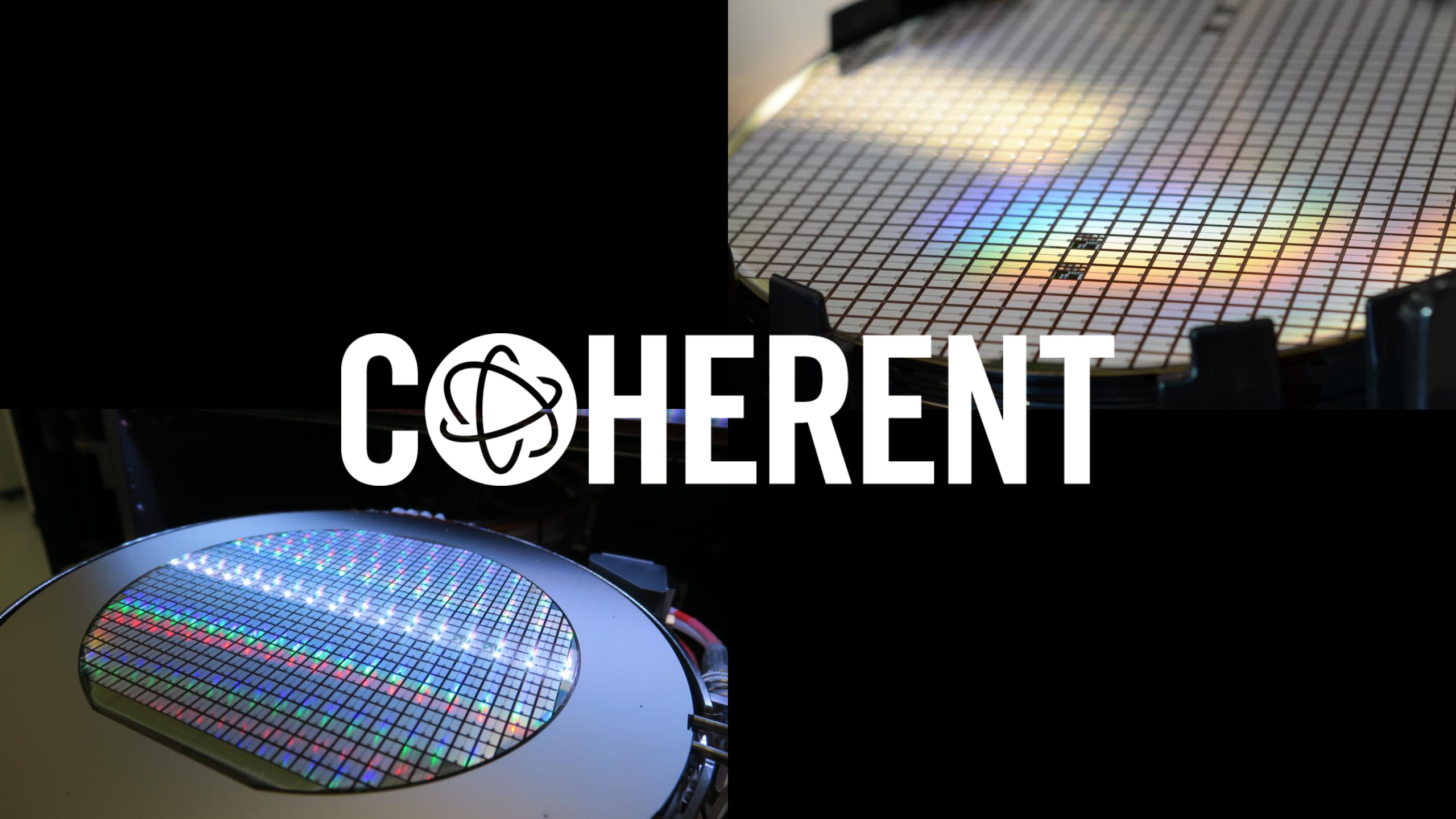
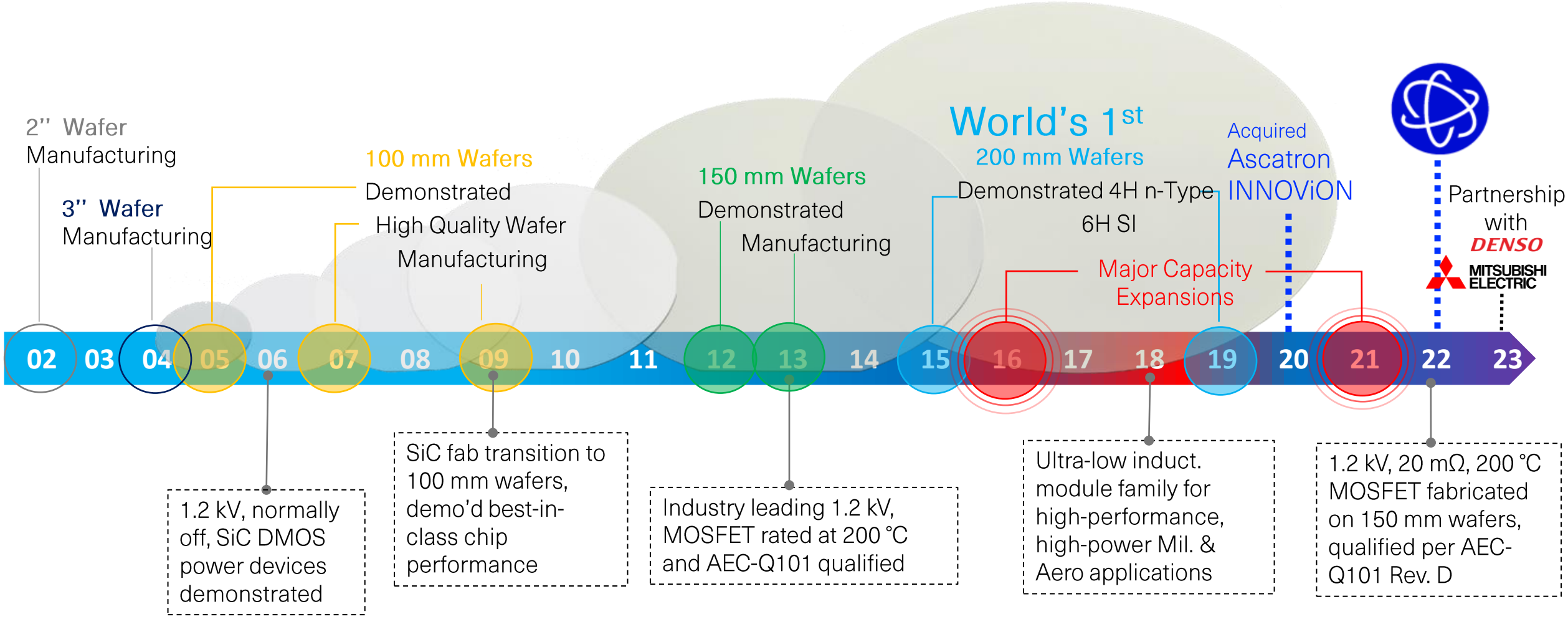
