



1 The 4-channel Rx/Tx module allows THz technologies at 300 GHz for wireless networks beyond 5G.

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2 Detailed view of a W-band transmission module realized via hetero-integration.

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SUBMILLIMETER-WAVE ICs AND MODULES

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.

- Power generation in the W-band with $P_{\text{sat}} > 1 \text{ W}$
- Amplifiers at 180 GHz with $P_{\text{sat}} > 50 \text{ mW}$
- 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 $> 10 \text{ dBm}$
- Single-chip transmission and receive channels up to 440 GHz with operating band widths $> 50 \text{ GHz}$

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Part of



Technology	Gate Length	Features
Metamorphic HEMT process	50 nm	InAlAs/InGaAs IC process on GaAs substrates with $f_{\text{max}} > 500 \text{ GHz}$
Metamorphic HEMT process	35 nm	InAlAs/InGaAs IC process on GaAs substrates with $f_{\text{max}} > 1000 \text{ GHz}$
GaN25 HEMT	250 nm	AlGaIn/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	AlGaIn/GaN IC process on SiC substrates for circuits up to 200 GHz