

Background

In the IOWN of 2030, multi-Tb/s optical and beyond-100-Gb/s wireless networks will be required. Analog ICs operating in ultra-broadband and sub-THz will be indispensable for such networks, but the operating speed limit of transistors and high-frequency losses have made it difficult to realize them.

Summary

Based on proprietary high-speed compound semiconductor transistor and progressive circuit design technologies, NTT has succeeded in developing the world's highest-performance analog ICs, including a 200-GHz-bandwidth baseband amplifier IC and a 300 -GHz power amplifier IC.

IOWN in 2030

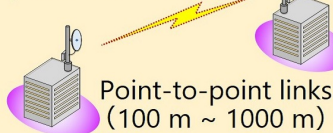
Optical networks

Need for **multi-Tb/s** per wavelength



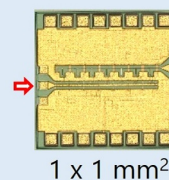
Wireless networks

Need for **beyond-100-Gb/s**

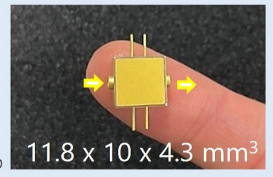
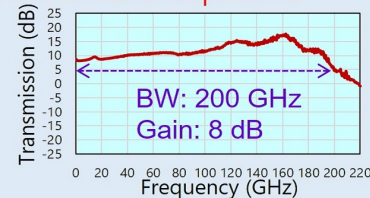


Ultra-broadband baseband analog IC for multi-Tb/s optical links

➤ 200-GHz-bandwidth baseband amplifier IC



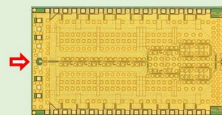
1 x 1 mm²



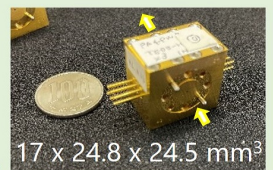
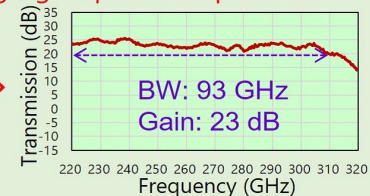
11.8 x 10 x 4.3 mm³

Sub-THz-band analog IC for 100-Gb/s wireless links

➤ 300-GHz-band high-gain power amplifier IC



2 x 3.4 mm²



17 x 24.8 x 24.5 mm³

Features

- Applying ultrahigh-speed compound-semiconductor transistor technology (InP-based heterojunction bipolar transistor) developed by NTT over many years
- Demonstrated the world's highest performance analog ICs based on novel circuit design techniques, such as new circuit topology that compensates for high-frequency loss
- Succeeded in developing high-performance compact packages that house ICs and provide superior usability based on precise electromagnetic-field-analysis techniques

Future_benefits

These broadband analog IC technologies will pave the way for multi-Tb/s optical and beyond-100-Gb/s wireless communications and support the further evolution of IOWN.

Collaboration partners

Tokyo Institute of Technology

Exhibiting Company

NIPPON TELEGRAPH AND TELEPHONE CORPORATION

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