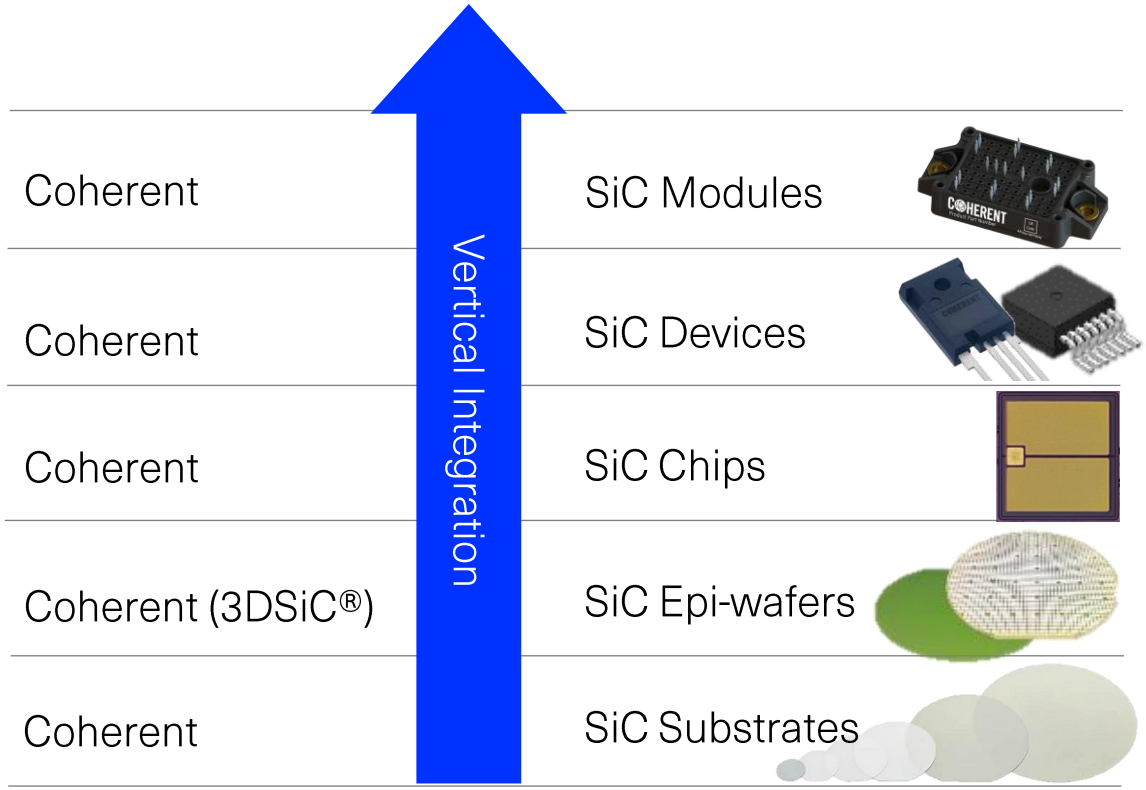

