

# MIDAS

## Millimetre-wave Integrated Diode and Amplifier Sources

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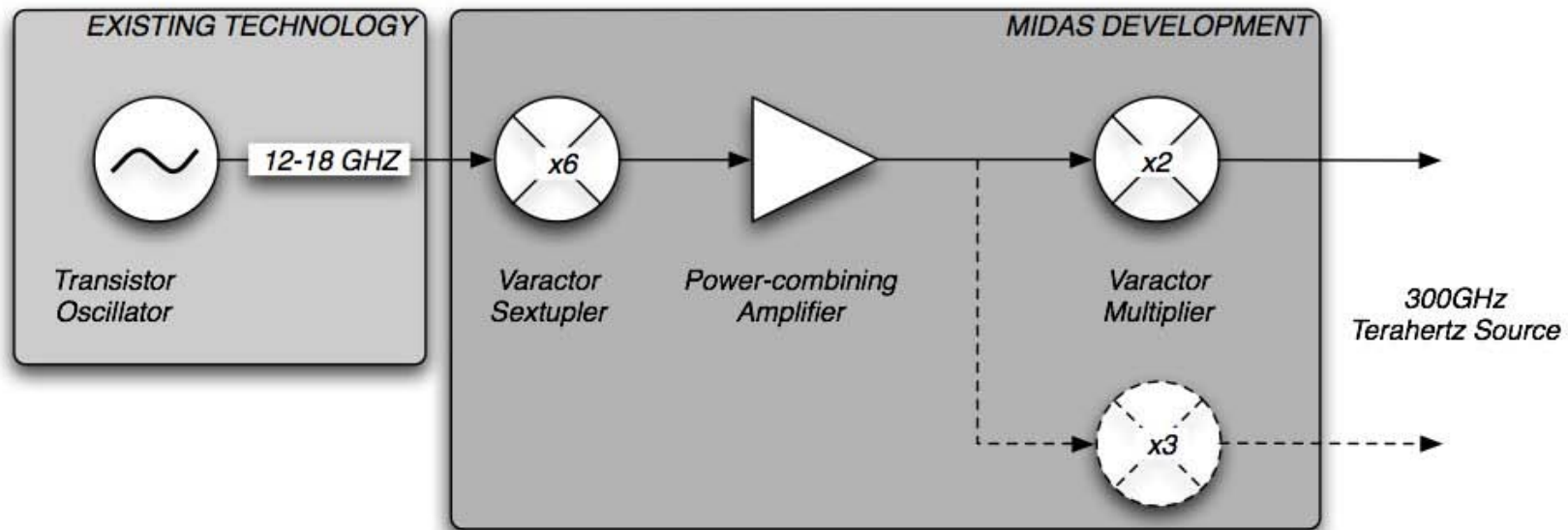
Radiometer Physics GmbH, Germany

