MESH

Pure-Play, Next Generation Power Semiconductors

Taiwan Investor Fire-Side Chat
August 18th / 19th, 2022

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A Powerful Combination

GaN + SiC: The Future of Power Semis

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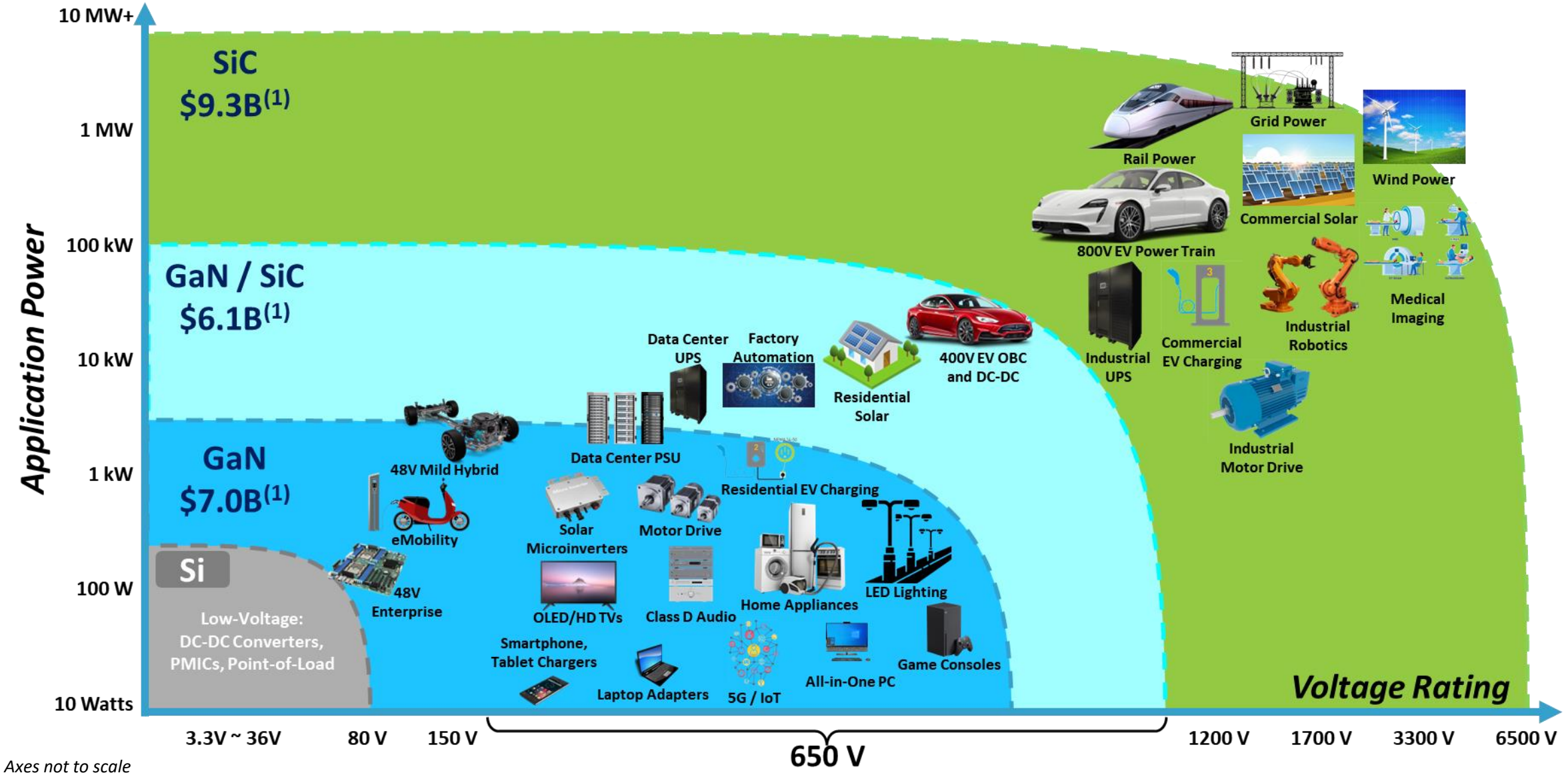

Note: Axes not to scale

Note (1): 2026E potential, Source: Yole, DNV, IRENA, Fraunhofer ISE, IHS, Cisco, Hyperscale, Peer annual reports, Wall Street research.

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Navitas GaN IC: An Enabling Force

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Up To	Up To	Up To	Up To	Up To	Up To
20x	**3x**	**40%**	**3x**	**3x**	**20%**
Faster Switching	Smaller & Lighter	Energy Savings	Higher Power Density	Faster Charging	Lower System Cost

Note: Statistical data is based on Navitas estimate of GaN-based power systems compared to Si-based systems in the 2024-2025 timeframe. Based on Navitas measurements of select GaN-based mobile wall chargers compared to Si-based chargers with similar output power. Relative to silicon, GaN has 10x stronger electrical fields and 2x greater electron mobility, enabling high voltages in fast chips and fast switching with high energy savings.

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GaN ICs: Maximize Speed & Efficiency

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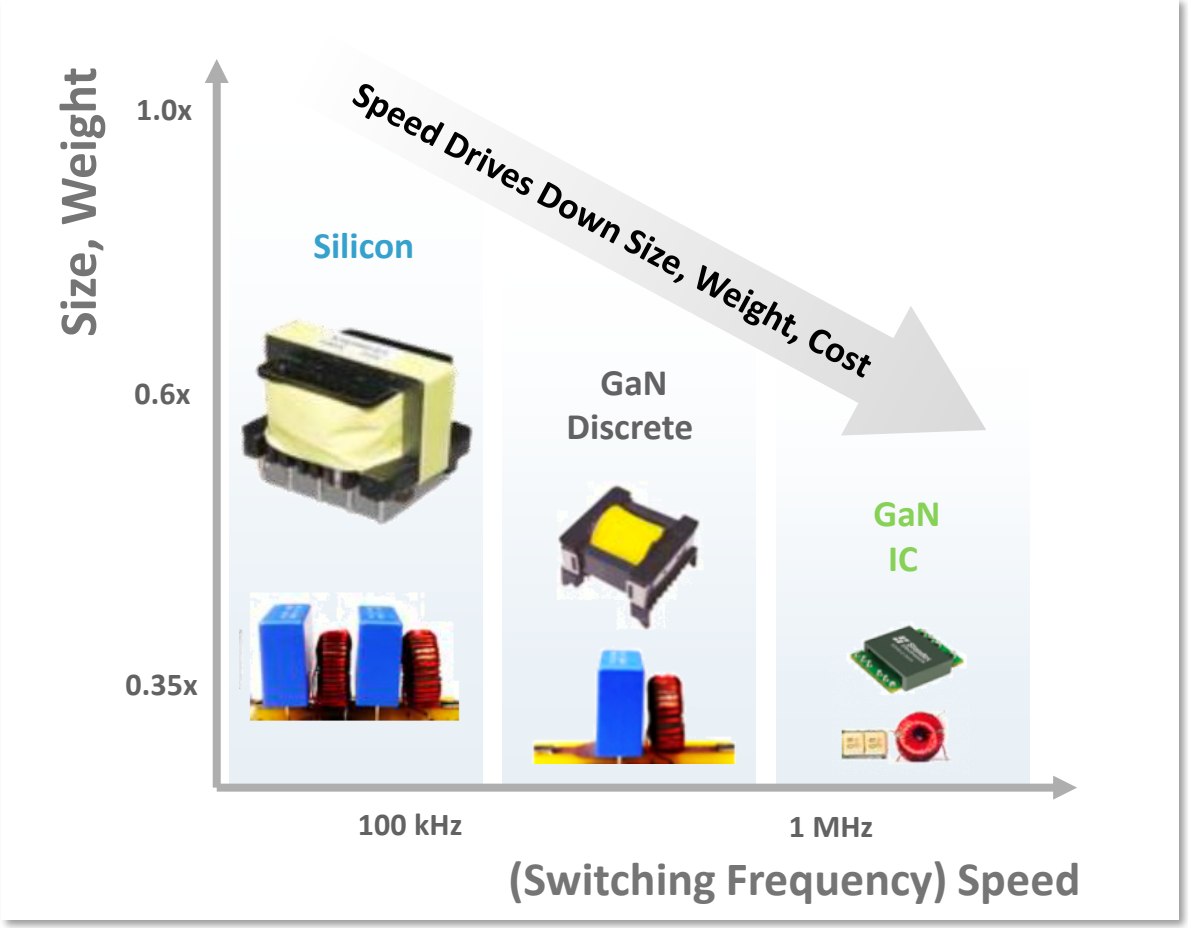

