

TGAN

transphorm

Leading the GaN Revolution

Business and Investor Update

May, 2022 | NASDAQ: TGAN

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Key Investment Highlights

GaN Power Semiconductor Pioneer and Leader

Disruptive Technology

GaN Enables Next Generation Power Conversion Solutions – 99% Efficiency¹, 50% More Compact/Lightweight, Lower System Cost

Large Market Opportunity

Transphorm's GaN Solutions will Enable the Future of Electric Vehicles and Fast-charging for 5G – Contributing to GaN TAM growing to \$6B² in 2026

Validation From Blue Chip Partners and Customers

Including KKR, Marelli, Yaskawa, SAS, Nexperia, Microchip, Diodes and the U.S. DoD(Navy), DOE

Ramping Commercially with Strong Manufacturing Base

Technology and Product Development completed, Integrated Manufacturing, \$24.1M FY-22 Revenues, Target >50% LT CAGR

Best-In-Class Differentiated GaN Technology + Industry's Strongest IP Position

IP Portfolio Appraised in Excess of \$200M³
Leader in Quality + Reliability, > 40 Billion Field hours, Silicon-like Reliability⁴

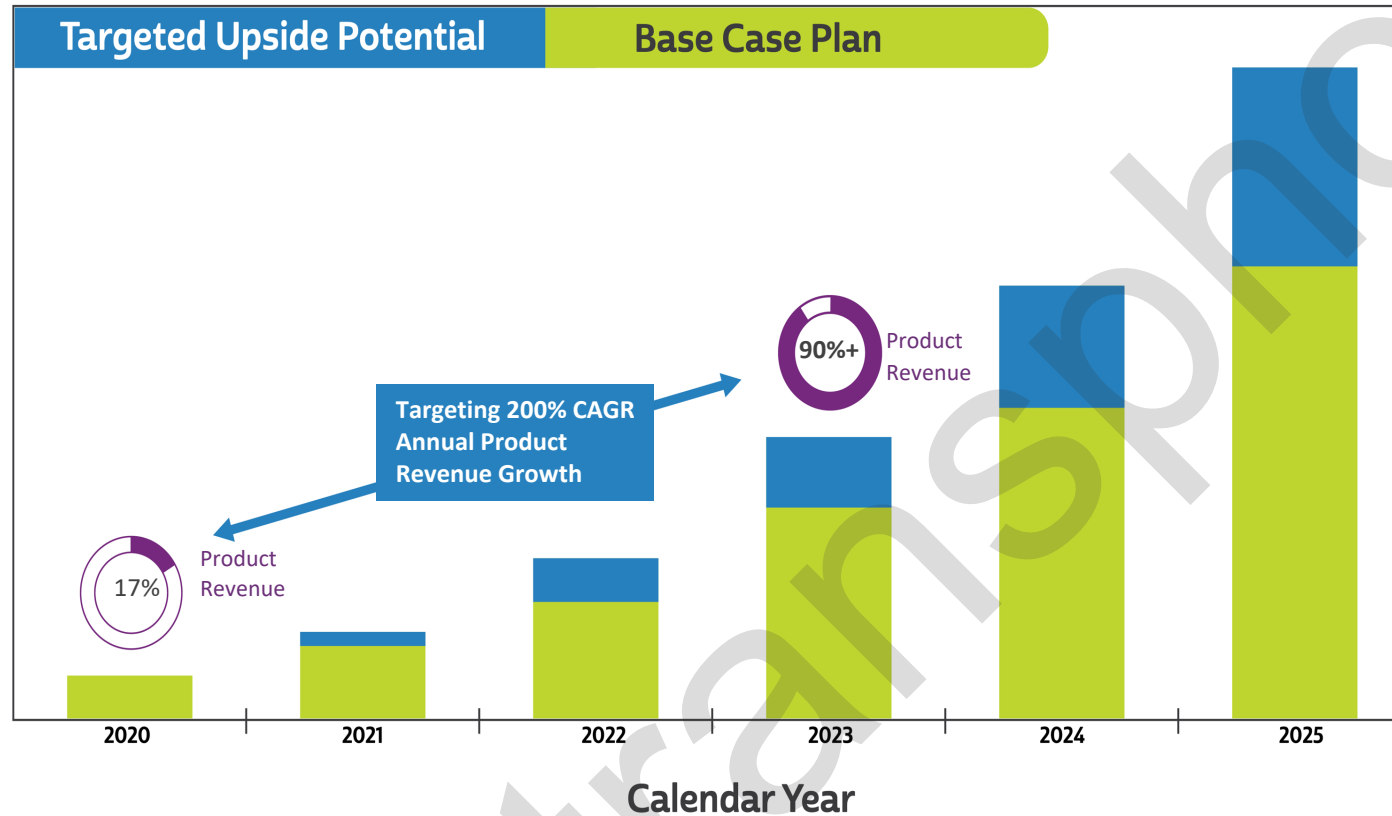
Team Led by World-Renowned GaN Experts

Proven Leadership, 18 PhDs and Over 300 Years of GaN Expertise



Target Operating Model

Building a High-Growth, Product Driven Cash Generating Business



Operating Guidelines:

- Rapid top-line growth and GaN adoption across multiple end markets
- OpEx for continued development of best-in-class products and IP portfolio
- CAPEX investment for increased scale

Target Model:

5-year CAGR range: 50%+

Gross Margin: 40%+

Operating Margin: 20%+

Free Cash Flow: 10%+

Targeting \$3 Billion Power Market Opportunity in 2023

Upside to TAM from Electric Vehicle Powertrain starting in 2025

End Market Applications and GaN Benefits

Near Term		Long Term	
Power Adapters Compute	Data Center Comm Infrastructure Crypto-Mining	Broad Industrial	Automotive EV and Charging + EV Powertrain from 2025