Technical University of Madrid, Spain

# Project Concept and Objectives



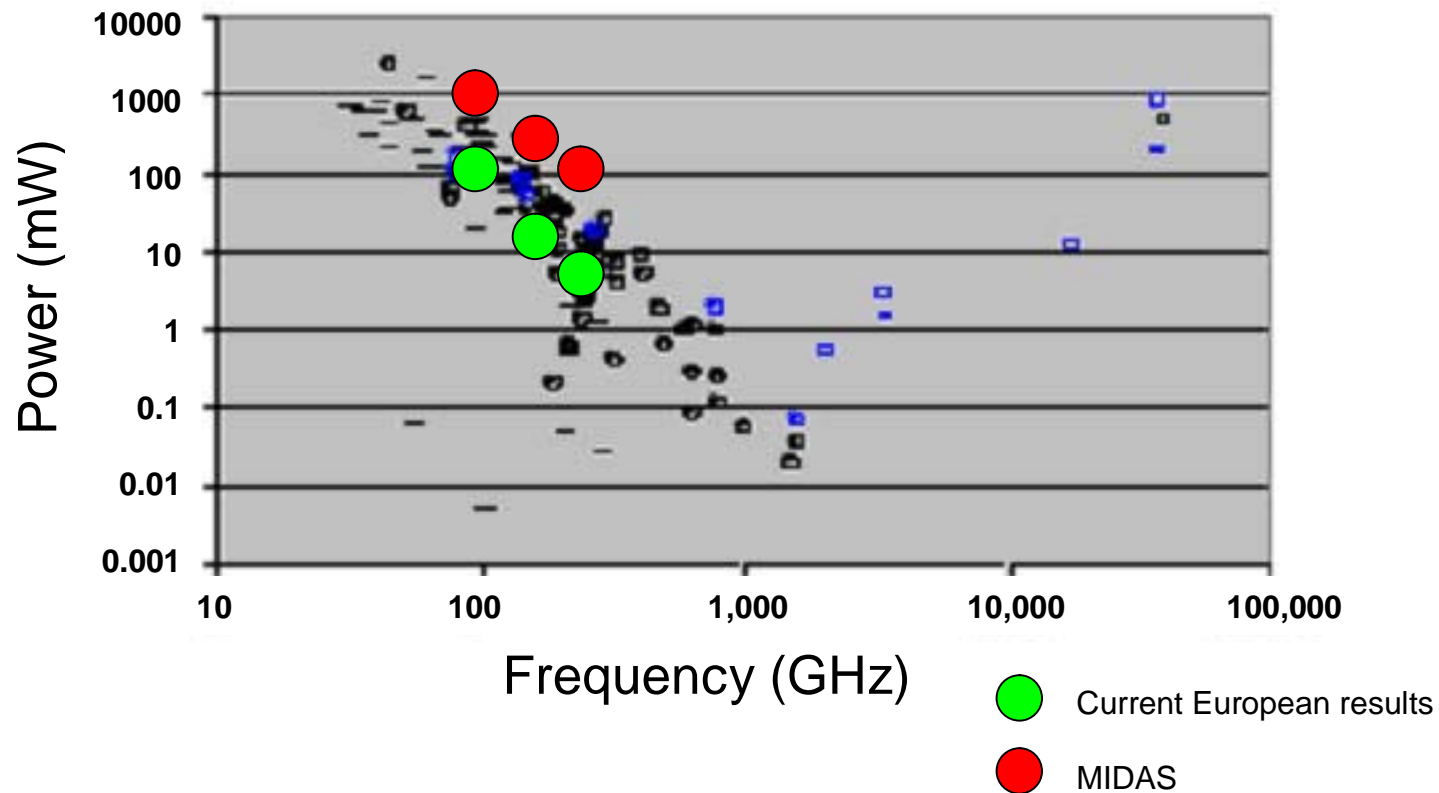
- To develop and commercialise generic integrated diode and amplifier sources
  - High power source technology at 200 and 300 GHz



