PRODUCT BRIEF

4-State Phase Shifter

For Beam Steering Antennas

Menlo Micro has developed a 3.6 GHz 2-bit digitally controlled phase shifter providing up to four discrete phase states, with applications targeting 5G beam steering and phased array antennas.

The phase shifter achieves extremely high linearity, low insertion loss, and operates with ultra-low supply current. It is built on Menlo's breakthrough Ideal Switch™ technology and achieves a phase state change of 10 µs, with a reliability of over 3 billion switching operations.

This innovative, patented design has many advantages over conventional switched phase shifters including true differential time delay, miniaturized form-factor, superior RF performance, and long operating life under extreme environmental conditions. The design can be easily adapted to cover broadband frequency ranges and phase shift values.

FEATURES

- 3.6 GHz Band Operation
- 4 Discrete Phase States (0°, 70°, 140°, 210°)
- +44 dBm Max Input Power
- IP3: +85 dBm
- Insertion Loss: 0.2 dB
- High Reliability: > 3 Billion Operations

APPLICATIONS

- Beam Steering Antennas
- DAS
- Phased Array Applications
- Weather and Military Radar

MARKETS

- 5G Cellular Infrastructure
- Aerospace
- General Purpose RF Front End Systems

ideal switch™

EXAMPLE REFERENCE DESIGN

The 3.6 GHz CBRS-Band Beam-Steering Antenna developed by Menlo Micro demonstrates the performance of the Ideal Switch Phase Shifter in a real-life application.

This design demonstrates how with a small number of miniaturized, high performance phase shifters, the beam can be directed in both horizontal and vertical directions up to 20°.

IDEAL SWITCH PHASE SHIFTER ADVANTAGES

- Can be used for standalone RF/Analog beam-forming as well as in hybrid beam-forming solutions
- High linearity with very low insertion loss
- True differential time delay
- Scalable delay lines for additional phase states and frequency coverage
- Small phase shifter form-factor – 13mm x 13mm, can be miniaturized further

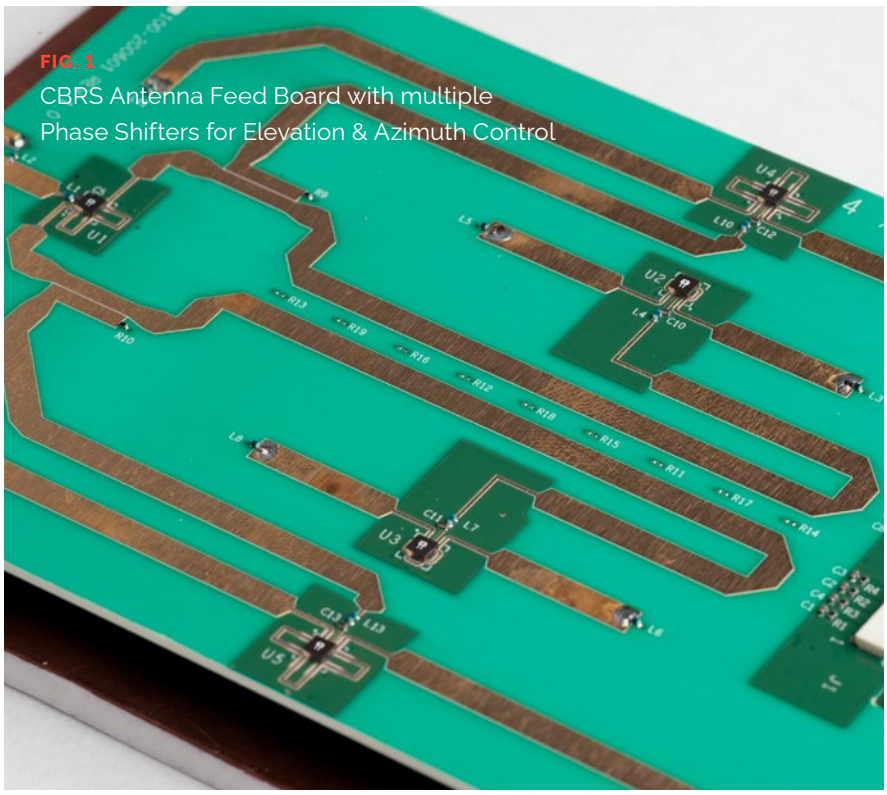

FIG. 1
CBRS Antenna Feed Board with multiple Phase Shifters for Elevation & Azimuth Control

FIG. 2
4x2 Array with Radome

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