



# Address challenges constraining 5G mmWave with our 39 GHz Beamforming front end IC



Operating from 37.0 to 41.0 GHz, the SUMMIT3741™ integrates power amplifiers (PA), low noise amplifiers, T/R switching, beamformers with beam table memory, calibration, gain control and temperature and power telemetry with a high-speed system peripheral interface (SPI) for control. A single SUMMIT3741™ provides two sets of four channels for two antenna polarizations – a total of eight channels per RFIC.

## Features

- 37.0 GHz-41.0 GHz
- Beamforming transceiver with 8 (2x4 H+V) ports enabling two data streams supporting 2 MIMO layers
- Tx/Rx independent beam directions enabled by 6-bit phase shifting and 16 dB variable gain in each path
- High-power, high-efficiency SOI CMOS power amplifiers
- Integrated low-loss T/R switches, linear power and state-of-the-art low noise amplifiers
- Ultra-low Transmit- and Receive-Mode power consumption
- 6-bit full-360° phase shifting and 0.5dB-step 16dB-range variable gain in each path
- Fully calibrated for Gain/Phase matching across ICs
- Extensive On-chip temperature and power sensing
- On-chip gain control for temperature compensation
- High-Speed SPI with large on-chip beam table storage
- Wafer-Level Chip-Scale Package (WLCSP) compatible with low-cost PCB manufacturing
- Support for large-scale arrays through multiple chip-addressing modes 7 dB NF (Noise Figure)

**“Sivers Semiconductors is indeed offering a real performance breakthrough which will translate to higher performance and lower cost mmWave phased array systems.”**

*Daniel Kang,*

*Head of Digital Solution Team, Dreamtech*

Sivers Semiconductor products and services enable 5G manufacturers to simplify product design, integrate components to reduce footprint and improve system reliability. Of course, with best-in-class RF performance.

SUMMIT3741™ is an eight-channel RF front-end for 39 GHz, 5G phased array antenna system fabricated in RF-Silicon on Insulator (RF-SOI). SUMMIT3741™ is designed to address the challenges constraining 5G mmWave performance by:

- Extending the link range to decrease infrastructure costs and improve customer satisfaction.
- Reducing power consumption and thermal dissipation.
- Reducing antenna array complexity and overall RF front-end cost.



5G MMWAVE



FWA



SATELLITE

High power and efficiency will be success factors when designing larger Base Transceiver Station (BTS) antenna arrays, where thermal design is critical. SUMMIT3741™ is a greener and more compelling solution reaching more customers, still using less energy.

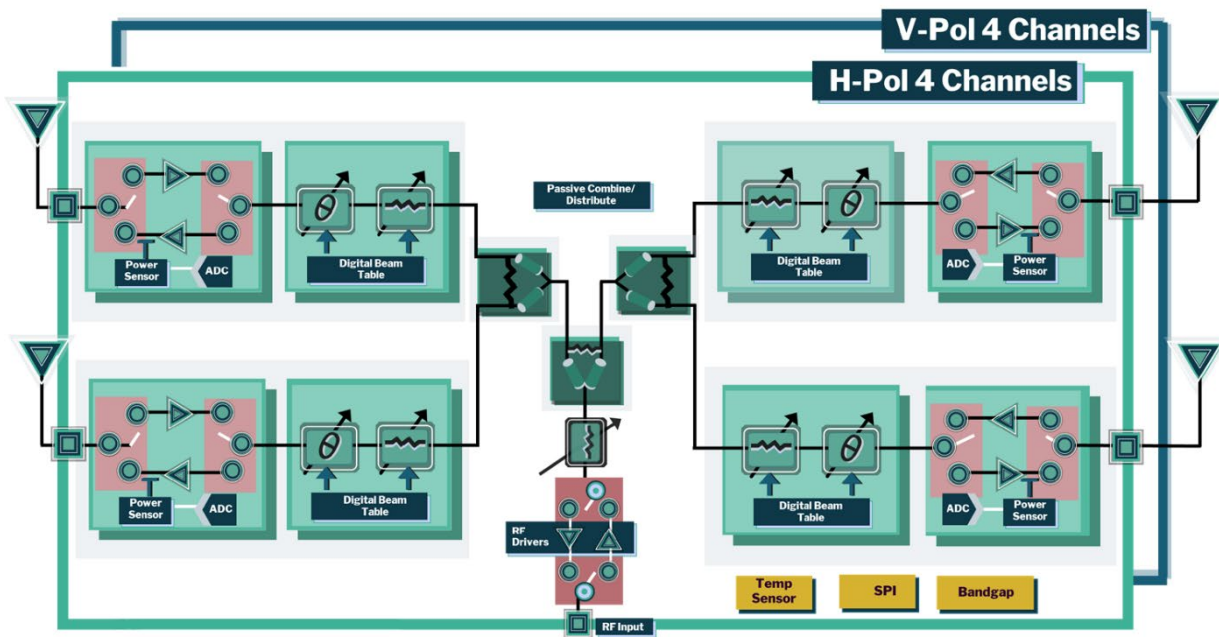


Figure 1. Block schematics SUMMIT3741™

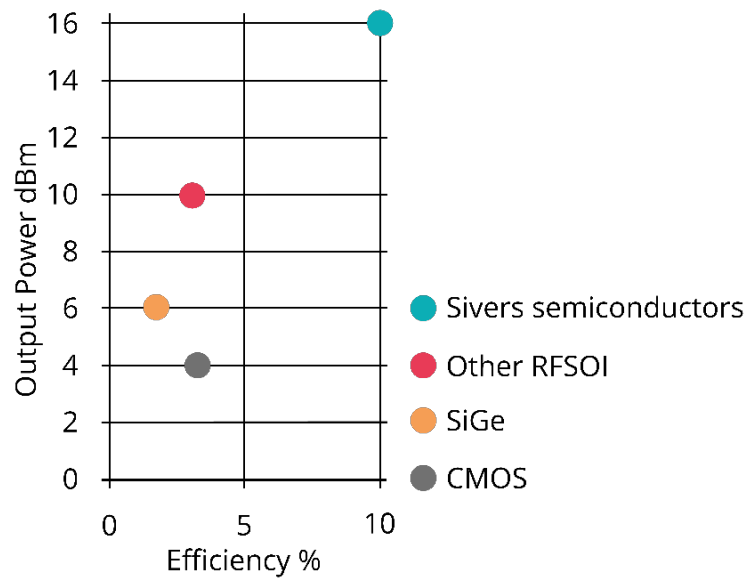


Figure 2. The SUMMIT3741™ offers 3-5 times better efficiency and 6-12 dB more output power than competitors

Sivers Semiconductors provides a wide range of mmWave products, services and algorithms. The portfolio includes:

- 5G mmWave RFICs, BFICs and complete modules with integrated antennas.
- Dual-polarized SatCom Chipsets.
- Algorithms boosting Open RAN and RF architectures.
- Analogue repeaters cost-effectively extending signal reach.