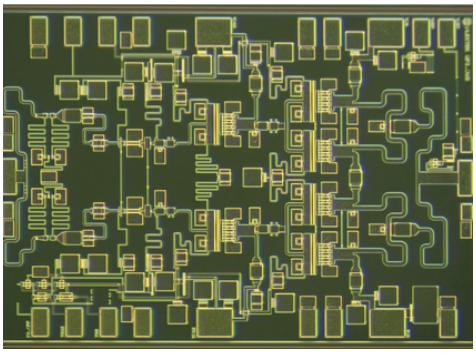
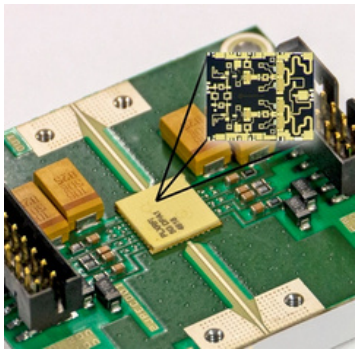
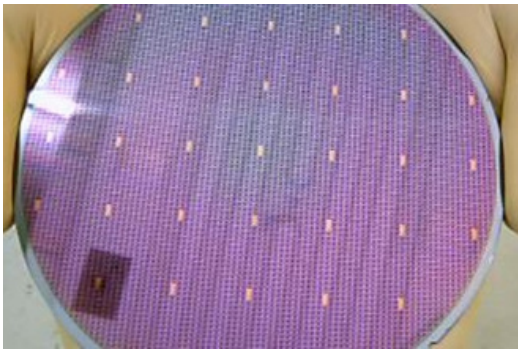
MMIC Design Services

MMIC, RFIC and microwave/mmWave module design specialists

PRFI Ltd. is a UK-based design house specialising in the design and development of RFICs and MMICs, and microwave/mmWave modules. Projects range from feasibility studies to the design and development of microwave ICs, components and sub-systems. Our offices and labs are located near Cambridge, in the UK.







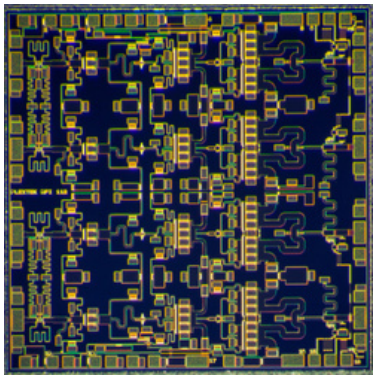
Design Experience

PRFI has a dedicated design team that develops MMICs and RFICs using GaAs and GaN, from baseband to 100 GHz. We have designed more than 150 custom ICs using the world's leading foundries, including GCS, MACOM (formerly Wolfspeed), Qorvo, UMS and WIN Semi. We have a reputation for achieving first-pass design success using proven design approaches.

IP Portfolio

PRFI has a wealth of designs which it draws upon for its clients' benefit. The use of this IP allows us to reduce the risk and timescale for new custom IC developments. This IP includes:

- 5G mmWave MMICs
- Amplifiers (PAs, LNAs, distributed)
- Mixers, frequency multipliers
- Switches, limiters
- Phase shifters, VVAs



Publications

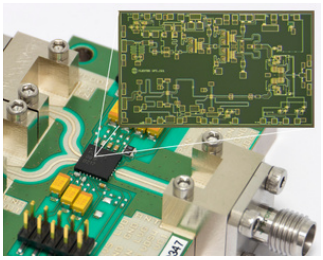
A selection of PRFI's technical papers on MMIC design:

- The Design of a Plastic-Packaged PA for 28-GHz 5G
- Low Loss, High Isolation mmWave Switch MMICs
- The Design and Evaluation of a Plastic Packaged Single-Chip FEM for 28GHz 5G
- A Sub-harmonic E-band IRM/SSB Realized on a Low Cost PHEMT Process
- GaN Hybrid PA for S-band Radar

Clients

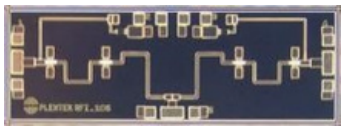
Our clients range from start-ups to major multi-nationals. Companies that have benefited from PRFI's services include Aeroflex, Analog Devices, BAE Systems, Inmarsat, MBDA, National Semiconductor, QinetiQ, Qorvo, Raytheon, Samsung, Sony Semiconductor, TDK and Thales.

Design Examples



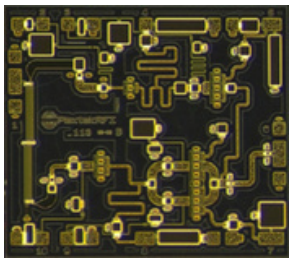
28 GHz FEM for 5G

Single-chip LNA, PA, RF switch, control logic and temperature-compensated power detector in a 5 x 5 mm plastic QFN package.



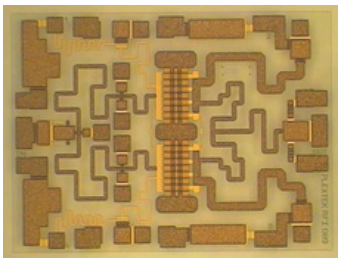
SPDT for 5G

RF switch covering 20 to 32 GHz. Low insertion loss (~0.65dB), high isolation (>50dB), designed on a low cost PIN diode process.



28 GHz Doherty GaN PA

An asymmetrical Doherty design with 35 dBm peak output power and high PAE at back-off. Designed on a 0.15µm GaN on SiC process.



X-band GaN PA for phased array

Output power of 7 W with 42% PAE in a compact die size designed on a European 0.25µm GaN on SiC process.

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