronics N.V. · ON Semiconductor Corporation · Qorvo, Inc. · and 18+ further profiled players.

Investment intelligence: venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a conditional investment view.

KEY QUESTIONS THIS REPORT ANSWERS

- How large is the global GaN components market, and how fast will it grow to 2032?
- Which regions, countries and segments offer the strongest risk-adjusted opportunity?
- How does GaN-on-Si cost decline change value versus silicon and SiC?
- Who leads, and where is the competitive and patent white space?
- Is the investment case bankable — and under what conditions?
- How does the category align with the SDGs, energy efficiency and disclosure regulation?

WHY ANMD — THE DIFFERENCE

Most market studies stop at units and revenue. This report is built as a sustainability due diligence instrument — fusing market sizing with ESG, SDG, climate, water and natural-capital intelligence and a decision-ready bankability view in a single architecture.

- **Triangulated sizing** — every market read three ways so value, volume and the physical-unit views reconcile rather than conflict.
- **Region-honest forecasting** — Latin America, Africa and the Middle East reported in full, never hidden inside Rest of World, every forecast resolved to the 2025 base year.
- **Integrated evidence base** — company, patent and project databases linked to the analysis, with published-filing patents and FTO treated as an indicator, not a legal conclusion.
- **No-fabrication discipline** — every estimate carries a data-confidence rating and disclosed sources; gaps are flagged for further diligence, never filled with invented numbers.
- **Anti-greenwashing rigour** — SDG-washing and greenwashing screens plus claim-substantiation checks built into the ESG and project analysis.
- **Decision-first structure** — 9 Parts and 53 Chapters culminating in stakeholder playbooks and a clear, conditional investment view.

WHO SHOULD BUY THIS REPORT

Investors, OEMs, telecom and data-centre buyers, foundries, lenders and policymakers, and strategic corporate planners and decision-makers.

Access the Full Report

The complete report delivers all 53 chapters in full, with every sub-heading, country table, company and patent directory, forecast model and due diligence checklist.

Purchase at www.anewmarketdynamics.com · Standard & Premium licences · Single-Site (SSL) and Global-Site (GSL) options at checkout.

Want the Complete Detailed Table of Contents?

This prospectus lists the nine parts and 53 chapters. The complete detailed table of contents — every sub-heading, country table, exhibit, company and patent directory and annex — is available on request to registered users. To receive it, register with your official company email at www.anewmarketdynamics.com. The full detailed table of contents will be sent directly to your registered company email address.