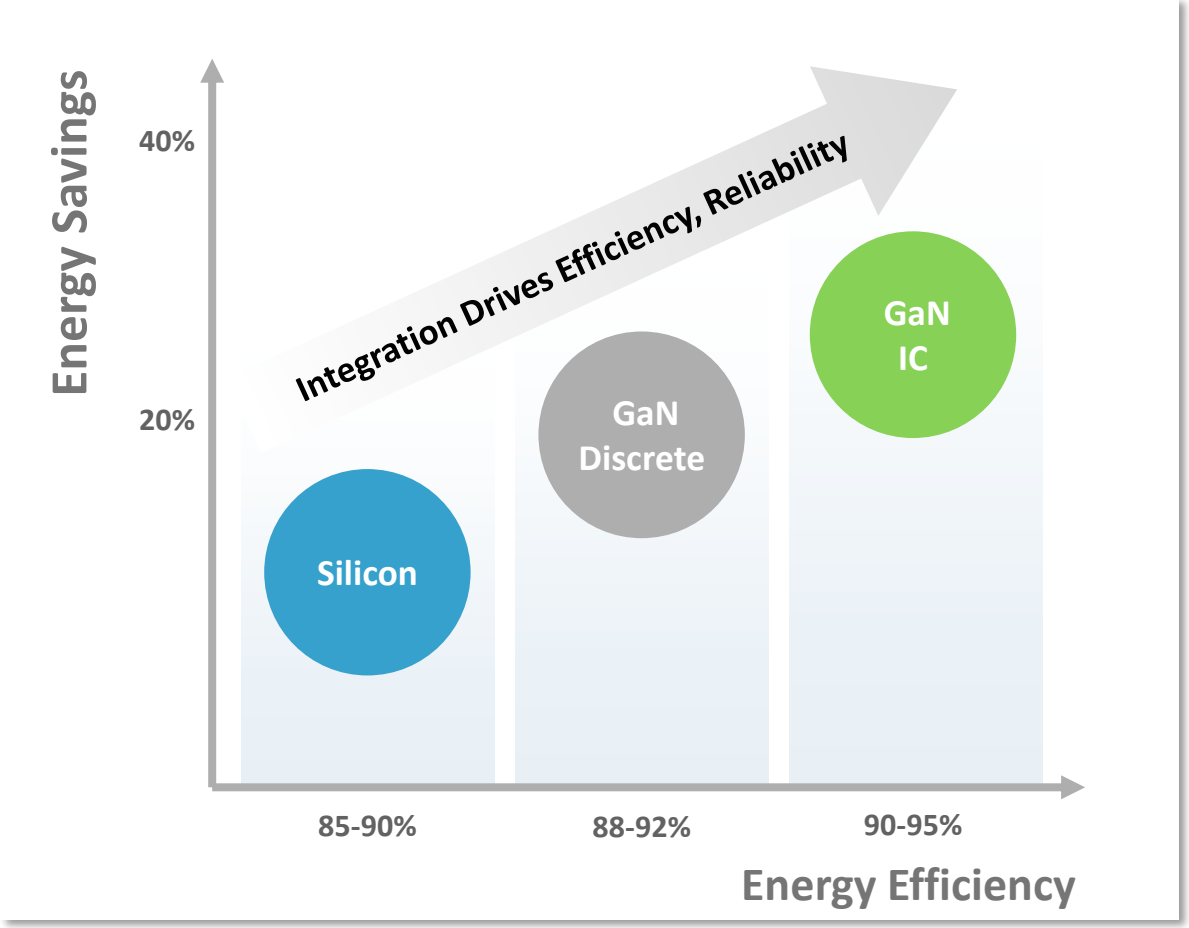

GaN power ICs enable up to 3x smaller, lighter [1]

GaN ICs save 40% energy [2], 100x more reliable [3]

1) Based on Navitas measurements of GaN-based chargers compared to Si-based chargers with the same output power.
2) Navitas estimate of GaN-based power systems compared to Si-based systems in the 2024-2025 timeframe, Navitas measurements of select GaN-based chargers vs. Si-based chargers with similar power.
3) VGS failure distribution based on Navitas internal characterization of Discrete GaN Transistors compared to GaN power ICs.

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GaN: The Future of Mobile Charging

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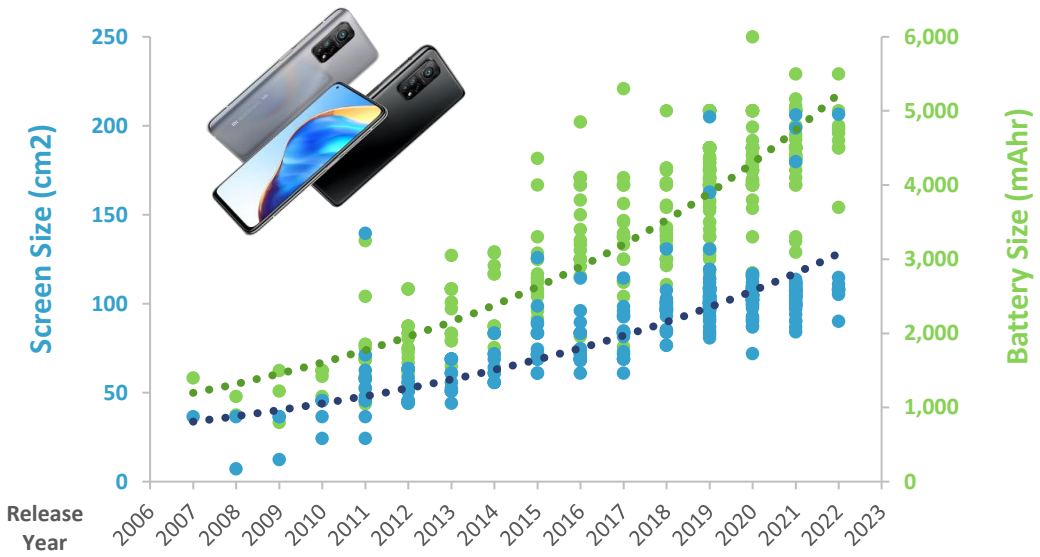
Larger Mobile Screens And Batteries Need More Power

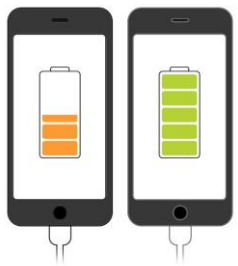
Screen Size and Battery Size Continue to Increase[1]



Over $2.5B GaN IC opportunity[3]

- 2.5Bu per year of mobile wall chargers shipped
  - Phone, tablet, laptop and after-market
- Over $1 of GaN content per charger and increasing over time

Fast
Up to 3x more power
Up to 3x faster charging



Mobile
Half the size and weight of traditional chargers

Universal
One charger for ***ALL*** your devices
One and Done!!

65W Multi-Port GaN Wall Charger[2]

3 Silicon Chargers

1 GaN Charger

3x smaller, 3x lighter, and less expensive

Mobile is Moving to GaN Fast Chargers, Creating a Multi-Billion Dollar GaN IC Opportunity

1) Includes Huawei, Xiaomi, OPPO, OnePlus, RealMe, Samsung, Apple and Google.
2) Based on Navitas measurements of select GaN-based mobile wall chargers compared to Si-based chargers with similar output power.
3) Based on estimates from IDC PC Tracker, USB-C research, Yole Research and Navitas estimates.

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100% Tier 1 Mobile OEMs Adopting Navitas

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Tier 1 OEMs

Aftermarket Examples

225+	290+	100%	50M+	Zero
GaN Chargers Mass Production(1)	GaN Chargers In Development(1)	Mobile OEMs Designing With Navitas GaN ICs	GaN ICs Shipped(2)	GaN Field Failures(2)

1) As of June 30th, 2022.
2) Based on no customer-reported consumer failures for production shipments through May 2021.

