AWMF-0106: X-Band Medium Power Front End

AWMF-0106-APP-01: Drain Switching Application Note

CONTENTS

INTRODUCTION

1.1 Scope

This application note describes how the Anokiwave AWMF-0106 X-band Medium Power Front End evaluation board (EVB) can be configured for drain switching applications.

AWMF-0106 EVB CIRCUIT DETAILS

2.1 AWMF-0106 Description

The Anokiwave AWMF-0106 X-band Medium Power Front End is targeted for use in phased array RADAR applications. It is comprised of a power amplifier, T/R switch, receiver limiter and receiver low noise amplifier, integrated into a 7x7 mm QFN package. A block diagram of the RFIC is shown in Figure 1. In transmit mode the RFIC can be configured in either gate switched or drain switched modes. Gate switching is implemented directly on-chip through the use of the active bias control in which the user is required to provide a -5V reference to the circuit. The PA_EN input pin is a -5V (PA disabled) and 0 V (PA enabled) signal line. For drain switching applications, the user should set the PA_EN line to 0 V and provide a pulsed supply signal to the +8V line (drains of PA stages), via a suitable high current pulser circuit.

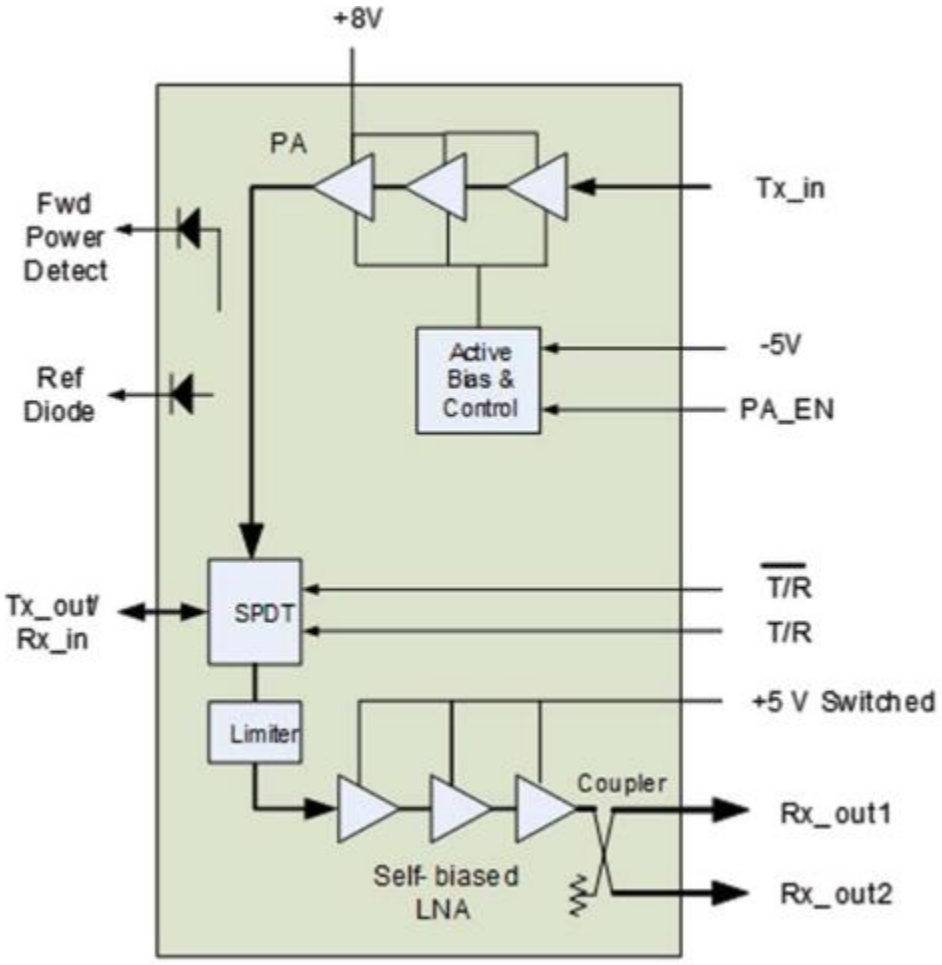

Figure 1: AWMF-0106 Block Diagram

2.2 AWMF-0106 Evaluation Board

A schematic and picture of the AWMF-0106 Evaluation Board (EVB) configured for drain switching applications are shown in Figure 2 and Figure 3, respectively. The EVB is equipped with 2.92 mm Southwest end launch connectors (1092-04A-5). Power and control signals are provided by the two header connectors. The AD8276BRMZ is a differential operational amplifier that is used to generate the power detector voltage from the on chip Det Out and Ref Out signals. The VDD supply bypassing capacitors have been selected to optimize drain switching and stability demands and should be placed as close to the device as possible.