COHERENT

2 DECADES OF EXPERIENCE IN SiC MATERIALS AND DEVICE TECHNOLOGY

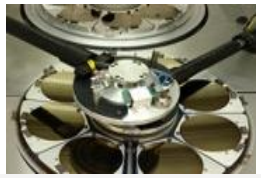
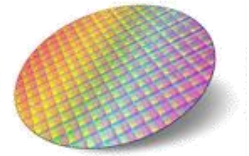
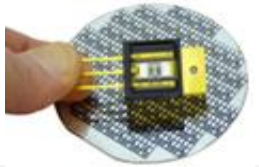


A VERTICALLY INTEGRATED SiC POWER ELECTRONICS TECHNOLOGY ORGANIZATION



WOLRDWIDE PRESENCE

SiC Devices and Modules

Pine Brook, NJ USA	Easton, PA USA	Starkville, MS USA	Fuzhou China	San Jose, CA Hsinchu, TW Wilmington, MA	Warren, NJ USA	Kista, Sweden	Eching, Germany
SiC Substrates	SiC Substrates and SiC Epi	Back End SiC Wafer Processing	Back End SiC Wafer Processing	Ion Implantation Services	RF GaN/SiC Devices	SiC Epi-wafers and SiC Power Devices	SiC Power Modules
							
• R&D • Crystal growth • Slicing	• 300k ft^2 • Crystal growth through Epitaxy	• Characterize • Polish, Clean, Ship	• Characterize • Polish, Clean, Ship • Ongoing Expansion	• Up to 300 mm • Low energy to MeV • Room temp/heated • Si, GaAs, SiC, GaN • SAW, BAW	• GaN/SiC RF HEMT's • GaAs HBT's, IPD's	• SiC/SiC Epi • SiC Diodes • SiC MOSFET's	• Design Center

