SiC and GaN Applications in Electric Vehicles: Current Issues
Accelerating Market adoption of WBG

- Customer understanding how to get the full benefit from using WBG
- Reliability and quality
- Offering the best WBG technology for the solution
- Solving supply chain issues
- Cost roadmap
- Environmental CO2 impact / ESG
#1 in Power GaN & Accelerating Growth

Beyond Chargers

- ANKER
- AUKEY
- RAVPOWER
- 
- Conservation

- Headcount, Valuation & Revenues

- World's 1st GaN Power IC Prototype
- World's 1st GaN Half-Bridge Prototype
- World's Smallest 25W USB-A
- 3.2kW Data Center Prototype
- 30+ Patents
- 30+ Mass Production
- World's Smallest 150W
- World's Smallest 65W USB-PD
- World's Smallest 300W
- World's Smallest 65W
- World's Smallest 45W USB-PD
- World's Smallest 27W USB-PD
- 100+ Patents
- 120+ Patents
- 20M Shipped
- 40M Shipped
- 50M Shipped
- Zero Failures

- Innovation Award Honoree
- Data Center Design Center
- Data Center, Solar, EV Validation
- Industry-First
- 150+ Patents
- Warranty

- Samsung
- Motorola
- Amazon
- Enphase
- Redmi
- Vivo
- LG
- BRUSA
- UGREEN
- OPPO
- Lenovo
- ASUS
- NVIDIA
- Baseus
- Hyper
- Belkin
- Realme
- Spigen
- DensityPower
- Best Buy

- IPO: NVTS
- Nasdaq

- Future
Navitas Opens World’s First GaN IC Design Center Dedicated to Electric Vehicles (EV)

Navitas Opens New Design Center Focused on Enabling GaN-based Data-Centers

“The main advantages of Navitas GaN power ICs, are simplicity of driving high-speed switching performance, increased reliability and compact form factor” (Dr Bernhard Budaker, vice president at BRUSA)

“Navitas is an excellent partner with industry-leading GaN IC technology...to create new, breakthrough standards for high-performance computing, as the world’s demand for data increases.” (Robin Cheng, VP of Compuware’s R&D team)
Navitas

GaN + SiC

Pure-Play Next-Gen Power Semiconductors
Only Pure-Play Next-Gen Power Semi Company

SiC
$9.3B(1)

GaN / SiC
$6.1B(1)

GaN
$7.0B(1)

Si
Low-Voltage: DC-DC Converters, PMICs, Point-of-Load

Voltage Rating

3.3V ~ 36V
80 V
150 V
650 V

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Note: Axes not to scale
Note (1): 2026E potential, Source: Yole, DNV, IRENA, Fraunhofer ISE, IHS, Cisco, Hyperscale, Peer annual reports, Wall Street research.
$12B/yr Potential for GaN/SiC by 2030(1)

- OBC > $38
- DC-DC > $12
- Traction drive > $286

• Total: > $330 per EV = $10.1B
...and > $1.9B in road-side chargers

Note: Assumes 150 kW traction inverter, 100 kWh battery, $100/kWh battery cost and typical 230 mile range.

(1) Estimate 2030, 30M EV/yr, based on DNV and Navitas analysis
(2) Based on BCG Research, Yole Research and Navitas analysis.
High Capacity, 60% Shorter Lead-times

- Immediate availability for 1k prototyping
- **GaNFast**: Power ICs at 6-16 weeks
- **GeneSiC**: Rectifiers 16 weeks, FETs 16 weeks
GaN & SiC Manufacturing Costs

Manufacturing & Materials Cost Structures

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Epi</th>
<th>Wafer Fab</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>GaN</td>
<td>Silicon</td>
<td>GaN</td>
<td>1x → 0.6x future</td>
</tr>
<tr>
<td></td>
<td>very low</td>
<td>moderate cost</td>
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<td></td>
<td>cost</td>
<td>growing suppliers</td>
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<td></td>
<td>many</td>
<td>standard equip’t</td>
<td></td>
</tr>
<tr>
<td>SiC</td>
<td>SiC</td>
<td>Silicon Fab</td>
<td>1.7x → 1.0x future</td>
</tr>
<tr>
<td></td>
<td>high cost</td>
<td>low / moderate cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>many</td>
<td>some non-std equip’t</td>
<td></td>
</tr>
</tbody>
</table>

*All above are relative to today's GaN wafer fab costs (ie, 1x). Relative costs are Navitas best estimates across the industry.*

- GaN has inherent manufacturing cost advantage utilizing Si substrates (vs SiC substrates)
- GaN and SiC epi costs are similar and reducing
- Wafer fab processing costs can be low when utilizing older, retrofit Si fabs
- SiC substrate cost structures and supplier options are improving dramatically
Leader in Sustainability

Every GaNFast™ IC saves (3) 4 kg CO₂

- 4x-10x lower component CO₂ footprint than silicon (1)
- 28% lower lifetime CO₂ footprint for chargers / adapters (2)
- Accelerates transition from ICE to EV by 3 years, saving 20%/yr of road-sector emissions by 2050 (4)
- GaN saves up to 2.6 Gton / year by 2050 (5)

February ’22 First GaN sustainability report based on global standards.

May ’22 World’s first semiconductor company CarbonNeutral® certified

February ’22 First GaN sustainability report based on global standards.

Electrify Our World™

First 100,000 tons CO₂ saved!

August ’22 First 100,000 tons CO₂ saved

October ’22 Recognized for industry-leading sustainability reporting
Thank You

Let’s go GaNFast™

info@navitassemi.com