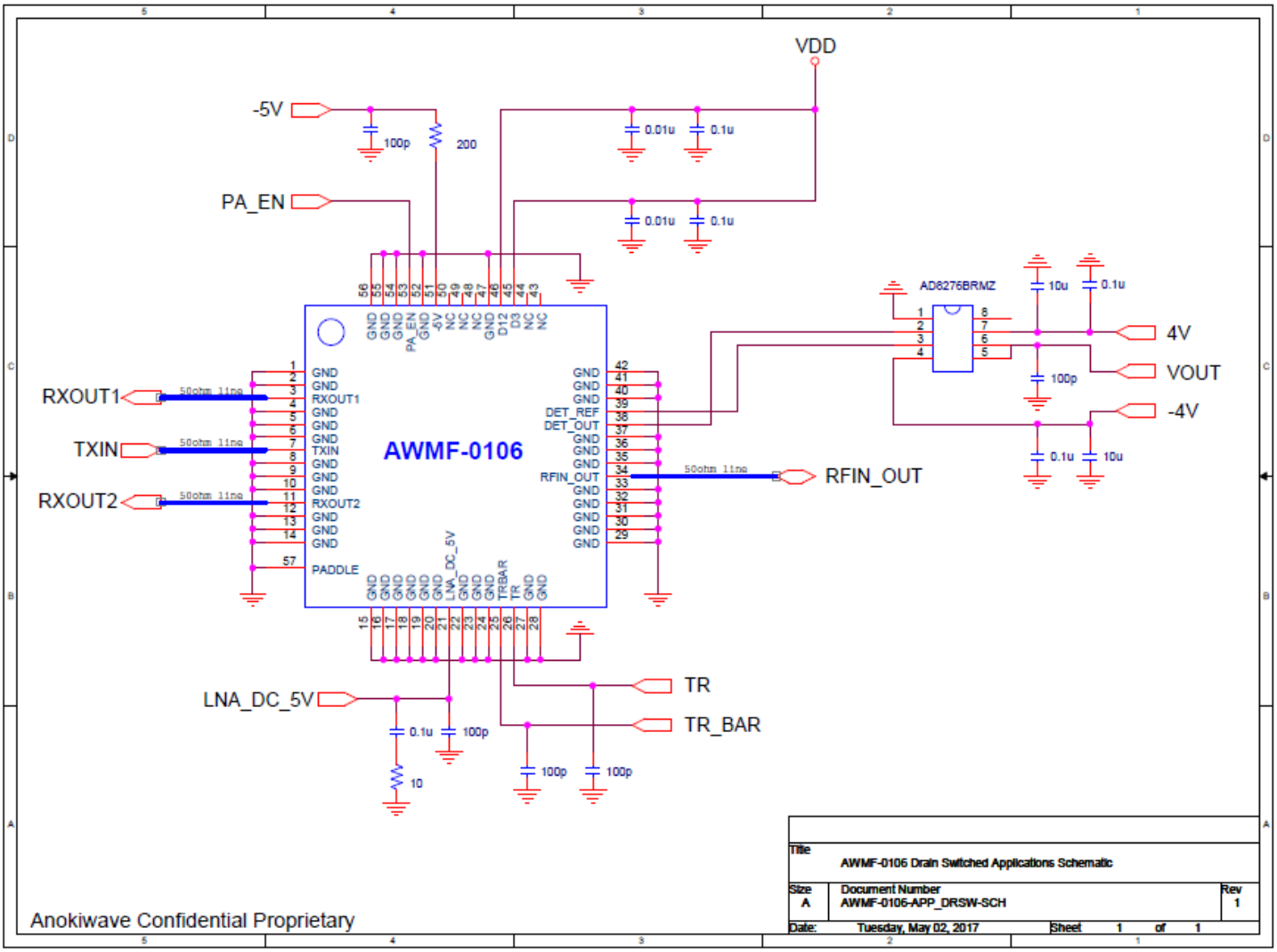

Figure 2: Schematic of AWMF-0106 Evaluation Board (Configured for Drain Switching)

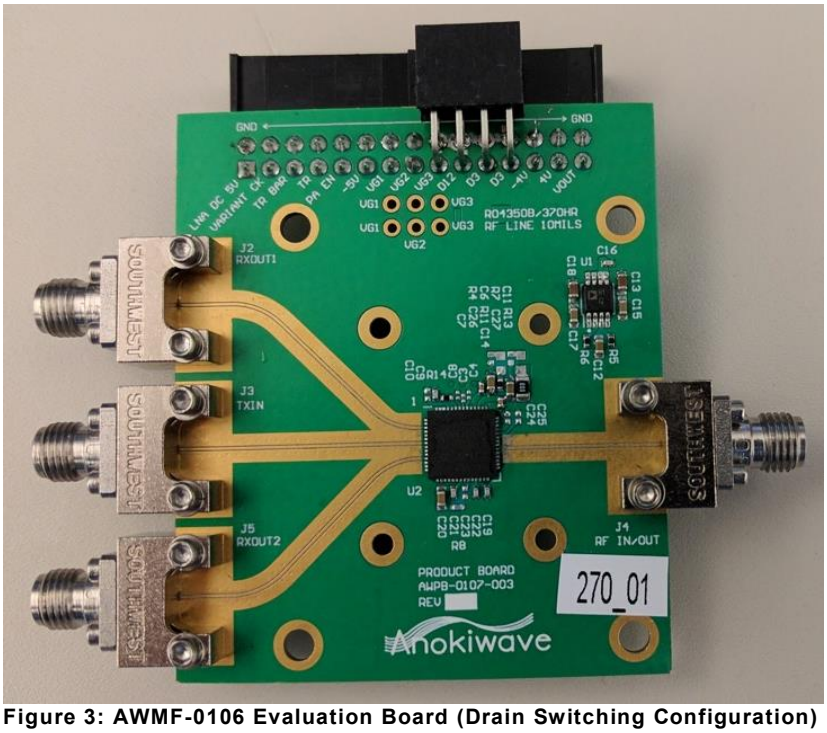

Figure 3: AWMF-0106 Evaluation Board (Drain Switching Configuration)