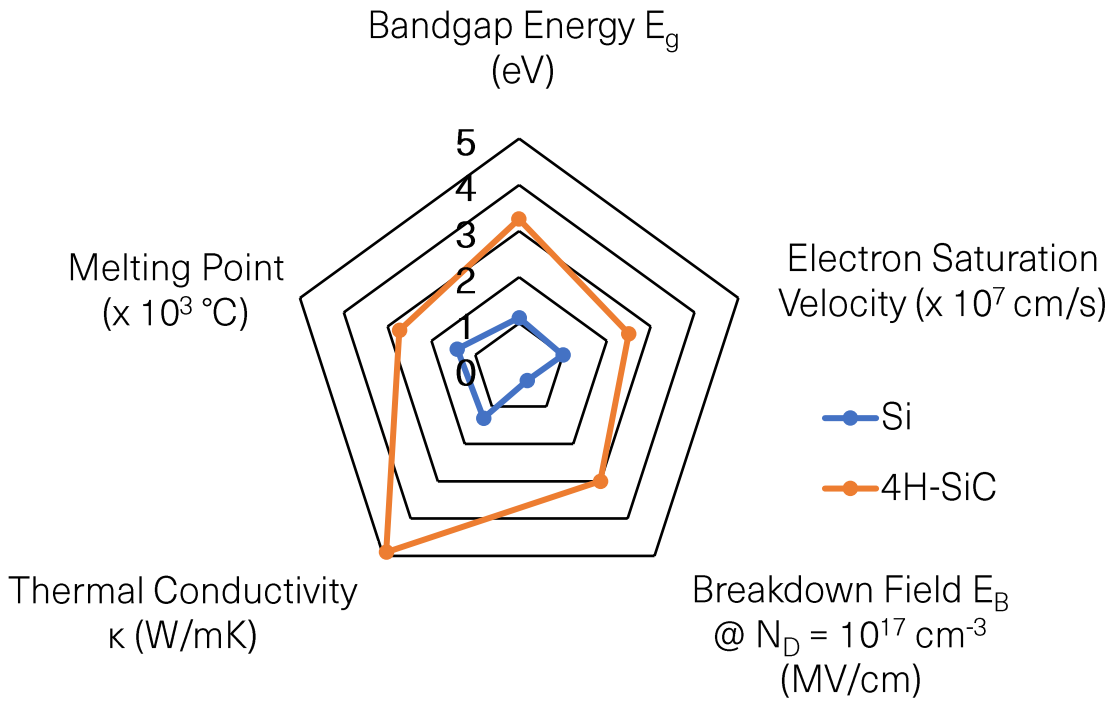
POWER ELECTRONICS FOR GREEN AND CLEAN ENERGY

ELECTRIC VEHICLES

SOLAR & WIND ENERGY

SMART GRID POWER SWITCHING

BENEFITS OF SiC POWER DEVICES COMPARED TO Si DEVICES



ADVANTAGES AND DIFFERENTIATIONS

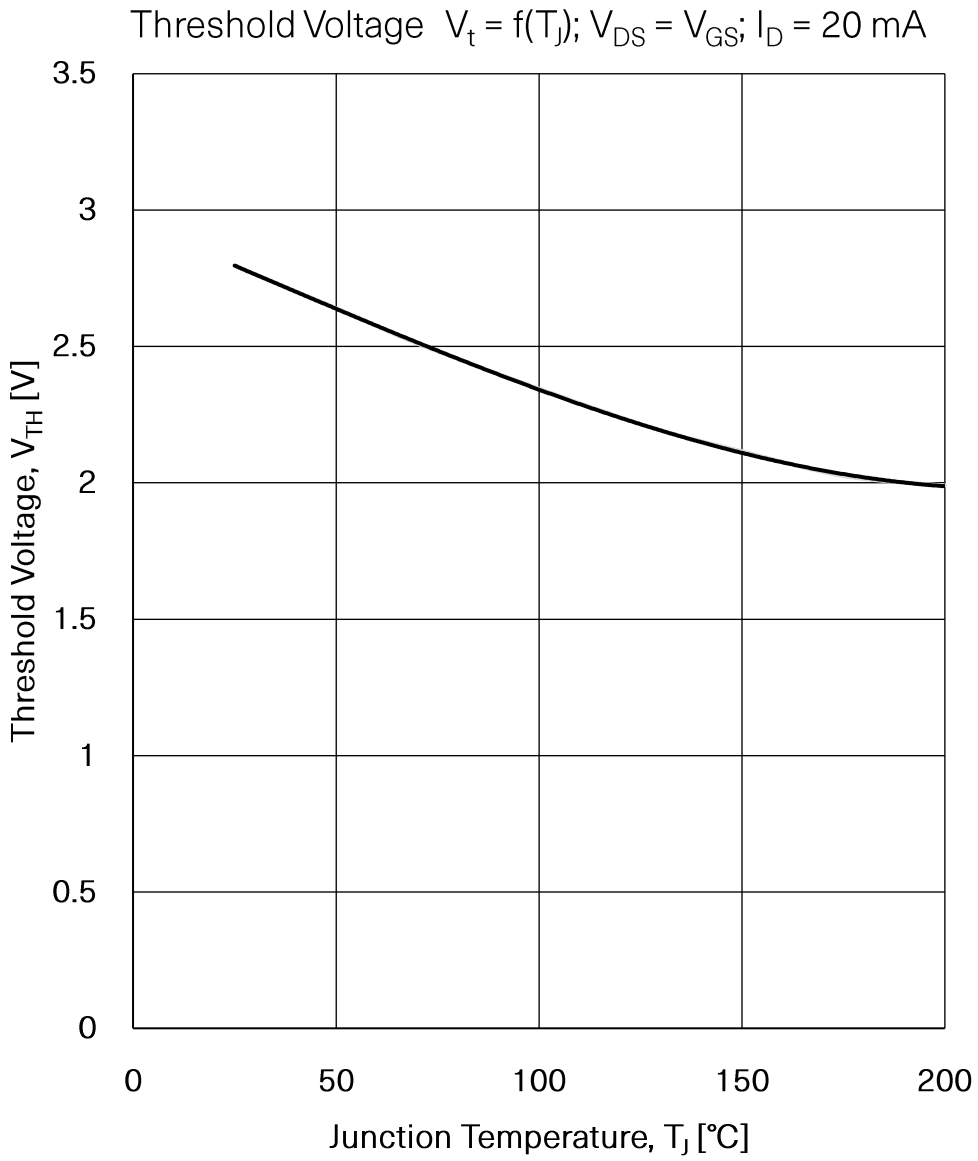
- Reliability
  - 200 °C
  - AEC-Q101-REV D1
  - GOI
  - PBTI, NBTI -15 V → +25 V

