GaN: Applications and Challenges for Schneider perspective

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Schneider Electric Power conversion products

UPS, 500VA to 1.5MVA, >2 B€

VSD, 500VA to 20MVA, >1 B€

EV charger

PV inverter

Servo drive

Power supply

USB charger
Power density and Energy efficiency are key features where GaN and SiC have strong impact

**Power density:**
Example of 3kVA UPS, size reduction from 3U to 2U then 1U in last ~10 years

**Energy efficiency:**
Helps increase power density.
Customers are paying more and more attention to hidden cost of energy losses.
GaN or SiC in Schneider products

GaN for low voltage (120V) and low power (<tens of kW)
SiC for high voltage (220-400V)
Conclusion

• Challenges to take full benefit of GaN device capabilities
  • robustness/overload/overvoltage capability, reliability
  • gate driving, paralleling, EMC
  • high frequency close-loop control
  • cost

• Need to work together to improve:
  • device technology,
  • integration, packaging, modeling, 3D simulation tool,
  • cost-competitive solution for advanced HF close-loop control
  • EV is main innovation driver of power electronics.
    Schneider Electric is willing to collaborate on integration, packaging
    standardization, 3D simulation etc.