- Fast charging
- Lower thermals/ smaller form factor
- Lower system cost



- Ability to double available power in standardized server and 5G telecom form factors
- Enable Titanium-class efficiency EU requirement



- Reduces size/weight of systems
- More efficient charging for battery and/or battery-powered equipment and vehicles



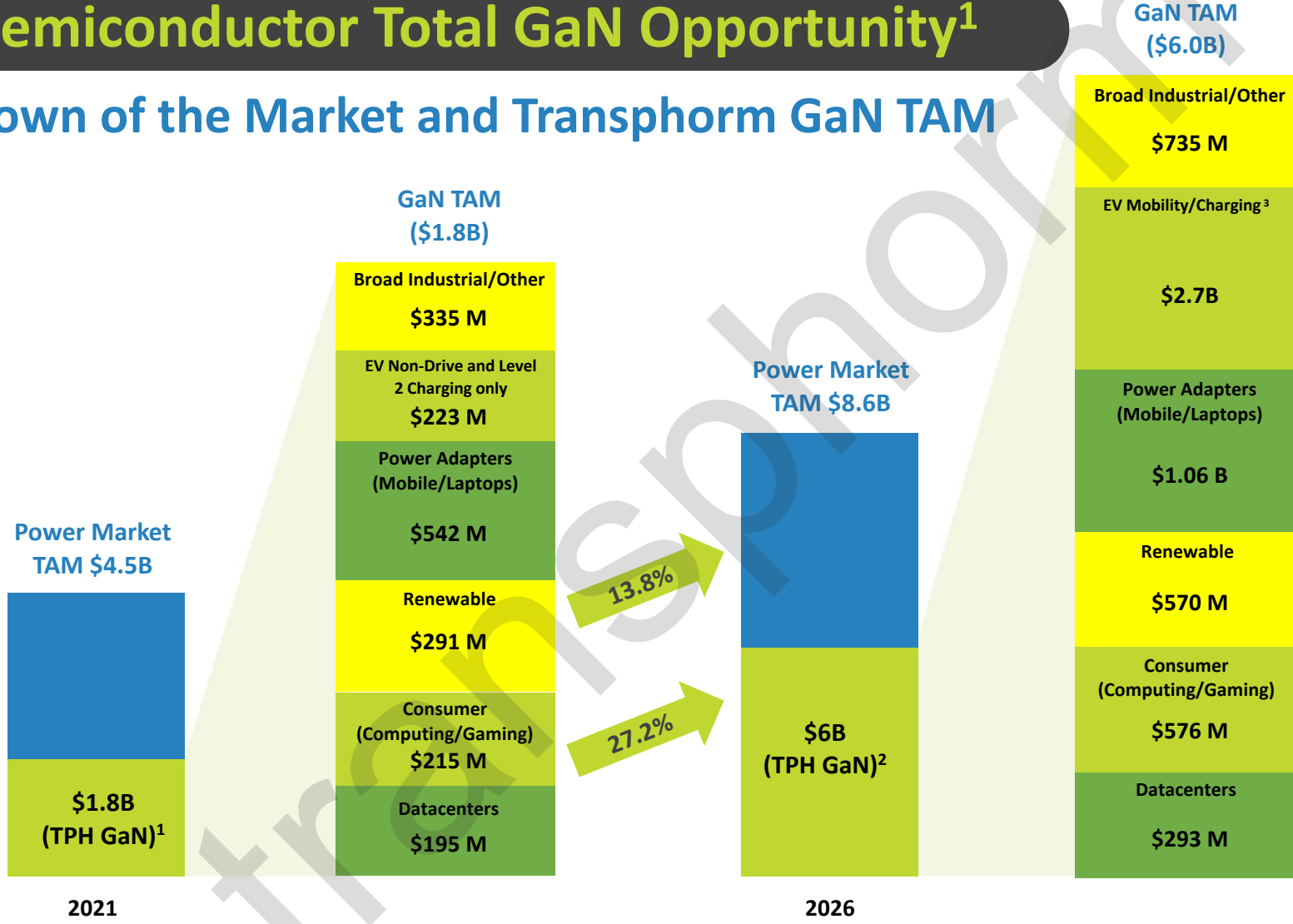
- Reduces size/weight of on-board chargers, power converters and power inverters
- Resulting in longer distance per charge



End customers already in Production with TPH GaN– 45W to 4 kW

Power Semiconductor Total GaN Opportunity¹

A Breakdown of the Market and Transphorm GaN TAM



¹ Market access based on current, future device offerings with operations to support shipments. Does not include the adoption of GaN technology nor Transphorm's yearly adoption rate

² Shows the breakout; potential GaN market sizes, does not include any adoption rate

³ Includes modules for EV inverter and EV fast charging starting in 2024 and beyond

⁴ See appendix for references

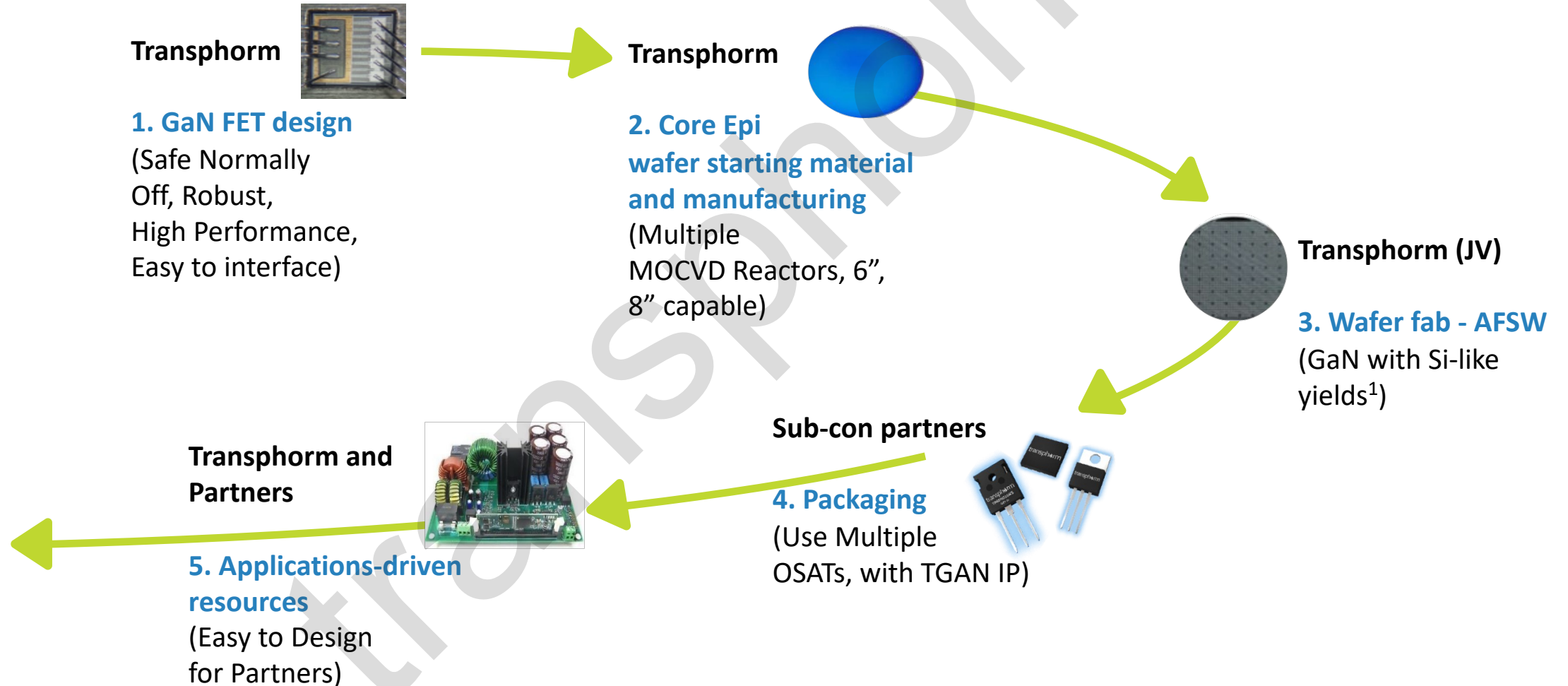
Transphorm Advantage: Enabling Customers by Taking GaN Benefits to the Next Level

Faster, Smaller, More Efficient and Robust Solutions

Intrinsic Benefits of GaN	
Performance	<ul style="list-style-type: none">• Field-proven best-in-class efficiency• Demonstrated and in volume over wide power levels
Quality & Reliability	<ul style="list-style-type: none">• JEDEC + AEC-Q101, best-in-class robustness• < 0.3 FIT > 40B hours
Volume Production Capability	<ul style="list-style-type: none">• In-house GaN supply, vertically integrated value chain• Capacity to support higher unit volumes
Comprehensive Product Portfolio	<ul style="list-style-type: none">• Products span low-to-high power, 45W to +10kW• Only company with 900V GaN, 1200V and short circuit in R&D
Ease of Drivability and Design-in	<ul style="list-style-type: none">• Compatibility with standard Silicon packages w/ superior thermal heatsink capability• Growing number of reference designs and IC partners
Patent & IP Coverage	<ul style="list-style-type: none">• Industry's strongest GaN IP position with >1K patents• From material and process to design and application

TGAN Owns GaN Wafer Production Supply Chain

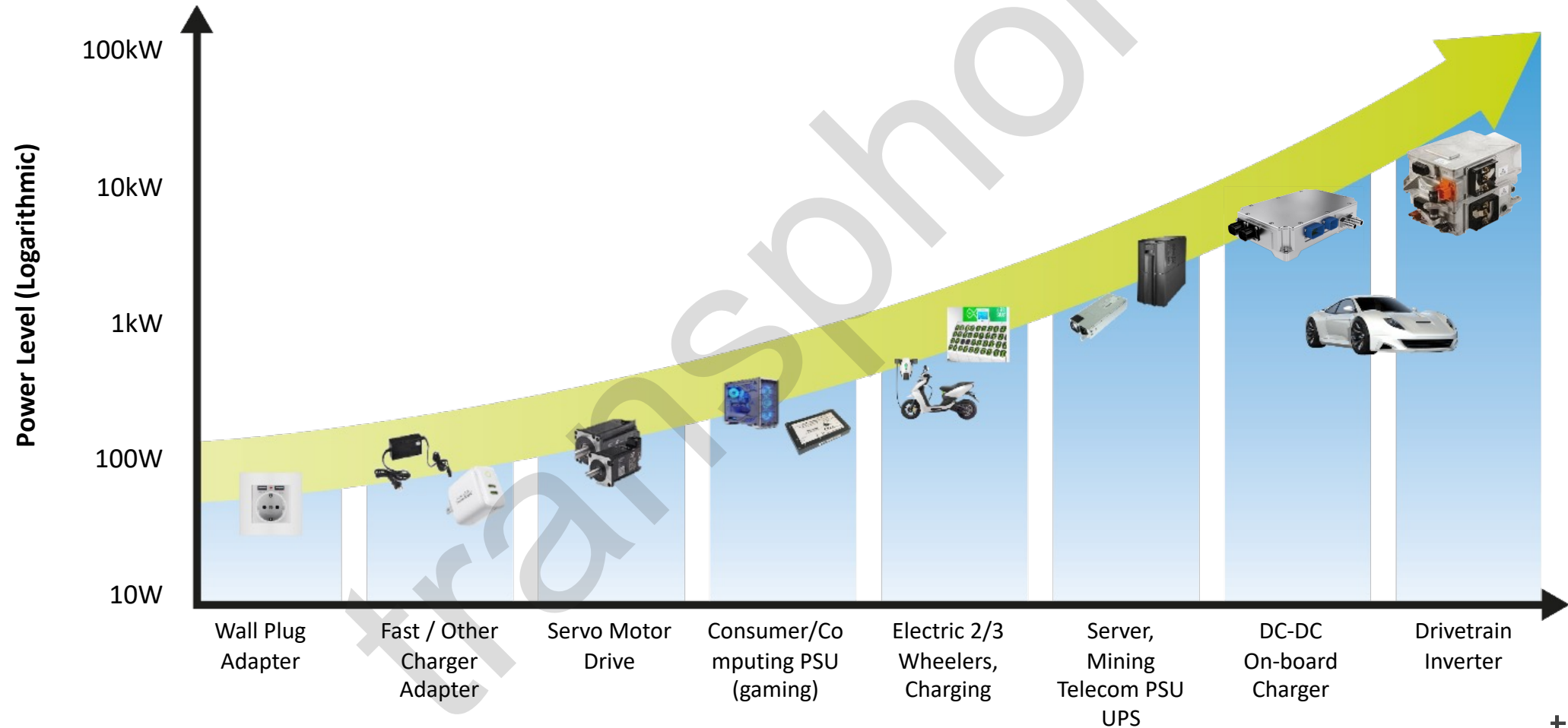
Asset-Light, Vertically Integrated Manufacturing Driving Innovation



1) P. Parikh et. al., GaN Power Commercialization with Highest Quality-Highest Reliability 650V HEMTs- Requirements, Successes and Challenges, 2018 IEEE International Electron Devices Meeting (IEDM), Dec 2018

Comprehensive GaN Product Portfolio: 45 W to +10 kW

TGAN Core Platform Spanning the Power Spectrum: Wide breadth of 650V, 900V JEDEC/AEC-Q101 Qualified Products, 1200V and short circuit in R&D



TPH GaN vs. e-mode GaN: Why We Win!

Key Factors	Silicon MOSFET	e-mode GaN	Transphorm GaN FET
Ease of use (std. drivers, agnostic to controllers)	●	●	●
Size (form factor) and Speed (frequency)	●	●	●
Performance (efficiency) ¹	●	●	●
Added BoM components (cost) ²	●	●	●
Reliability and Robustness ³	●	●	●



^{1,2}Based on multiple public and internal reference designs, <https://www.transphormusa.com/en/reference-design/tsadp-sil-usbc-65w-rd/>
³Impact of OFF-state Gate Bias on Dynamic R_{on} of p-GaN Gate HEMT (33rd ISPSD, 2021)

TGAN FET: Higher Range, Reliability & Performance Spanning Low to High Power

Why Transphorm Wins:

- Transphorm adopted in many more markets
- “e-mode” input interface is weaker – hard to operate in widely used TO Packages for higher power
- Superior Dynamic performance from TGAN FET – Strong performance, from smaller GaN die
- Proven reliability & manufacturing for scaled device – 10 kW capable single GaN device in production

In Production ¹			
Markets	GaN IC	GaN FET	Power Range TGAN Wins
Adapters	✓	✓	30-250W
Datacenters	✗	✓	800-3200W
Gaming (Desktop)	✗	✓	1600W
Crypto mining	✗	✓	1600-3600W
Industrial (≥ 500 W)	✗	✓	500-3000W
Aerospace	✗	✓	420-1200W

1. Based on our best knowledge of released products and in volume production with customers' systems

Myths/Mis-information

Myths Clarified: “IC” or Discrete Integrated or Other – Performance/Ease of Use/Reliability/Cost is what matters

Normally off:
“e-mode/
d-mode”

Fact:
Customer/Application demands Normally off Transistor.

TGAN FETs are Normally Off - just like MOSFETS

TPH GaN FET vs.
GaN IC
Performance

Fact:
GaN FET solution proven higher performance.