- Performance
  - More robust channel control in blocking mode
  - R_{sp} temperature sensitivity ↓
  - Lower switching loss
  - Stable dynamic characteristic
  - Less body-diode sensitivity to channel conduction
  - Better body-diode @ high-temperature synchronous switching

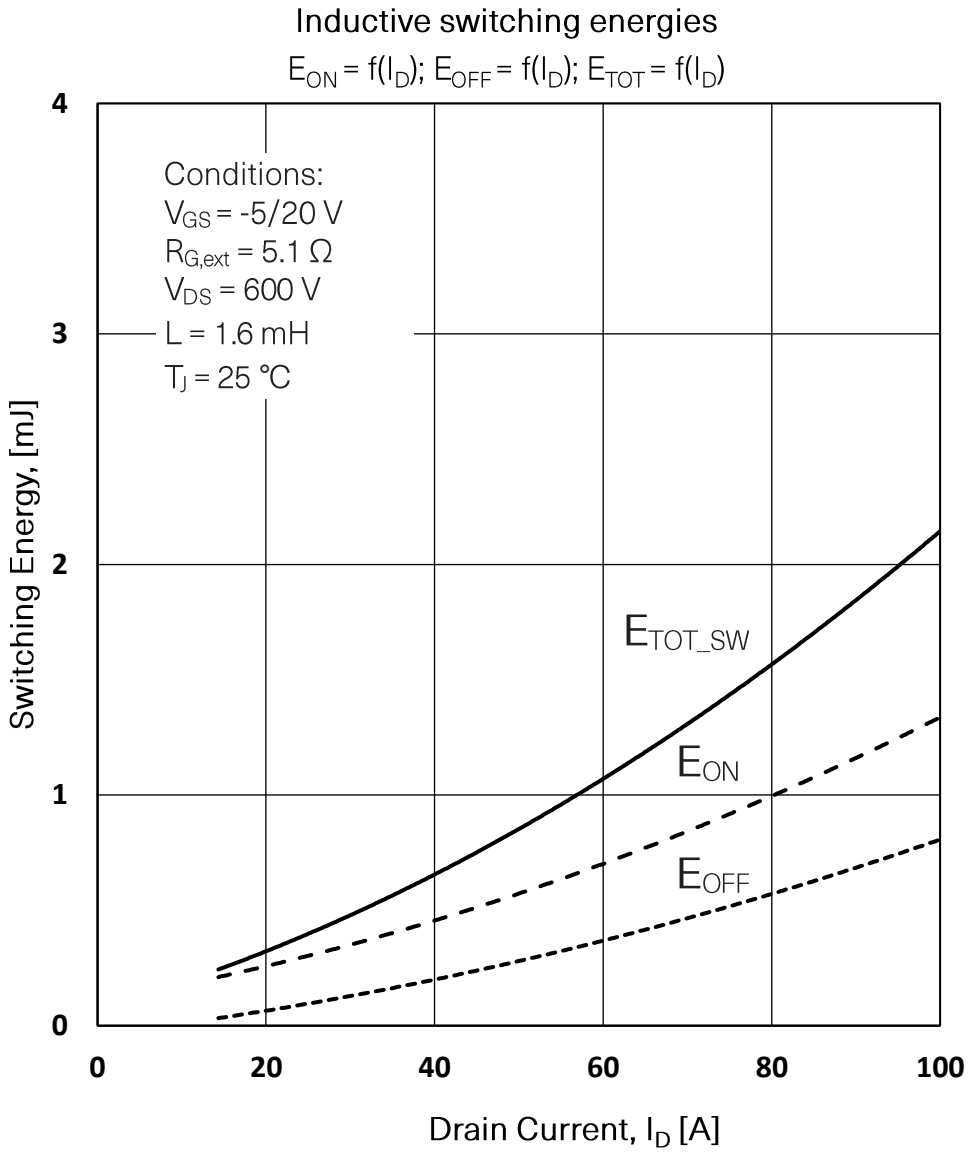
- Ruggedness
  - 4k cycles SCW survivability
  - Superior UIS avalanche energy 13 J/cm^2
  - Body diode surge