# Progress Beyond State-of-the-art



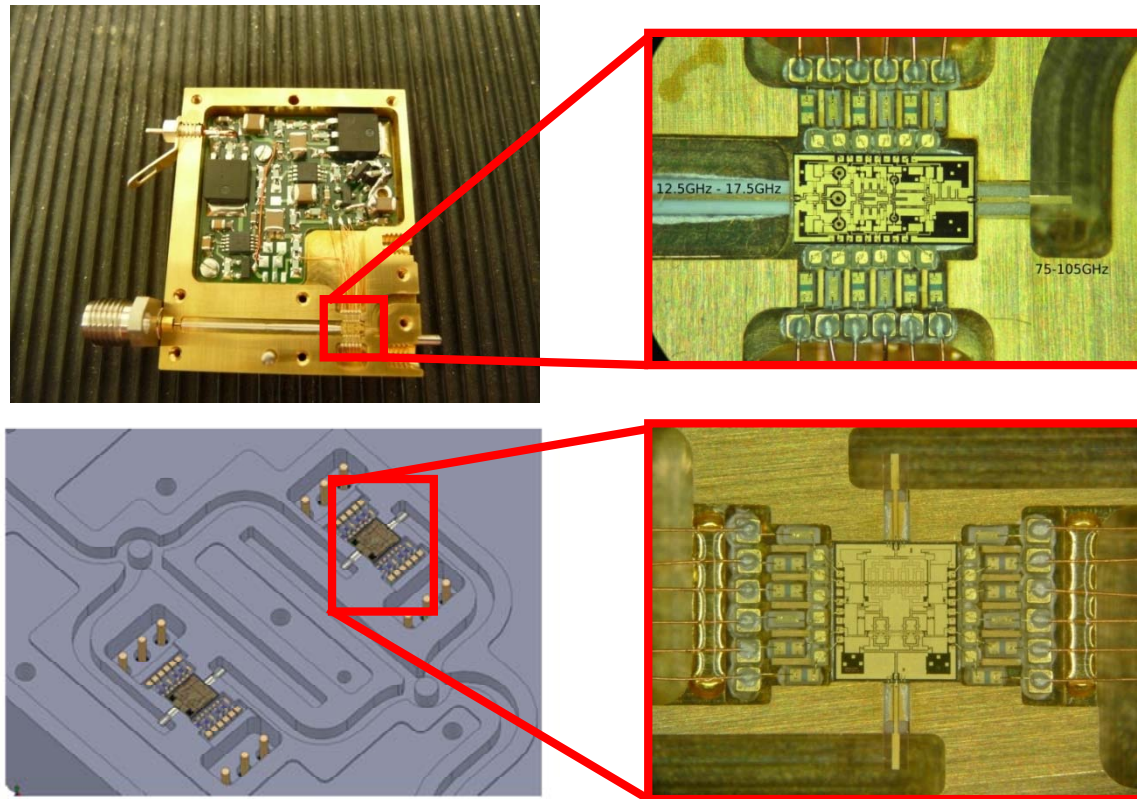
- MIDAS will represent a significant advance for European device technology



# High-Power 100 GHz Source



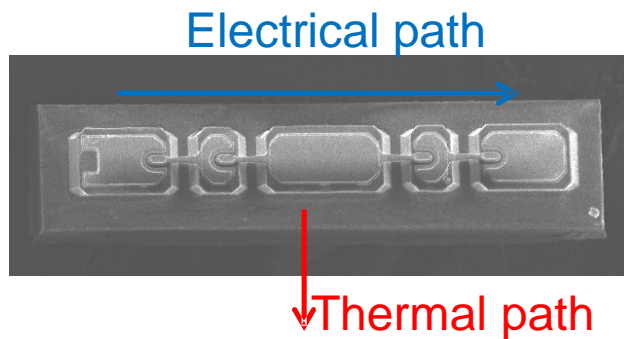
- Power combining techniques are being developed for MMIC and Schottky structures



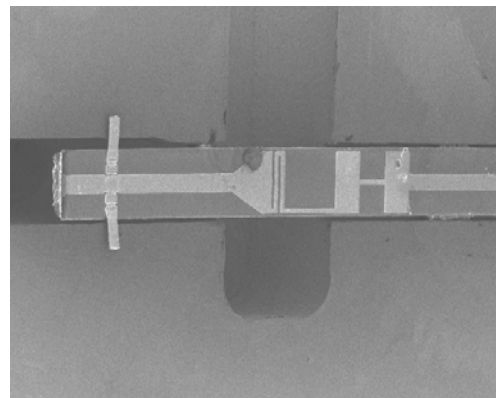
# Diode Simulation and Optimisation



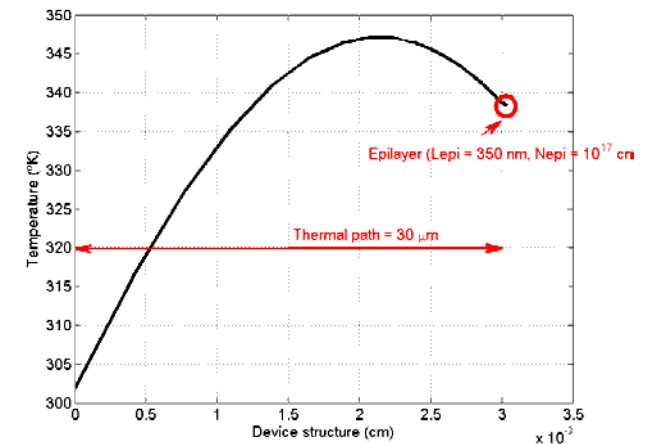
- Integration techniques have been developed to improve thermal management and increase circuit performance
  - Substrate transfer, beam-leads and capacitors
  - Full electro-thermal simulations