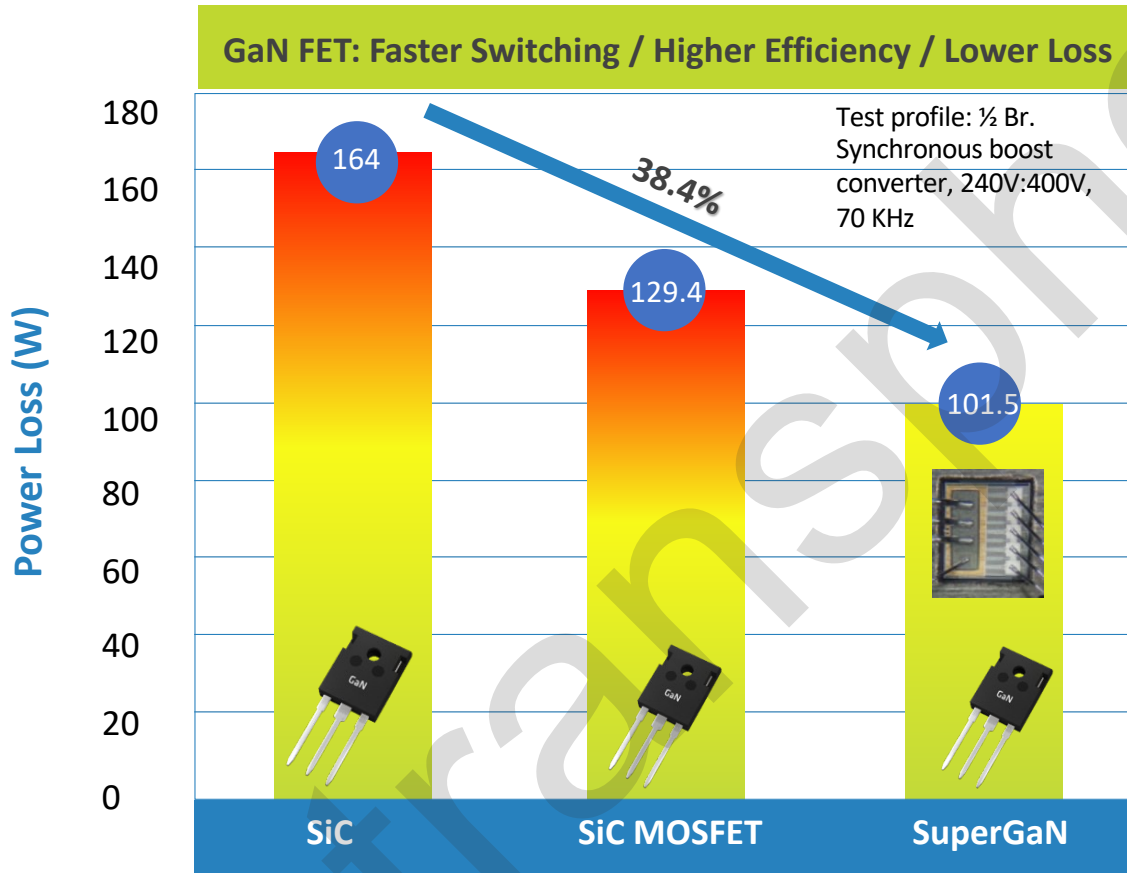
For example, in comparable adapter solutions.

Drivers/
Integration

Fact:
Many modern controllers have drivers integrated (free), TGAN FETs – No extra driver or interfacing need, and where drivers needed, it is a Silicon-like interface.

Transphorm GaN FET Outperforms the Competition

SuperGaN[®] offers reduced power loss (25-38%) over SiC FETs



Device Power Loss Comparison (9.2 kW)
(Limited due to SiC FET junction temperature)

Recent 3rd party independent validation: 15-20% loss reduction (0.5-1% point efficiency improvement) at 5 kW in a resonant converter ¹

1. PCIM 2022, Technical Paper, Alejandro Llop et. al., "A Comparison among Wide Bandgap Devices using a CLLC Bidirectional Resonant Converter"

Customers Select Transphorm GaN

Efficient, Reliable, Highest Performance, East of Drivability and Designability



“The Corsair AX1600i is the **best PSU** that money can buy today, period.”
tom's **HARDWARE**

“Based largely on the power semiconductors’ proven quality and reliability as well as the team’s reputation for successful collaboration,”



“Transphorm’s GaN within a totem-pole PFC configuration proved the **most reliable**, highest performing solution possible today,”



“Ease of drivability and designability—does not require custom drivers. Proven reliability — JEDEC and AEC-Q101”



Leadership in High-Power GaN – Secured new PO >500,000 units

Efficient, Reliable, High Performance, Patented GaN Architecture

Block Chain Computing – Power Hungry Systems requiring Titanium efficiency



3kW+



- Consumes ~120 TWh, equivalent to small country
- TGAN solutions can enable up to 1% higher efficiency
- 230 V_{AC} (> 125 lbs of CO₂ emissions / TGAN Device¹)
 - Greater than 50,000 metric tons in 2022

Data Center Server Power – We have enabled Titanium performance for > 4 years



- 5 MW Data center, \$103K saved / year, 397 tons reduced carbon footprint²
- Regulations like EU Ecodesign³ in 2023 expected to accelerate GaN adoption
 - Increased order from existing customer

Notes:

1) Based on company estimates done for a 5MW data center.

2) Based on existing rectifiers with 92% efficiency | Source: EPA estimated one kWh produces 1.52 pounds of carbon dioxide (excl. line-losses).

3) European Union's Ecodesign Directive (Directive 2009/125/EC).

GaN Enables Future of Next-Gen Electric Vehicles

EV challenges for existing Silicon-based solutions

Lower Watts / Cubic Inch



Power Loss



Heat Constraints



Limited Driving Distance



Higher Cost & Power Demand



Transphorm Gen IV 650V 35mΩ GaN FET

- Automotive qualified (AEC) today

- Charger / Converter / Inverters for EVs
- Staying ahead: R&D for 1200V¹ with GaN for higher battery voltage EVs (taking on SiC higher Voltage FETs)

Faster Charging & Increased Range w/ GaN

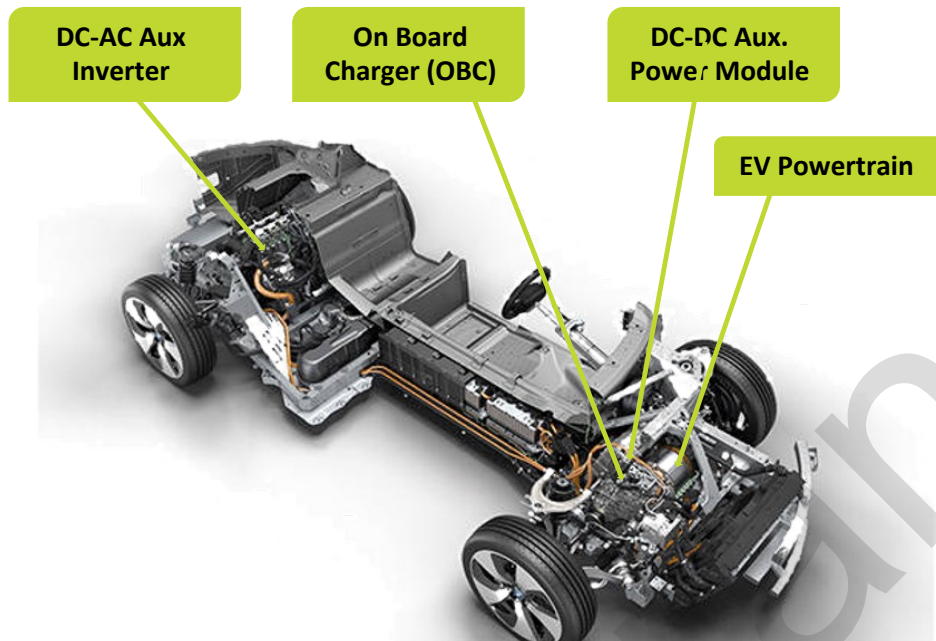
Future of EV with GaN-based solutions

GaN-enabled Power Solution Benefits¹:

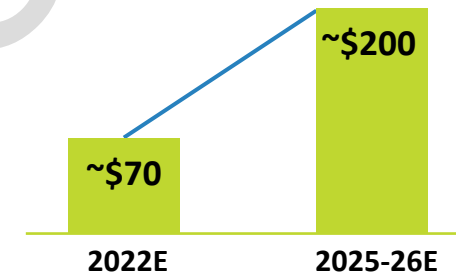
- + 2x More Watts / Cubic Inch, Faster Charging
- + Less Power Loss (~20%)
- + Reduced Size (~50%)
- + Increased Range

Accelerating Opportunity for GaN Enabled Power in EV

GaN Opportunities in EV



Addressable GaN \$ Content/EV²

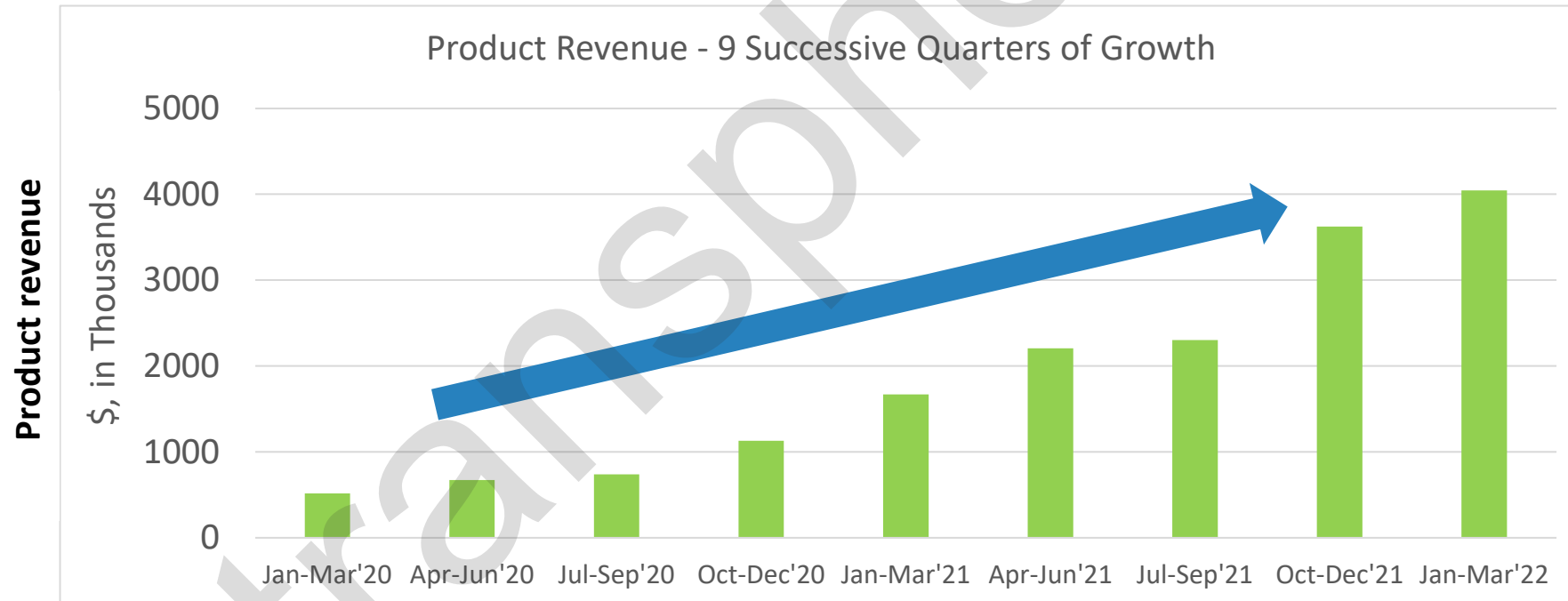


- Well-positioned for automotive opportunity with leading products, strategic partners
- EV Adoption increasing to 32 million (44 million - hyper adoption) vehicles by 2030¹

Transphorm GaN AEC-Q101 (Automotive) Qualified NOW

Strong QoQ of Product Revenue Growth

- *Maintaining leadership in higher power markets (1-5kW segment): Captured recent >500,000 units order (1 large device ~ 8 smaller Adapter/charger devices)*
- *Gain share in Adapter/chargers with superior performance, strong solutions partners*