- Design for manufacturing uniformity
  - Gate dielectric breakdown voltage
  - UIS distribution across lots, scalable with die sizes
  - SCW across lots and die sizes

INDUSTRY-LEADING VOLTAGE THRESHOLD STABILITY ENABLES 200 °C OPERATION



OUTSTANDING SWITCHING PERFORMANCE FROM RT UP TO 200 °C JUNCTION TEMPERATURE

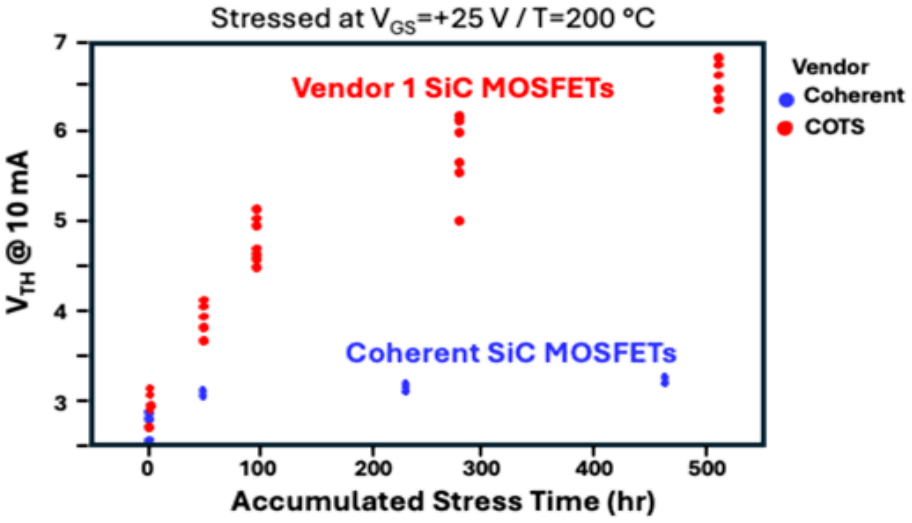


200 °C JUNCTION TEMPERATURE CAPABILITY

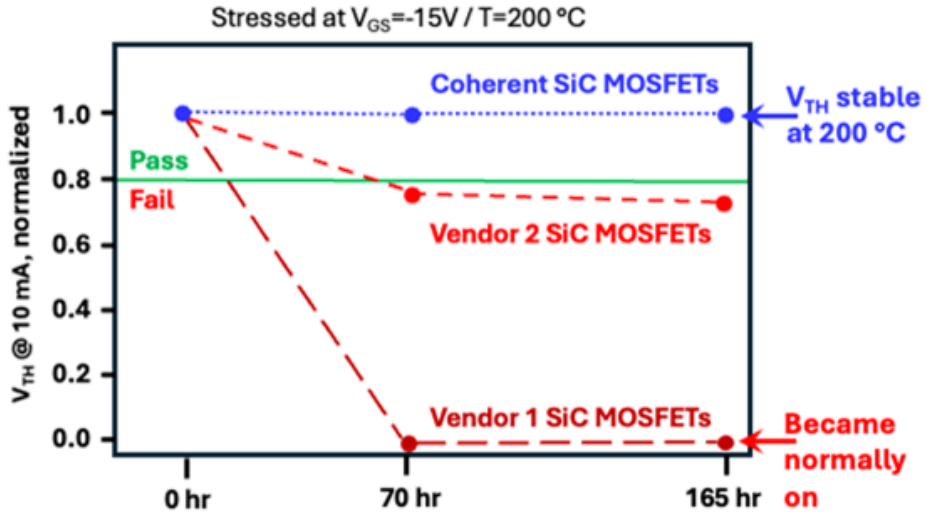
