Preliminary Data Sheet Brief

AWMF-0247

Ku-band Quad 4x1 Tx/Rx Beamformer IC

1. Product Overview and Benefits

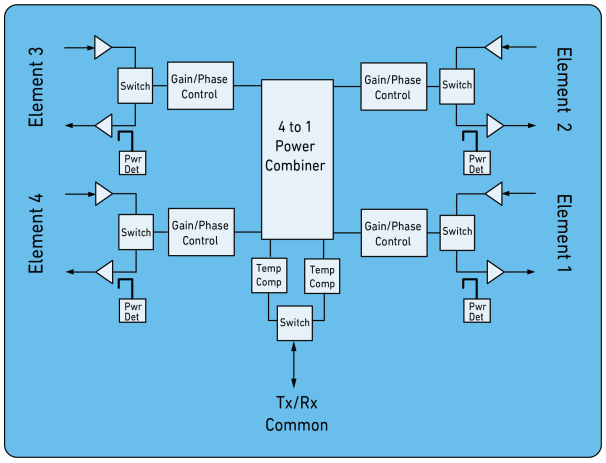
The Ku-band AWMF-0247 adds TDD half-duplex capability to Qorvo's beamformer IC portfolio, enabling both transmit and receive in a single device. This allows flat panel SATCOM terminals to use a shared antenna aperture, cutting system size and component count compared to dual-antenna designs.

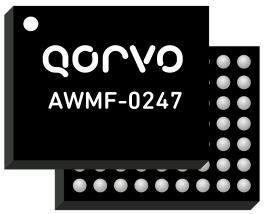
With support for four elements across 13.75 to 14.5 GHz (Tx) and 10.7 to 12.75 GHz (Rx), the AWMF-0247 combines adjustable PA bias for efficient linear transmit power with low noise figure for improved receive sensitivity. The result is a compact, power-efficient solution ideal for LEO and NTN terminals.

New Updates:

- **TDD architecture** for single aperture antenna design for low cost LEO and NTN terminals
- **Separate Tx and Rx element feed architectures** for best performance
- Inactive **port impedance management** improves off-state return loss by >3dB, **increasing aperture efficiency**
- **Industry leading NF and DC power** performance
- **Higher accuracy** temperature sensing
- **New FC-CSP** package

2. Functional Block Diagram





3.0 x 3.8 mm FC-CSP

3. Key Features

- 13.75 to 14.5 GHz Tx operation
- 10.7 to 12.75 GHz Rx operation
- Supports 4 antenna elements with fixed polarization
- 10 dBm Tx output power per port
- 27 dB Tx gain per channel
- 30 dB Rx coherent gain
- 6-bit phase control (LSB=5.625°)
- 6-bit gain control (LSB=0.25 dB)
- Telemetry reporting

4. Applications

- SATCOM flat panel terminals
  - Low-cost LEO
  - Emerging NTN

5. Ordering Information

Part Number	Description
AWMF-0247	AWMF-0247 Tape and reel 7", Qty 2000
AMWF-0247-SQ	AWMF-0247 Cut tape small sample, Qty 25
AWMF-0247-SR	AWMF-0247 Short reel, Qty 100
AWMF-0247-DL	AWMF-0247 Developer kit for evaluation, Qty 1

If you need further information about the AWMF-0247, please contact us at beamforming-sales@qorvo.com.

6. Developer Kit: AWMF-0247-DL

The developer kit includes all hardware and software required to interface to the AWMF-0247. The kit enables full evaluation and RF testing with easily defined user interfaces. The test board has been carefully designed to easily replicate the performance of the device and to provide the necessary channel to channel isolation. Calibration data is included to enable the removal of test board line losses. The SPI control is supported through a high-speed cable, interposer board and USB interface module. Driver software is supplied to provide control from a PC. DC power is supplied to the test board through a separate cable assembly. A full set of measured data is included to provide reference performance for each Developer Kit. Evaluation of the AWMF-0247 with the Developer Kit will significantly shorten the time to become familiar with the operation and performance of the product, thereby reducing system development time and cost.

6.1. Developer Kit Bill of Material

QTY	DESCRIPTION
1	Test board with 9 x RF connectors, 1 x DC connector and 1 x SPI connector
1	DC power cable assembly
1	High speed SPI cable assembly
1	USB-SPI controller
1	SPI driver software
1	Control software with User's Guide, full test results and board calibration
1	Software Installation and Control Software User's Guide
1	Gerber files

7. Environmental Compliance

This part is compliant with the 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), as amended by Directive 2015/863/EU.

This product also has the following attributes:

- Lead Free
  Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_4O_2$) Free

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

Web: www.qorvo.com

Tel: +1 844-890-8163

Email: beamforming-sales@qorvo.com

Important Notices

The information contained in this Data Sheet and any associated documents ("Data Sheet Information") is believed to be reliable; however, Qorvo makes no warranties regarding the Data Sheet Information and assumes no responsibility or liability whatsoever for the use of or reliance on said information. All Data Sheet Information is subject to change without notice. Customers should obtain and verify the latest relevant Data Sheet Information before placing orders for Qorvo® products. Information concerning Qorvo's product life cycles is available at https://www.qorvo.com/support/product-lifecycle-information. Data Sheet Information or the use thereof does not grant, explicitly, implicitly or otherwise any rights or licenses with respect to patents or any other intellectual property whether with regard to such Data Sheet Information itself or anything described by such information.

Qorvo grants you permission to use this Data Sheet and any associated resources only to develop an application that uses the Qorvo products described in the Data Sheet and any associated resources. Other reproduction and display of this Data Sheet and any associated resources is prohibited.

Qorvo's products are provided subject to Qorvo's Terms of Sale or provided in conjunction with such Qorvo products. Qorvo objects to and rejects any additional or different terms customer may have proposed regarding the purchase of Qorvo products.

DATA SHEET INFORMATION DOES NOT CONSTITUTE A WARRANTY WITH RESPECT TO THE PRODUCTS DESCRIBED HEREIN, AND QORVO HEREBY DISCLAIMS ANY AND ALL WARRANTIES WITH RESPECT TO SUCH PRODUCTS WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Without limiting the generality of the foregoing, Qorvo® products are not warranted or authorized for use as critical components in medical, life-saving, or life-sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death. Applications described in the Data Sheet Information are for illustrative purposes only. Customers are responsible for validating that a particular product described in the Data Sheet Information is suitable for use in a particular application.