Key Business Focus – Scaling Product Revenue

Focus on Product Revenue Growth, Supply Chain and Expanding Capacity

Key focus area	Achieved	Comments
1. Revenue/Products	<ul style="list-style-type: none"> ✓ \$4M Products (Total \$4.93M) 	<ul style="list-style-type: none"> • 9th sequentially higher Qtr. • Robust demand, strong backlog
2. Adapters/Chargers: Design-ins, Production, Solutions (45W – 250W)	<ul style="list-style-type: none"> ✓ Design-Ins: >55 (>5 added) ✓ In Production: >20 ✓ Solutions/Ref designs: >12 	<ul style="list-style-type: none"> • Laptop win, 50K units PO • Easy to use, no added driver, Small die vs. e-mode • Pilot wins at major Tier 1s
3. High power: Design-Ins, Production, Ref. Designs (300W-4kW)	<ul style="list-style-type: none"> ✓ Design-Ins: >35 (> 5 added) ✓ In Production: >15 ✓ Eval kits/Ref designs: >8 (1-4kW) 	<ul style="list-style-type: none"> • >500K units PO for 3kW+ • >50% of revenue High Power • Next: Expand & Dominate
4. Product SKUs and Qualification	<ul style="list-style-type: none"> ✓ Total: 17 (AEC qualified: 3) ✓ 1200V R&D Demo (@ Major IEEE Conf.) 	<ul style="list-style-type: none"> • Broadest offering (650/900V), • Compact surface-mount & thermally robust TOs • Next: Gen5 AEC qualification
5. Capacity Proof Points	<ul style="list-style-type: none"> ✓ Lower power (PQFN) – multiple sources in place ✓ Higher power (TO247) –1st 5 months of CY'22 > all of CY'21 	<ul style="list-style-type: none"> • Focus - Supply chain management • Epi , Fab Wafer capacity expansion ongoing

Key Business Update – Strategic Partnerships

Manufacturing, Capacity Increase Partnerships

- Global Wafers (Partner) – Epiwafer expansion on track (completion in mid-CY 2023)
- AFSW Fab (Transphorm’s JV) – Managing with GaNovation (Financial-Strategic partner) and planning for increases in 2H’CY 22 and 2023 to keep up with increasing demand



Industrial and Automotive

- Yaskawa (Industrial) – Program aligned for cost effective innovative solutions for robotic applications
 - Development funding to be completed
- Nexperia (Automotive focus) – Continued epi and fab wafer supply, next milestone Gen5 AEC qual, Marelli (Automotive) – Ongoing development phase, with Gen IV/Gen V: Charger/Converter, Inverter
 - Other: Continuing design-ins with other Japan EV, for CY 2023-2024 dc-dc and obc opportunities




Government Revenue and Epi Business

- Navy and Govt. Programs – On track, \$0.9m in FQ4’22. Epi for RF (Navy, DARPA), 1200V R&D (ARPA-E)
- Additional Epi customers (rf) – Ongoing, primary focus on internal power products ramp

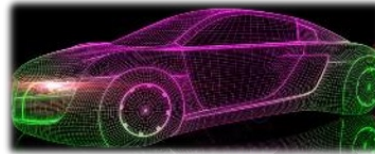


Key Financial Highlights

Record Product Revenue, Improving EPS, TGAN now on NASDAQ

	Q4 FY2022	FY2022	Commentary
Revenue	\$4.9m (> 80% Product)	\$24.1m (> 50% product)	<ul style="list-style-type: none"> 9 successive quarters of revenue growth Total Revenue increased 7% from Q3, 89% from FY21 Product revenue increased 10% from Q3, 190% from FY21
Gross Margin	23%	48%	<ul style="list-style-type: none"> FY2022 blended margin of 48% (FY21 – 45%) Gross margin progressing toward long term model
OPEX (non-GAAP)	\$4.6m	\$18.1m	<ul style="list-style-type: none"> 5% increase in quarter, 16% increase from FY21 Increases largely driven by staffing
EPS (non-GAAP)	(\$0.08)	(\$0.22)	<ul style="list-style-type: none"> Solid improvement in EPS Q3 FY22 EPS (\$0.09) and FY21 EPS (\$0.42)
Stockholders Equity		\$32m	<ul style="list-style-type: none"> Stockholder's equity improved \$56m from FY21 Strong equity raises, Yaskawa loan conversion and execution on Development loan
Operational Notables			<ul style="list-style-type: none"> Record quarterly product bookings Strong Backlog in place to support growth

Positioned to Grow Across Multiple Segments



5G Market Adoption

Electric Vehicle (EV) Market Adoption

Adoption / Growth

Execution and Expansion

Achieve Target Model

CY 2021-2022

CY 2023

CY 2024+

- Multiple revenue streams in place
- Growing production across multiple segments
- Shipped > 1M units in December 2021
- Continued investment in growth across all aspects of the company
- Investing in capacity increases

- Broad market inflection point
- Ramping revenue across consumer, data centers and crypto segments
- Continue to scale capacity aggressively
- Initial wins in automotive segment
- Continued government contracts

- Continued momentum and broad market expansion
- Automotive adoption growth
- Leader in High Power, EV, Consumer segments
- Positive cash flow generation
- Execute to target model

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Validation From Blue Chip Partners and Customers

Including KKR, Marelli, Yaskawa, SAS, Nexperia, Microchip, Diodes and the U.S. DoD(Navy), DOE

Ramping Commercially with Strong Manufacturing Base

Technology and Product Development completed, Integrated Manufacturing, \$24.1M FY-22 Revenues, Target >50% LT CAGR

Best-In-Class Differentiated GaN Technology + Industry's Strongest IP Position

IP Portfolio Appraised in Excess of \$200M³
Leader in Quality + Reliability, > 40 Billion Field hours, Silicon-like Reliability⁴

Team Led by World-Renowned GaN Experts

Proven Leadership, 18 PhDs and Over 300 Years of GaN Expertise



Appendices

Financials

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Consolidated Balance Sheets

Transphorm, Inc.
Condensed Consolidated Balance Sheets
(in thousands)

