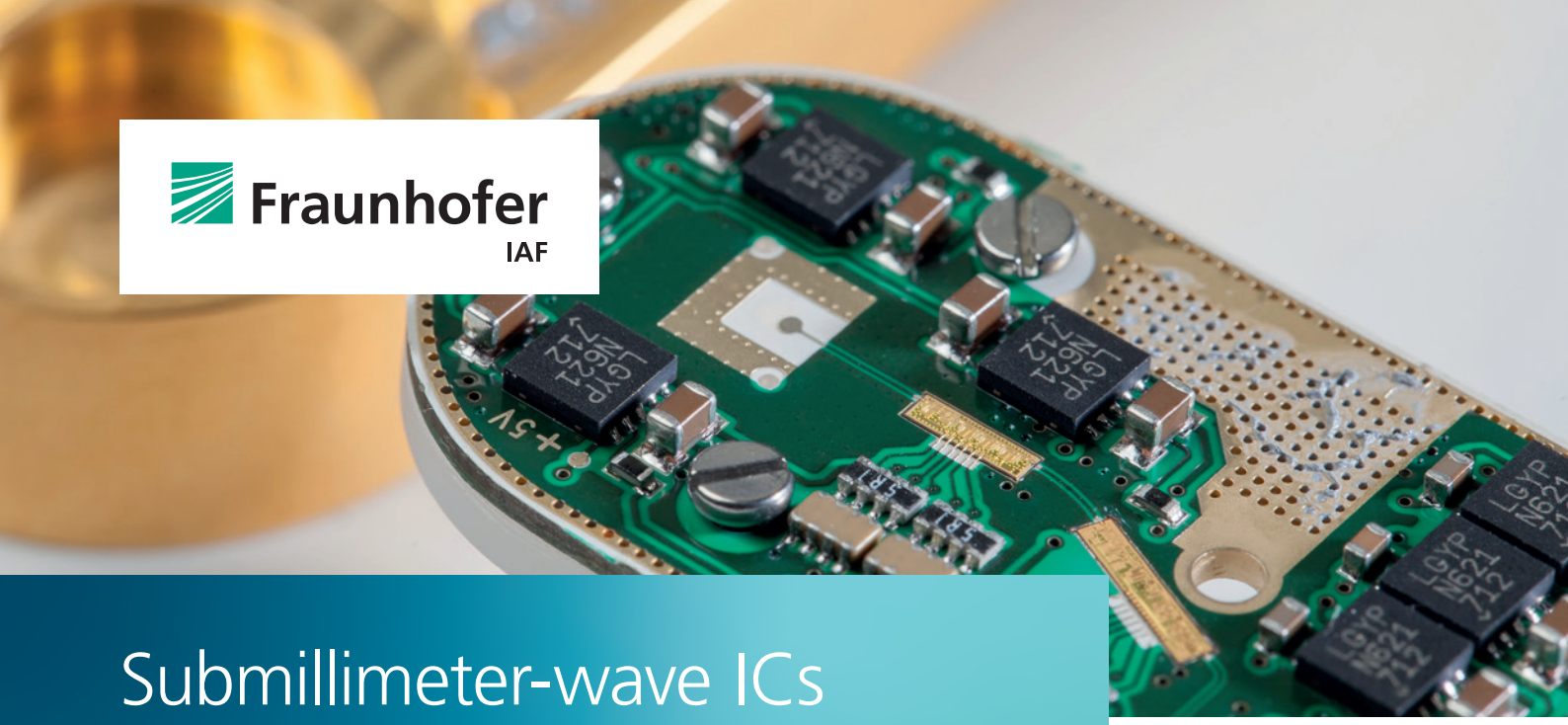

Fraunhofer IAF

Submillimeter-wave ICs and modules

Detailed view of a W-band transmission module realized via heterointegration
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Extremely low noise at high bandwidth

We offer transmission and receiver circuits with low noise, high bandwidths and low power consumption. Our metamorphic InGaAs-based MMICs set new standards with a noise figure of only 6 dB at 340 GHz and operating frequencies of up to 670 GHz. The production of transmission amplifiers up to 200 GHz is based on high-performance GaN technology on silicon carbide substrates.

Features

- Power generation in the W-band with P_{sat} > 1 W
- Amplifiers at 180 GHz with P_{sat} > 50 mW
- Amplifier modules in the W-band with a noise figure of 2 dB
- Waveguide modules at 340 GHz with a noise figure of 7 dB or with an output power of > 10 dBm
- Single-chip transmission and receive channels up to 440 GHz with operating band widths > 50 GHz

Technology	Gate Length	Features
Metamorphic HEMT process	50 nm	InAlAs/InGaAs IC process on GaAs substrates with f_{max} > 500 GHz
Metamorphic HEMT process	35 nm	InAlAs/InGaAs IC process on GaAs substrates with f_{max} > 1000 GHz
GaN25 HEMT	250 nm	AlGaN/GaN IC process on SiC substrates for the development of powerbars and MMICs in the frequency range of approx. 20 GHz
GaN10 HEMT	100 nm	AlGaN/GaN IC process on SiC substrates for circuits up to 200 GHz

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More information: