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ARMMS Panel Session

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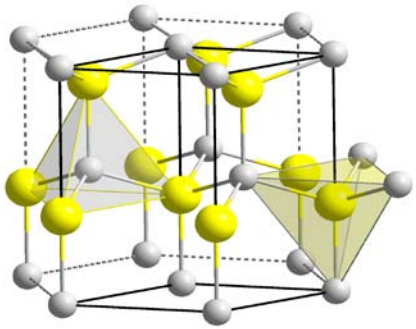
RF Semiconductor Technology Road Map - Are we changing lanes, or adding them to increase capacity?

GaN - Disruptive Technology

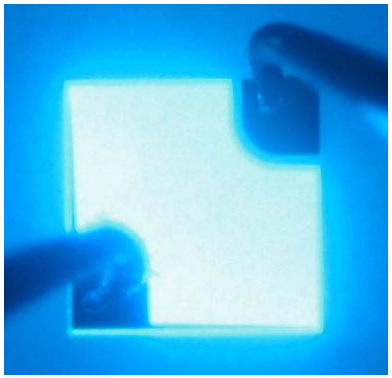


High Electric Field Strength

Breakdown Voltage

High Voltage Operation

Higher Impedance



Temp. Tolerance

Power Dissipation

Power Density

Higher Efficiency

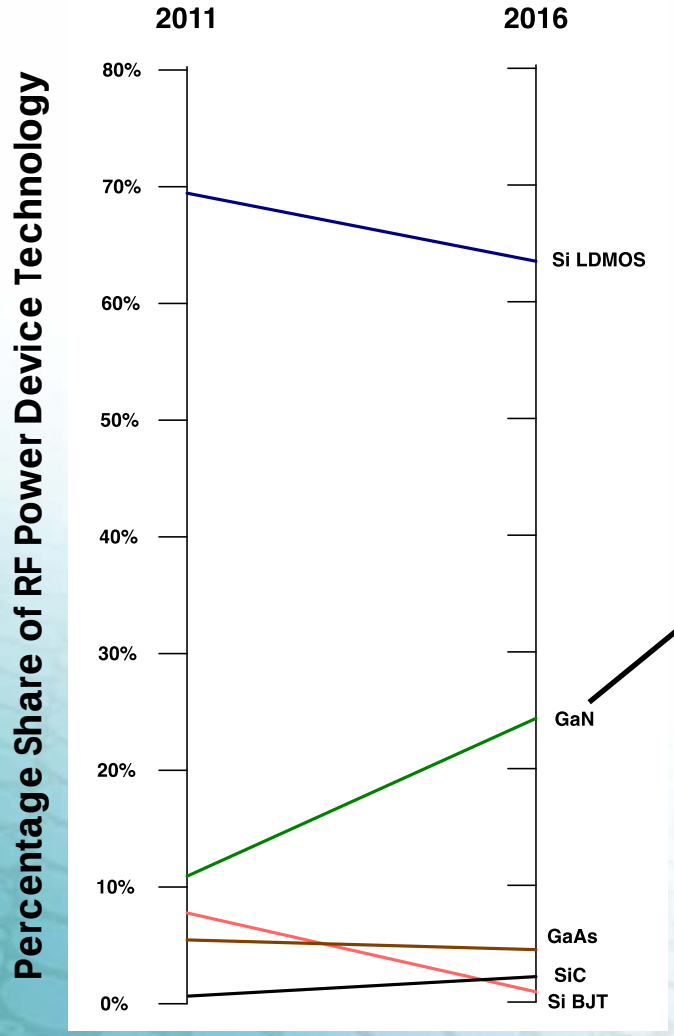