	March 31, 2022 (unaudited)	December 31, 2021 (unaudited)	March 31, 2021 (audited)
Assets			
Current assets:			
Cash and cash equivalents	\$ 33,435	\$ 40,467	\$ 9,500
Restricted cash	500	500	—
Accounts receivable	2,632	2,489	1,618
Inventory	6,330	5,956	2,223
Prepaid expenses and other current assets	1,750	1,249	953
Total current assets	44,647	50,661	14,294
Property and equipment, net	1,796	1,897	1,360
Goodwill	1,180	1,250	1,302
Intangible assets, net	617	691	914
Investment in joint venture	143	61	—
Other assets	263	282	274
Total assets	\$ 48,646	\$ 54,842	\$ 18,144
Liabilities and stockholders' equity (deficit)			
Current liabilities:			
Accounts payable and accrued expenses	\$ 3,626	\$ 4,749	\$ 3,140
Deferred revenue	308	267	505
Development loan	—	—	10,000
Revolving credit facility	180	368	10,150
Unfunded commitment in joint venture	—	—	1,866
Accrued payroll and benefits	1,171	1,239	1,410
Total current liabilities	5,285	6,623	27,071
Revolving credit facility	12,000	12,000	—
Promissory note	—	—	16,128
Total liabilities	17,285	18,623	43,199
Commitments and contingencies			
Stockholders' equity (deficit):			
Common stock	5	5	4
Additional paid-in capital	211,190	210,841	144,201
Accumulated deficit	(178,638)	(173,639)	(168,403)
Accumulated other comprehensive loss	(1,196)	(988)	(857)
Total Stockholders' equity (deficit)	31,361	36,219	(25,055)
Total liabilities and stockholders' equity (deficit)	\$ 48,646	\$ 54,842	\$ 18,144

Subject to completion of audit procedures

Condensed Consolidated Statements of Operations

Transphorm, Inc.
Condensed Consolidated Statements of Operations
(in thousands except share and per share data)

	Three Months Ended			Twelve Months Ended	
	March 31, 2022 (unaudited)	December 31, 2021 (unaudited)	March 31, 2021 (audited)	March 31, 2022 (unaudited)	March 31, 2021 (unaudited)
Revenue, net	\$ 4,927	\$ 4,604	\$ 2,425	\$ 24,050	\$ 12,696
Operating expenses:					
Cost of goods sold	3,789	3,935	1,788	12,530	7,015
Research and development	1,632	1,609	1,780	6,655	5,898
Sales and marketing	1,047	976	663	3,535	2,319
General and administrative	2,917	2,852	2,733	11,226	9,969
Total operating expenses	9,385	9,372	6,964	33,946	25,201
Loss from operations	(4,458)	(4,768)	(4,539)	(9,896)	(12,505)
Interest expense	181	187	187	792	758
Loss in joint venture	677	712	1,468	3,971	6,885
Changes in fair value of promissory note	—	—	699	(605)	2,093
Other income, net	(317)	(1,503)	(314)	(3,819)	(1,940)
Loss before tax expense	(4,999)	(4,164)	(6,579)	(10,235)	(20,301)
Tax expense	—	—	—	—	—
Net loss	\$ (4,999)	\$ (4,164)	\$ (6,579)	\$ (10,235)	\$ (20,301)
Net loss per share - basic and diluted	\$ (0.09)	\$ (0.08)	\$ (0.16)	\$ (0.22)	\$ (0.56)
Weighted average common shares: outstanding - basic and diluted	53,343,862	49,147,630	40,274,660	46,056,331	36,555,353

Subject to completion of audit procedures

GAAP to NON-GAAP Reconciliation

Transphorm, Inc.
Reconciliation of GAAP and Non-GAAP Financial Information (unaudited)
(in thousands except share and per share data)

	Three Months Ended			Twelve Months Ended	
	March 31, 2022	December 31, 2021	March 31, 2021	March 31, 2022	March 31, 2021
GAAP net loss	\$ (4,999)	\$ (4,164)	\$ (6,579)	\$ (10,235)	\$ (20,301)
Adjustments:					
Stock-based compensation	758	848	513	2,614	1,906
Depreciation	147	142	123	546	500
Amortization	74	74	74	296	296
Changes in fair value of promissory note	—	—	699	(605)	2,139
Other income (1)	—	(1,222)	—	(2,677)	—
Total adjustments to GAAP net loss	979	(158)	1,409	174	4,841
Non-GAAP net loss	\$ (4,020)	\$ (4,322)	\$ (5,170)	\$ (10,061)	\$ (15,460)
GAAP net loss per share - basic and diluted	\$ (0.09)	\$ (0.08)	\$ (0.16)	\$ (0.22)	\$ (0.54)
Adjustment	0.01	(0.01)	0.03	—	0.12
Non-GAAP net loss per share - basic and diluted	\$ (0.08)	\$ (0.09)	\$ (0.13)	\$ (0.22)	\$ (0.42)
Weighted average common shares outstanding - basic and diluted	53,343,862	49,147,630	40,274,660	46,056,331	36,555,353

(1) Other income consists of \$1.2 million gain upon the conversion of the Yaskawa Note for the three months ended December 31, 2021 and \$1.5 million gain upon termination of the joint venture agreement between Fujitsu Semiconductor Limited and Transphorm Aisru for the three months ended September 30, 2021.

	Three Months Ended			Twelve Months Ended	
	March 31, 2022	December 31, 2021	March 31, 2021	March 31, 2022	March 31, 2021
GAAP operating expenses	\$ 5,596	\$ 5,437	\$ 5,176	\$ 21,416	\$ 18,186
Adjustments:					
Stock-based compensation	715	796	475	2,453	1,789
Depreciation	147	142	123	546	500
Amortization	74	74	74	296	296
Total adjustments to GAAP operating expenses	936	1,012	672	3,295	2,585
Non-GAAP operating expenses	\$ 4,660	\$ 4,425	\$ 4,504	\$ 18,121	\$ 15,601

Subject to completion of audit procedures

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