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GaN Beyond Chargers:
$1B+ Potential GaN Markets

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$2B EV*

$1B Data Center*

$1B Solar

$2B Consumer

$2B+ Mobile*

Fast Chargers

Ultra-Fast

"It's the ***end of the road for silicon***."

"GaN offers >***10x*** frequency, ***significant*** cost advantages" *Enphase*

"Navitas advantages: ***simplicity of driving, high-speed, reliability & compact form factor***." *Brusa*

*"**GaN** is a **breakthrough new technology**"*

*"Navitas: excellent partner, **industry-leading GaN ICs**"* Compuware

20W 100W 240W 500W 1,200W 3,200W 22,000W

*Dedicated System Design Center

Potential GaN market opportunity estimated in 2026 (2030 for EV). Figures refer to whole market, not any named customers. Navitas estimates

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GaN: High-Volume, Low-Cost, Reliable Manufacturing

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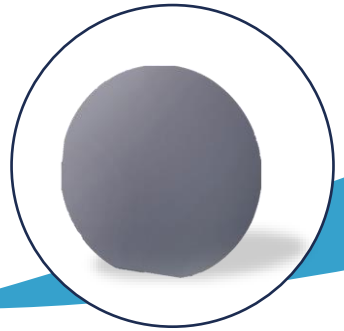
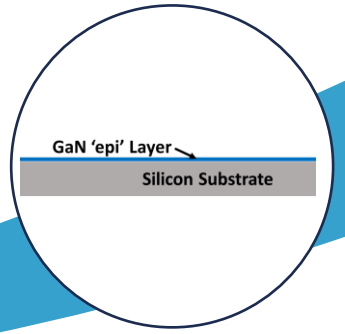
GaNFast™

Low-cost, Si wafer
"GaN-on-Si" technology

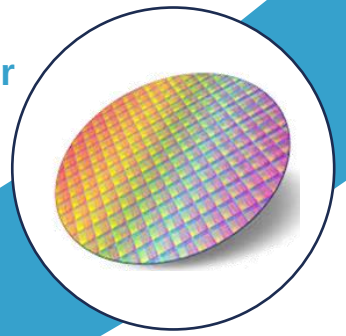


GaN Epi Layer
Multi-sourced reactors, scalable, low CapEx



Tier-1, Low-Cost Foundry
TSMC Fab 2 (6", 0.35µm CMOS)
Old, available, under-utilized, low-cost fabs available

Finished Wafer



Tier-1, Low-Cost Packaging
Multiple, major suppliers qualified

GaNFast Power ICs

- ✓ 90% -> 95% yields
- ✓ 50M+ shipped(1)
- ✓ 0 GaN-related field-failures(1)
- ✓ Committed capacity, significant upside
- ✓ 6- to 16-week lead-times for select / forecasted customers

(1) Based on Navitas cumulative production shipments, no reported GaN-related field-failures through May 6th 2022

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SiC Pioneers and Leaders

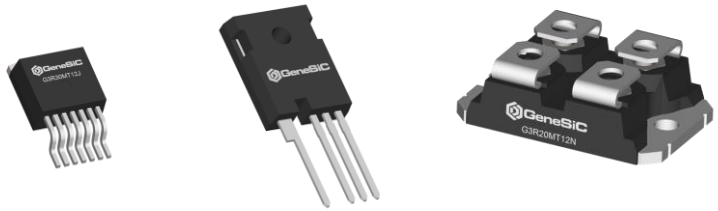
- ✓ Industry-leading SiC performance
- ✓ Industry-leading robustness & reliability
- ✓ Broadest range of SiC MOSFETs
- ✓ 1st commercial products introduced in 2011
- ✓ Significant revenue in EV, solar, energy storage, wind, grid power & more
- ✓ 22 company patents granted or pending; many innovation awards
- ✓ Core team in device, process, test & product
- ✓ Strategic relationships with multiple suppliers
- ✓ High growth, highly profitable, accretive
- ✓ Fabless, robust supply chain

Dr. Ranbir Singh, President

- Founded GeneSiC in 2004
- 25+ years dedicated to SiC
- Device design, process development and technology innovations
- Ph.D. and M.S. Electrical & Computer Eng, North Carolina State University, Bachelors Technology from Indian Institute of Technology, Delhi

Dr. Siddarth Sundaresan, VP Technology

- 14+ years with GeneSiC
- 23+ granted or pending patents on SiC MOSFET/Diode design and process technologies
- Ph.D. and M.S. Electrical & Computer Eng, George Mason University, dissertation on ultra-fast, high-temperature processing of SiC and GaN



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Industry-Leading SiC Performance

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Supplier	Resistance		Energy Loss				Figure-of-Merit *(Low number is better)*	
	$R_{DS(ON)}$ @ 25°C (mΩ)	$R_{DS(ON)}$ @ 175°C (mΩ)	E_{ON} @ 25A (µJ)	E_{OFF} @ 35A (µJ)	E_{OSS} @ 800V (µJ)	E_{ZVS} E_{OFF}-E_{OSS} (µJ)	**Hard-Switching** R_{DS} @ 175°C x (E_{ON}+E_{OFF}) (Ω-µJ)	**Soft-Switching** R_{DS} @ 175°C x E_{ZVS} (Ω-µJ)
GeneSiC SEMICONDUCTOR	40	57	600	80	34	46	**38.8**	**2.6**
#2	40	68	600	80	40	40	46.2	2.7
#3	40	80	850	390	35	355	99.2	28.4
#4	40	71	550	150	35	115	49.7	8.2
#5	45	85	520	65	29	36	49.7	3.1

Lowest power loss at high temp, high speed = ***Highest Efficiency, Energy Savings Small Size, Light Weight, Low System Costs!***

Reference 1,200V SiC FET, 40-45mΩ devices; GeneSiC = G3R40MT12J; based on Navitas test result & competitive data sheet parameters.