Substrate transfer



Diode integration with beam-leads



Electro-thermal simulation of diode structure

• Thermal performance: 3D problem

• Electrical path • Thermal path

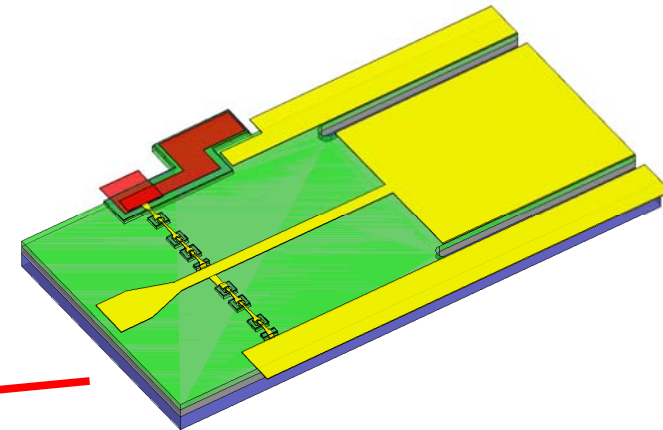
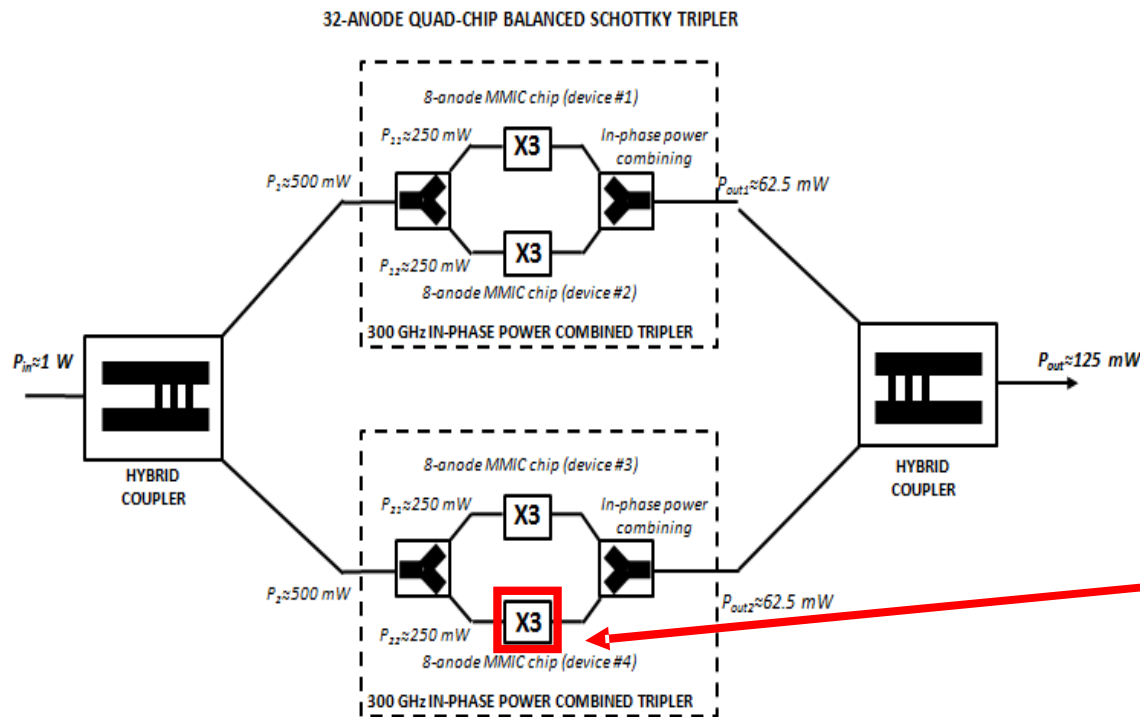
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# Final Demonstrators



- Power combined integrated Schottky circuits will follow power-combined MMIC amplifiers to provide high-power source technology



Integrated 300 GHz tripler design