Coherent MOSFETs are based on our Gen3+ technology platform, building on 20+ years history in the fabrication of SiC MOSFETs. These devices are AEC-Q101 qualified at 200 °C max junction temperature. This technology platform demonstrates its leading reliability and ruggedness, along with industry-leading avalanche capability.

1200 V, 20 mΩ SiC MOSFET
Industry leading V_{GS} threshold stability enables 200 °C rating

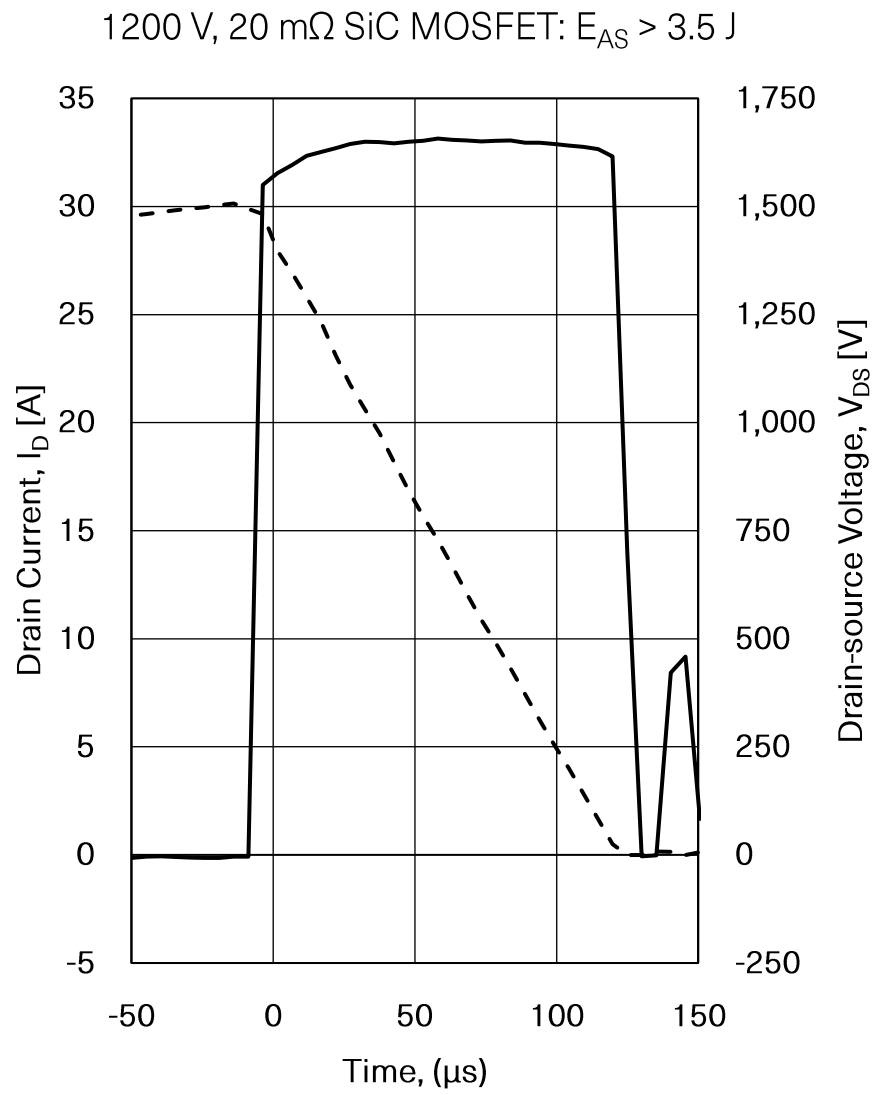
Positive Bias Threshold Instability (PBTI)



