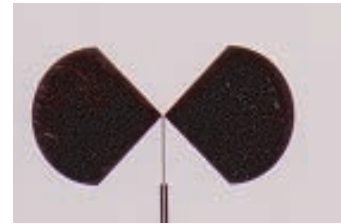


InGaP/GaAs HBT MMIC Amplifier with Active Balun for Ultra-Wideband Self-Complementary Antenna

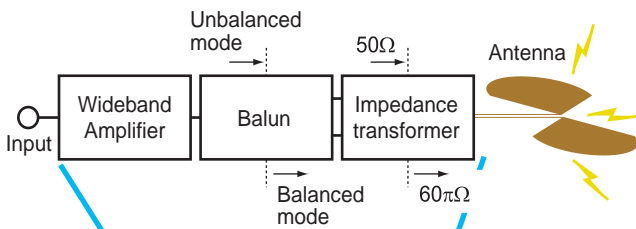
Wireless communication system
UWB system (3.1 GHz ~ 10.6 GHz)



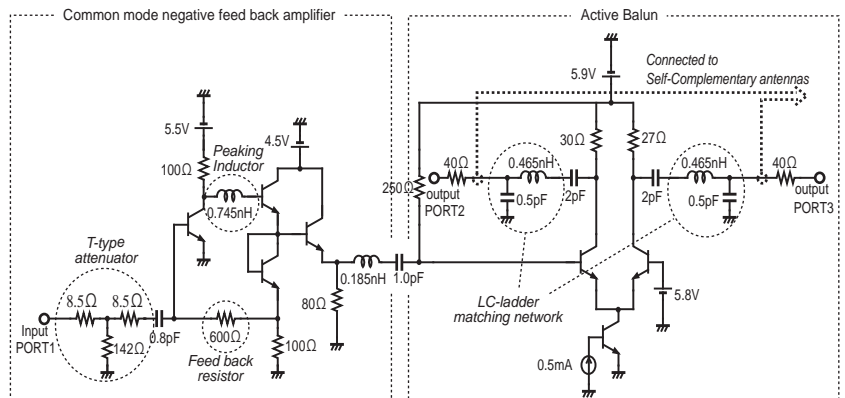
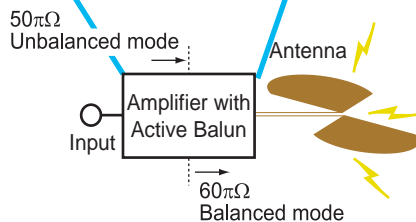
Developed Self-Complementary Antenna in Honjo Lab. :

For driving the Self-Complementary Antenna, **Amplifier with Balanced Output** is needed.

Planar antenna formed in resin substructure.
Size : 4cm × 2cm (~ 2cm × 1cm)
 $\epsilon_r = 10.2$
Low loss (dielectric loss tangent : 0.004)
Omni-directional radiation patterns
Input impedance : $60\pi\Omega$
Input signal : balanced mode

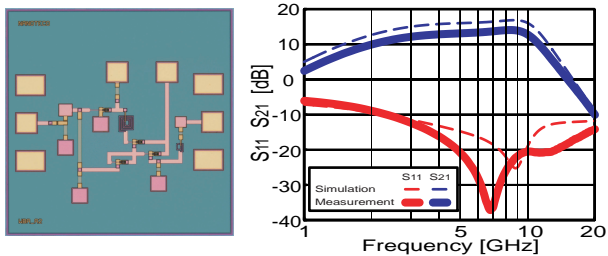


Working with coalition in MMIC to miniaturization.

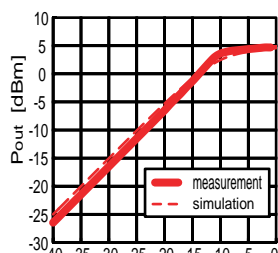


Equivalent circuit for designed InGaP/GaAs MMIC Amplifier with Active Balun.

Amplifier circuit

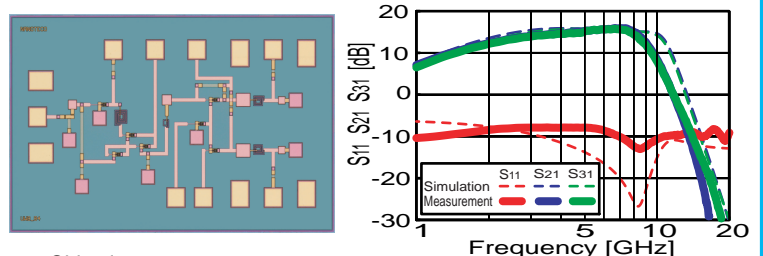


Chip size : 1.12 × 1.17 mm Gain and return loss characteristics.



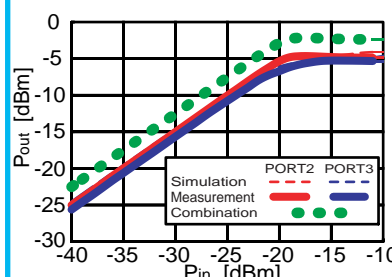
The input-output power characteristics.

Amplifier with Active Balun circuit

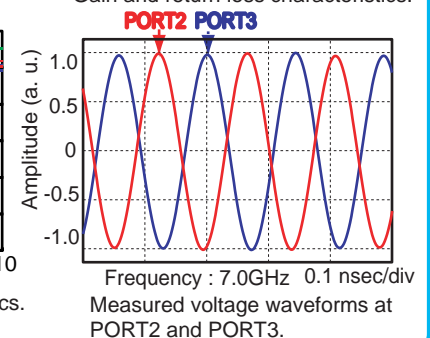


Chip size : 1.92 × 1.17 mm

Gain and return loss characteristics.



The input-output power characteristics.



Measured voltage waveforms at PORT2 and PORT3.