Wider Bandwidth

Higher Power

Smaller Size

Multi Function Capability

The GaN Opportunity

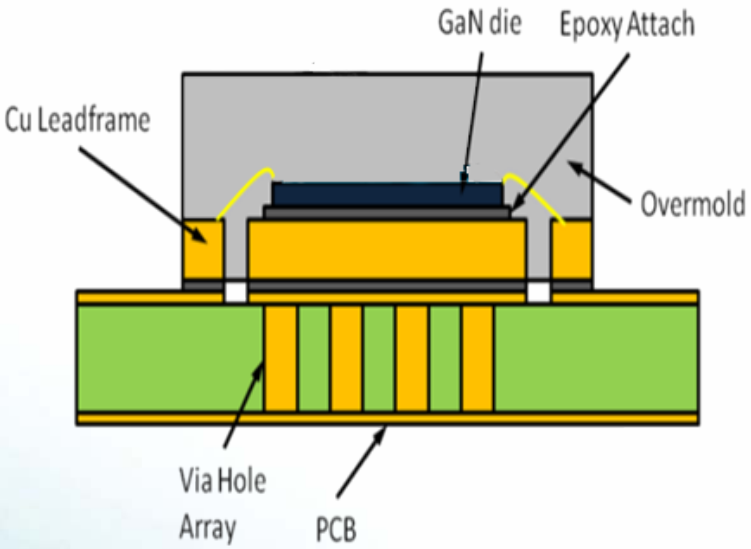


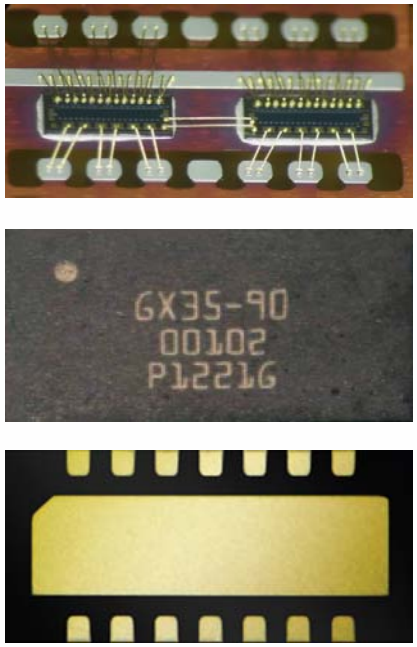
GaN is the fastest growing segment of the $1.3B RF power transistor market

GaN is expected to be approximately 25% of the overall RF power device market in 2016

Source: ABI Research

GaN in Plastic Packaging





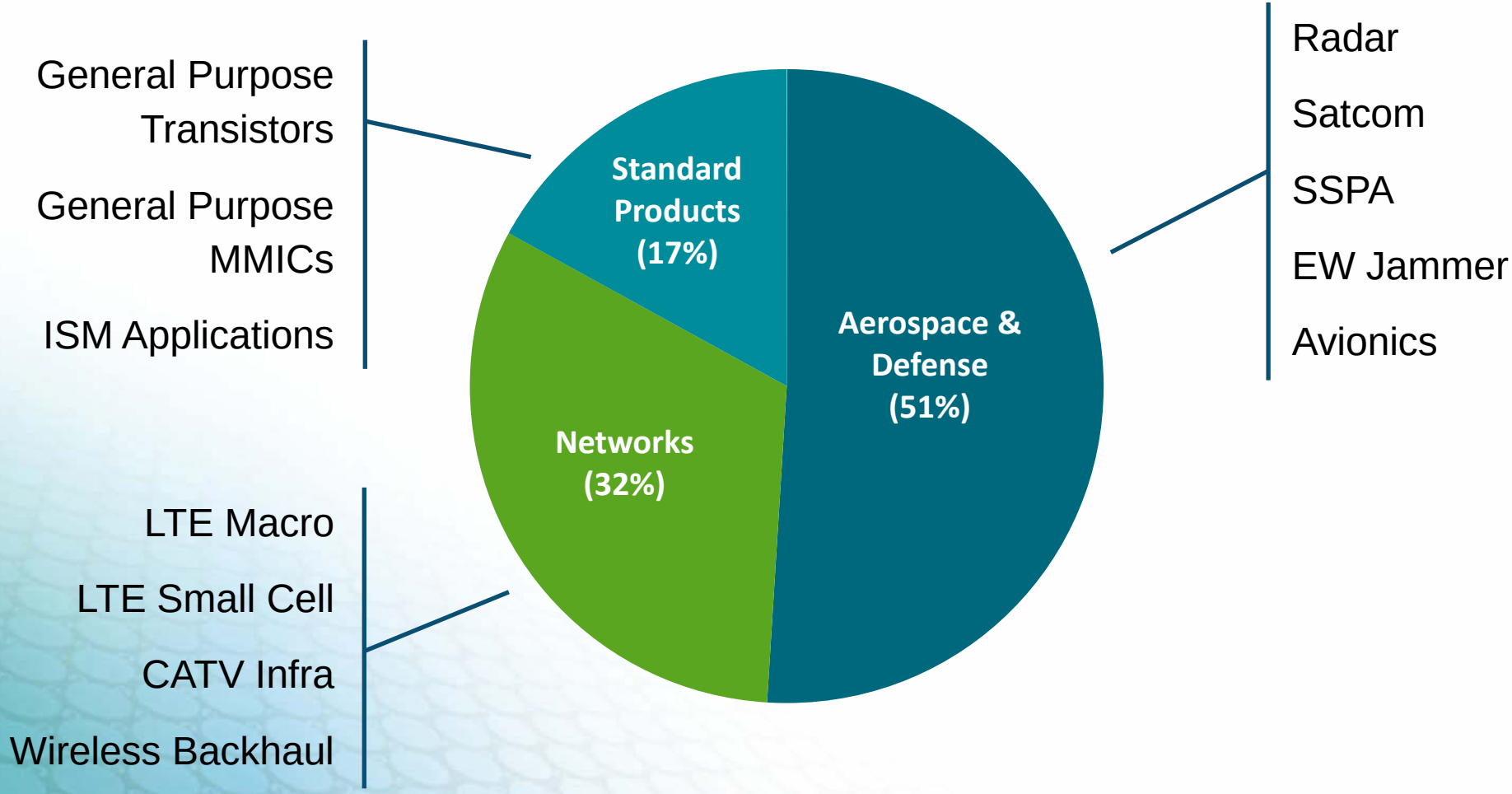
100W Power Transistor in
3 x 6 mm DFN Package

Automatic Low Cost Build:

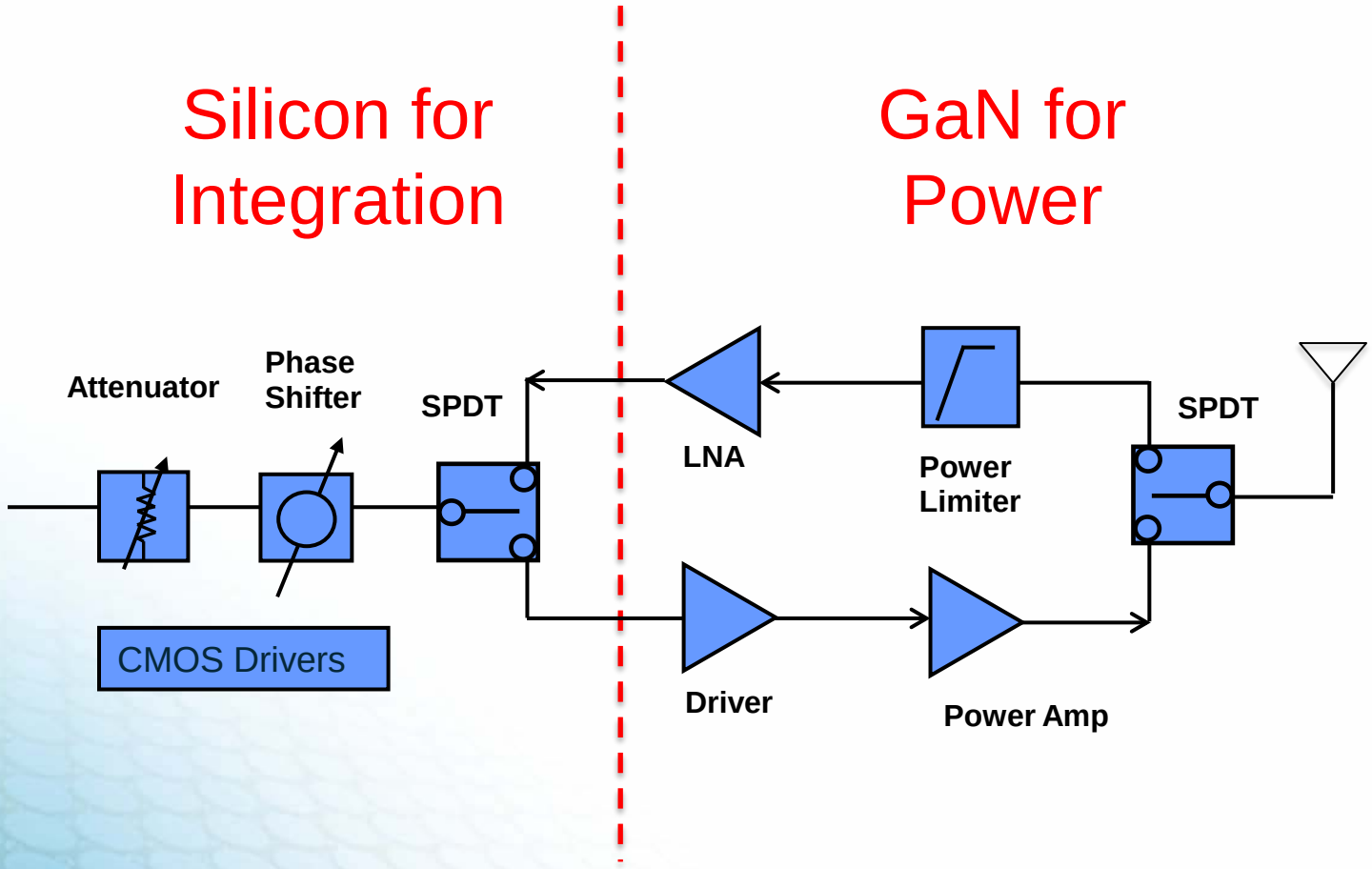
- Die Placement
- Die Attach
- Wire Bond
- Die Coat Dispense
- Over-Mold

True SMT Assembly with MSL1

High Power RF GaN is Expected to be Adopted Across Many Market Segments



RX/TX System Breakdown

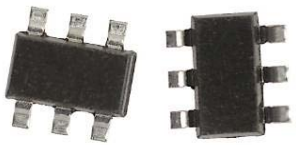


Transit Receive Module (TRM) Example

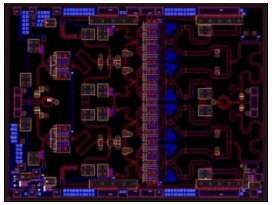
The Future of GaAs…

GaAs to Decline Slowly

- High Availability of Utility Low Cost GaAs Devices
- High Cost of GaN
  - Limited Foundry Sources
  - 0.25um / 0.15um / 0.1um Development Time
  - Focus on High Power Amplifiers
- GaN on Si cheaper than on SiC – Nitronex Acquisition
- GaN Supply Voltage Change from 8V to 28V / 48V
- SiGe Development Costs are high for Transceiver Function
- Inflexibility of SiGe Transcievers



GaAs Gain Blocks



GaAs PA

Thank You!

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