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Industry-Leading Robustness & Reliability

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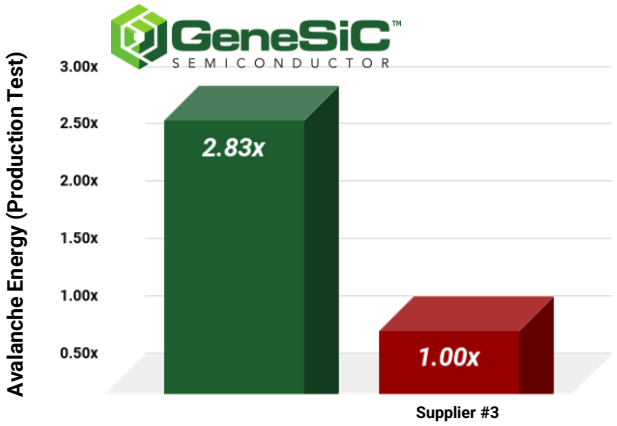
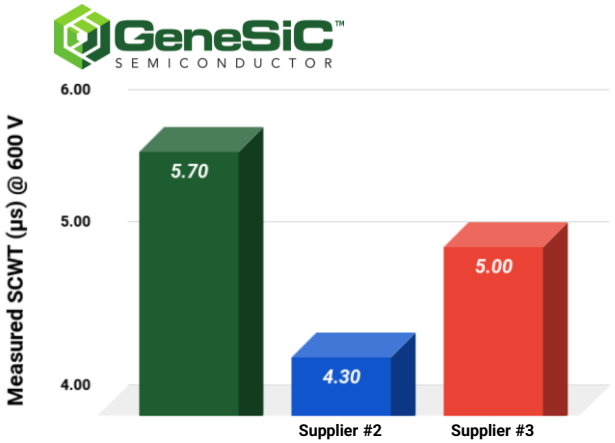
Industry's Highest 100% Tested Avalanche



Excellent Short-Circuit Withstand Time



Patented Trench-Assisted Planar SiC MOSFET

- Highly uniform in production
- Industry-leading robustness
- Highest 100% tested avalanche ratings
- World-class short circuit capability

Avalanche *= capability to handle excess energy in fault condition*

Withstand time *= survival duration in fault condition*

Based on internal testing of 1200V SiC MOSFETs versus competitor products in same voltage, current range

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Broadest[1] SiC MOSFET Portfolio

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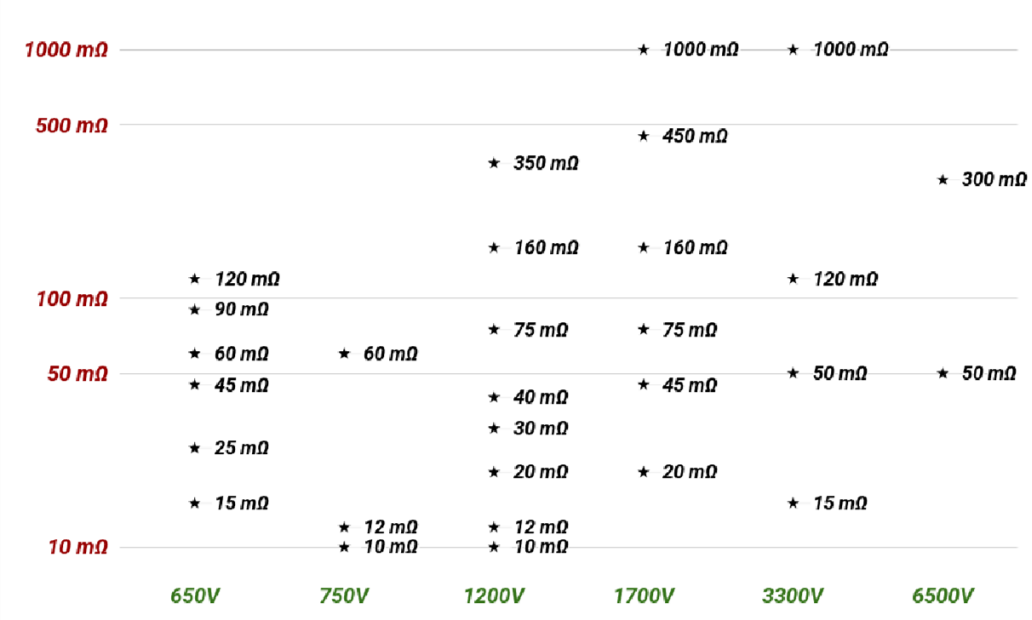
GeneSiC SEMICONDUCTOR 650V – 6,500V SiC MOSFETs



Most 1,700V SiC MOSFETs

- 50+ SiC MOSFETs, array of standard packages
- Only supplier with 650V to 6,500V SiC MOSFETs

- Broadest industry offering for 1700V SiC MOSFETs

Note (1): based on GeneSiC voltage range of production released SiC MOSFETs compared to all publicly identified voltage ranges of other SiC suppliers.