Negative Bias Threshold Instability (NBTI)



SUPERIOR AVALANCHE RUGGEDNESS AND ROBUST DESIGN-PROCESS RESULTS IN GOOD UNIFORMITY



SiC DEVICE LINE-UP

Part Number	$R_{DS(ON)}$	Package	Blocking Voltage	Current Rating @25 °C	Qualification
* TBM30116120	11.6 mΩ	Bare Die	1200 V	-	Automotive
* TM3B0012120A	12 mΩ	TO-247-4	1200 V	171 A	Automotive
TBM30200120	20 mΩ	Bare Die	1200 V	-	Automotive
TM3B0020120A	20 mΩ	TO-247-4	1200 V	115 A	Automotive
* TBM30270120	27 mΩ	Bare Die	1200 V	-	Automotive
* TM3B0027120A	27 mΩ	TO-247-4	1200 V	83 A	Automotive
* TM3E0027120A	27 mΩ	TO-263-7	1200 V	83 A	Automotive
* TBM30390120	39 mΩ	Bare Die	1200 V	-	Automotive
* TM3B0039120A	39 mΩ	TO-247-4	1200 V	60 A	Automotive
* TM3E0039120A	39 mΩ	TO263-7L	1200 V	60 A	Automotive

* In AEC-Q101 qualification

Operating Temperature: -55 °C to 200 °C

SiC MODULE LINE-UP

Part Number	Variant	$R_{DS(ON)}$	Topology	Bloking Voltage	Housing	Qualification
TMA0100HB120A	AP0101	10	Half Bridge	1200 V	AlphaPack E1	Automotive
TMA0100HB120A	AP0201	10	Half Bridge	1200 V	AlphaPack E1	Industrial
TMA0195HB120A	AP0202	19.5	Half Bridge	1200 V	AlphaPack E1	Industrial
TMA0135HB120A	AP0203	13.5	Half Bridge	1200 V	AlphaPack E1	Industrial
TMA0200HH120A	AP0301	20	Full Bridge	1200 V	AlphaPack E1	Industrial
TMA0390HH120A	AP0302	39	Full Bridge	1200 V	AlphaPack E1	Industrial
TMA0270HH120A	AP0303	27	Full Bridge	1200 V	AlphaPack E1	Industrial
TMA0390SP120A	AP0401	39	Six Pack	1200 V	AlphaPack E1	Industrial
TMA0600SP120A	AP0402	60	Six Pack	1200 V	AlphaPack E1	Industrial
TMA0270SP120A	AP0403	27	Six Pack	1200 V	AlphaPack E1	Industrial
TMA0050HB120B	BP0001	5	Half Bridge	1200 V	AlphaPack E2	Industrial
TMA0066HB120B	BP0002	6.6	Half Bridge	1200 V	AlphaPack E2	Industrial
TMA0029HB120B	BP0003	2.9	Half Bridge	1200 V	AlphaPack E2	Automotive
TMA0116HH120B	BP0201	11.6	Half Bridge	1200 V	AlphaPack E2	Industrial
TMA0600SP120B	BP0301	11.6	Six Pack	1200 V	AlphaPack E2	Industrial

* All available with pre-applied TIM material
* Plan to get AEC-Q101 qualified
* Pin: Barrel Press-fit

SALES AND DISTRIBUTOR

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Europe	sales@coherent.com
Asia	sales@coherent.com

Partners	Capabilities	Contact Info
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Avnet, Inc.	Devices & Modules	onlinesupportUS@avnet.com
Digi-Key, Corp.	Devices & Modules	sales@digikey.com
Mouser Electronics	Devices & Modules	sales@mouser.com

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