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	SDG 9	SDG 12	SDG 13
Affordable & Clean Energy	Industry, Innovation & Infrastructure	Responsible Consumption	Climate Action

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.

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.