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Over 500(1) Diverse & Synergistic Customers

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EV, Including Off-Board Chargers

AMG
BRUSA
BYD
GEELY
hypercharger by alpitronic
INOVANCE
JAGUAR
LAND ROVER
LEAR CORPORATION
LG - MAGNA
SAAB
SHINRY
SIGNET
ŠKODA Group
STERCOM

Solar

Advanced Energy
Alpha power solutions
CHINT
GOODWE
GROWATT
KACO new energy.
POWER ELECTRONICS
SOFAR SOLAR
Steca A KATEK Brand
SUNGROW Clean power for all

Energy Storage

CATL
Elektro-Automatik
ENERGY storage system
EXIDE TECHNOLOGIES
Hopewind
KRAFT POWERCON
PULS VARIO
TDK·Lambda Trusted · Innovative · Reliable

Other

CRRC
CRSC
Danfoss
DYNEX Power through Innovation
GE Energy
IPG PHOTONICS
KEBA Automation by innovation.
KEHUA TECH
kestra MEDICAL TECHNOLOGIES
MEDHA
SCHIEDERWERK
Schindler
TRUMPF
TSINGHUA TONGFANG

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Note (1): based on customers in production or in development.

SiC: Robust and Flexible Supply Chain

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GeneSiC™

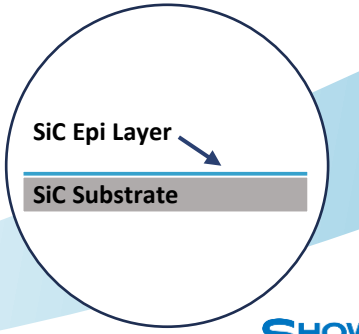
SiC Wafer Substrate
Multi-sourced, established suppliers

II-VI

SK siltron css

Wolfspeed

SiC Epi Layer
Multi-sourced reactors, scalable, highest-quality epi

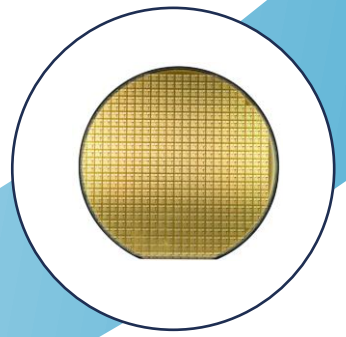


SHOWA DENKO

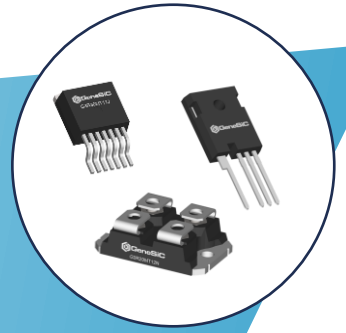
xfab

Tier-1, Low-Cost Foundry
- 6”(150mm) wafers
- 25k wafers/month capacity.
- Automotive-rated Class-10
- Fully-Automated CMOS prod’n

Finished SiC Wafer



Tier-1, Low-Cost Packaging
Multiple, major suppliers qualified



World-Class SiC Devices

- ✓ 90%+ yields
- ✓ 12+ combinations of substrate, epi and foundry qualified
- ✓ Industry highest die per wafer
- ✓ Significant capacity expansion & upside in 2022 / 2023
- ✓ 16-26 week lead-times

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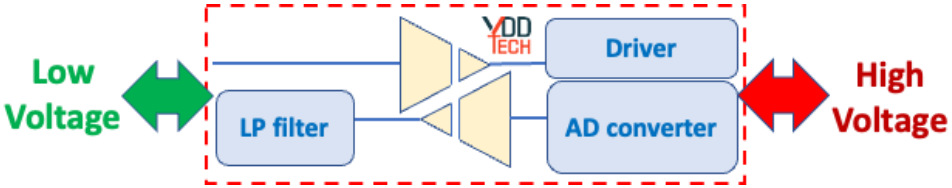
Critical, High-Speed Isolation

What are Digital Isolators?

- Critical circuits that interface low-voltage logic to high-voltage power
- Required in virtually all power systems for safety certifications
- Optimized for high-speed GaN and SiC
- Up to $1B/yr new market potential
- Expect first products launch in ‘23, revenue ‘24



Exp 20+

Phd. **Vincent DESSARD**

Founder, CEO, CTO

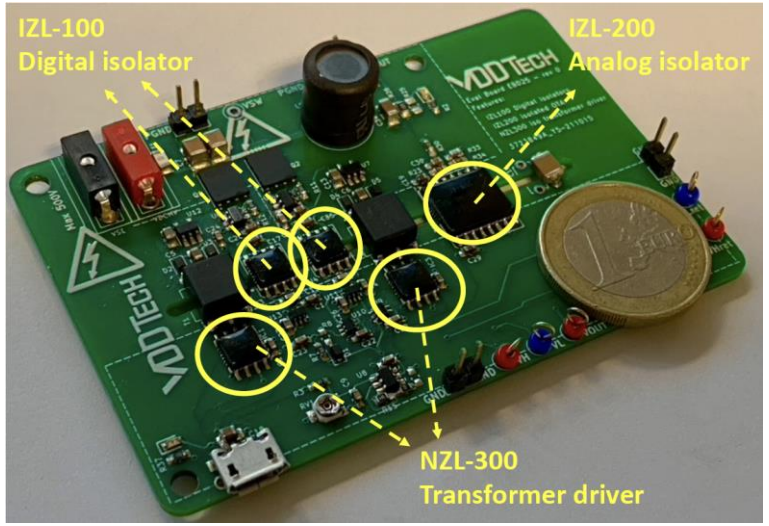
Serial Entrepreneur (Cissoid & X-Relsemi)
High-T° & Analog design in Power Elec.

Exp 15+

Phd. **Amaid SAIB**

Senior Designer

Automotive
High-T° design



Core IP Critical for GaN, SiC

	VDD Tech	Supplier #2	Supplier #3	Supplier #4	Supplier #5
Galvanic Isolation	✓ ≥2.5kVRMS	✓	✓	✓	✓
dv/dt immunity	✓ >200V/nsec	0	0	✗	0
Low EMI	✓ <0.5pF coupling cap	✓	✗	✗	✗
Low-cost	✓ Std CMOS	✗	✗	✗	✓

Based on Navitas assessment of publicly available supplier data sheets

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Unique, Focused, Go-To-Market Strategy

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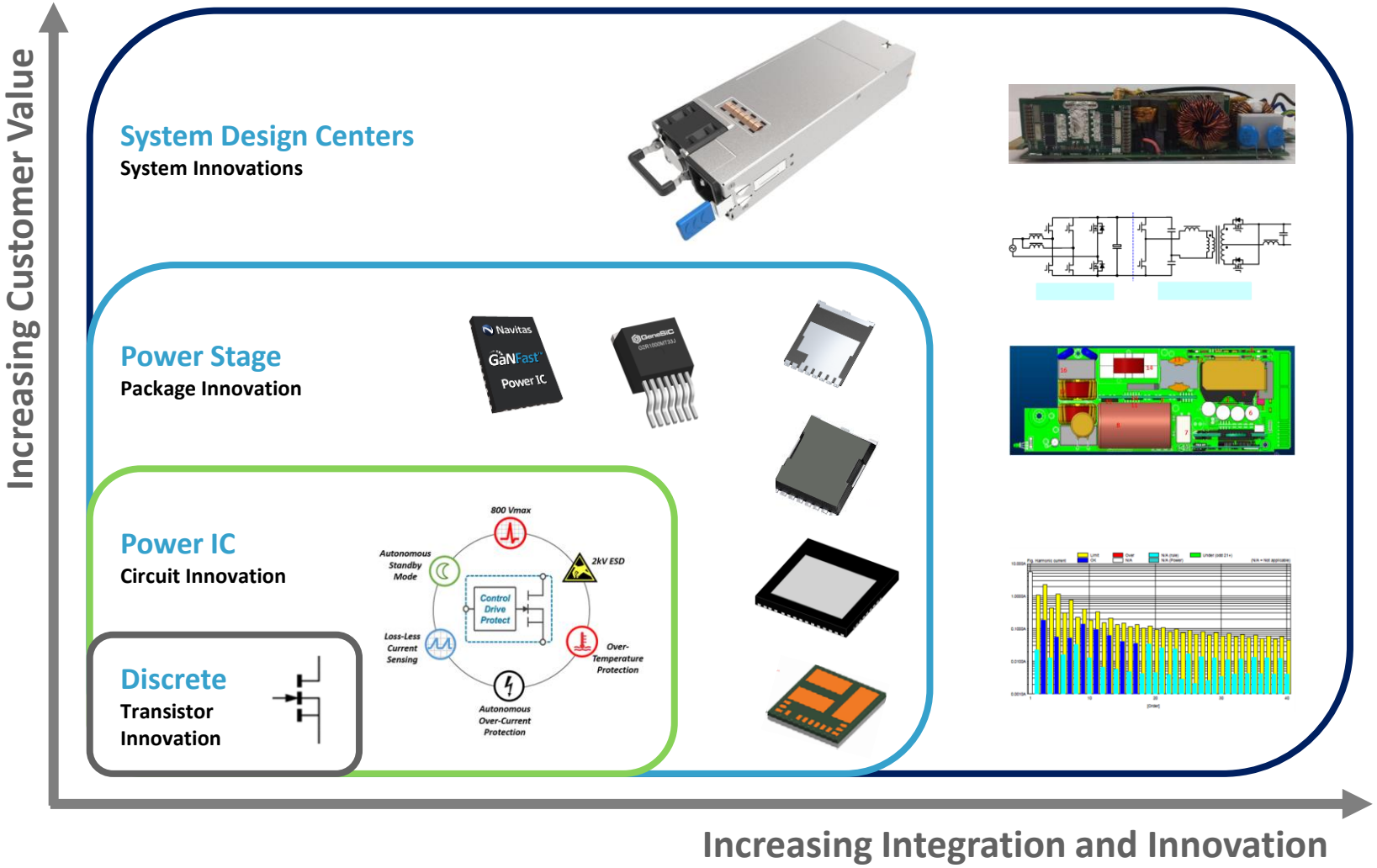

Four layers of innovation, integration and customer value

1) Transistor (discrete)
2) Circuit (power IC)
3) Package (power stage)
4) System

Unique System Design Centers

- Co-develop w/ lead customers
- High level of trust / dependency
- Drives increased innovation and value in package, circuit, discrete innovations

Three System Design Centers

- Mobile chargers
- Data center power systems
- EV power systems

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Electrify Our World™

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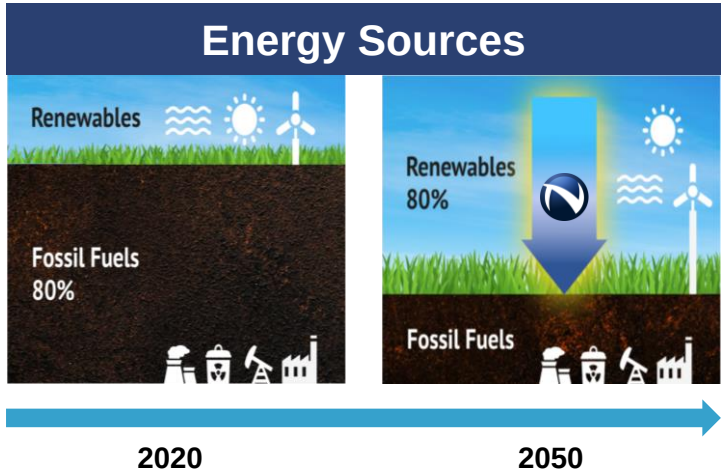
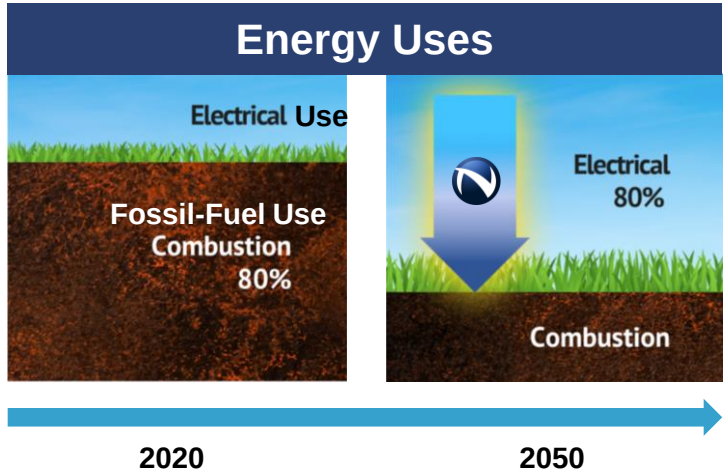
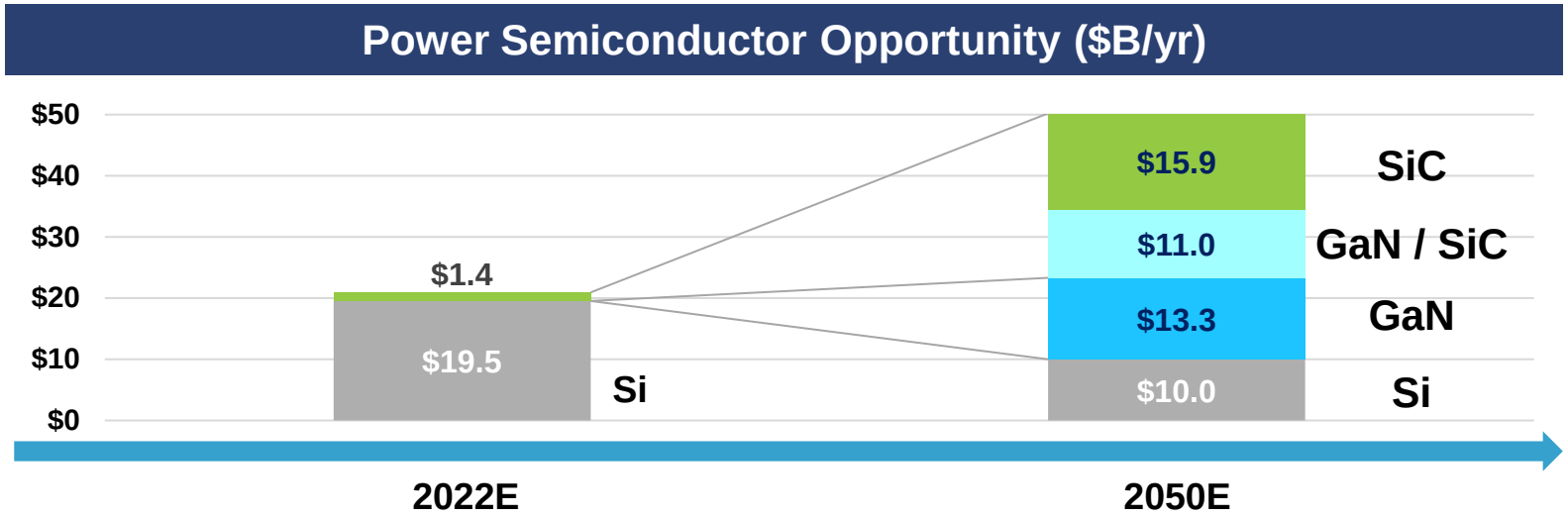
Energy sources and uses are being electrified…





…creating a $40B GaN + SiC opportunity by 2050



Fossil-fuel vs renewable ratios adapted from IRENA 2020 "Global Renewables Outlook".
Shift required to meet "Transforming Energy Scenario, 9.5 Gton target in 2050", per Paris Agreement's 1.5°C rise.
Market opportunity $ from Yole Développement, 2020 and Navitas analysis.

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Mesh Ventures Taiwan Investor Fire-Side Chat
August 18th / 19th, 2022

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Management does not consider these non-GAAP financial measures in isolation or as an alternative to financial measures determined in accordance with GAAP. The principal limitation of these non-GAAP financial measures is that they exclude significant expenses and income that are required by GAAP to be recorded in Navitas' financial statements. In addition, they are subject to inherent limitations as they reflect the exercise of judgments by management about which expenses and income are excluded or included in determining these non-GAAP financial measures. And, because non-GAAP financial measures are not standardized, it may not be possible to compare non-GAAP financial measures prepared by Navitas with non-GAAP financial measures prepared by other companies, even if the measures have similar names.

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