

RTKA214401DR0000BU

Demonstration Board

The RTKA214401DR0000BU demonstration board provides a simple and compact platform for demonstrating the RAA214401, a 40V, 150mA LDO linear regulator with super low quiescent current. The board has convenient connection points for the input and output. Its small size allows it to integrate into other systems as a daughter card or a module.

The RAA214401 is offered in a 3Ld SOT23 package. The RTKA214401DR0000BU demonstration board operates from a supply voltage as low as 4.5V up to 40V, regulates a 3.3V output voltage, and supports up to 150mA load.

**Key Features**

- Wide input voltage range 4.5V (at 10mA load) to 40V
- Accurate output voltage at 3.3V
- Excellent line and load regulation
- Stable with 2.2µF to 47µF MLCC output capacitor
- Robust line and load transient responses
- Integrated Fault protection including over temperature shut down and short circuit current limit

**Specifications**

This board is specified for the following operating conditions:

- $V_{IN}$  supply: 4.5V (at 10mA load) to 40V
- $V_{OUT}$ : 3.3V
- Load Step: up to 150mA

**Ordering Information**

Part Number	Description
RTKA214401DR0000BU	RAA214401 demonstration board

**Related Literature**

For a full list of related documents, visit our website:

- [RAA214401](#) device page

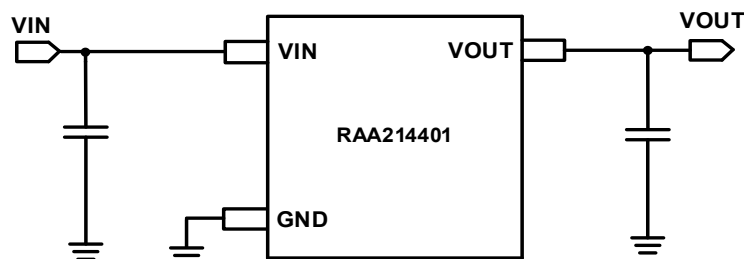


Figure 1. RAA214401 Typical Application Block Diagrams

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# 1. Functional Description

The RTKA214401DR0000BU provides a straightforward setup to demonstrate the functionality of the RAA214401 LDO linear regulator. This demonstration board includes an input capacitor and an output capacitor. Connectors for the input and output are populated on the board to allow for easy and quick connections. The pads for these connectors can also be used to solder or connect the small demonstration board to other systems.

## 1.1 Recommended Equipment

- Power supply that can deliver up to 40V with at least 0.5A source current capability.
- DC electronic load to draw current out of the LDO output.
- Oscilloscope to monitor input voltage, output voltage, and load current.

## 1.2 Quick Start Guide

1. Connect a power supply to the VIN terminals on board TP1 and GND.
2. Connect the DC load to the output terminals TP2 and GND.
3. Turn on the VIN supply at the required voltage, up to 40V.
4. Verify the output voltage and load current on the oscilloscope.

## 2. Board Design

### 2.1 PCB Layout Guidelines

For best thermal performance, use as many vias as possible to connect the top layer Printed Circuit Board (PCB) thermal land to the ground planes on other PCB layers. Place the input and output capacitors as close to the IC as possible.

### 2.2 Evaluation Board

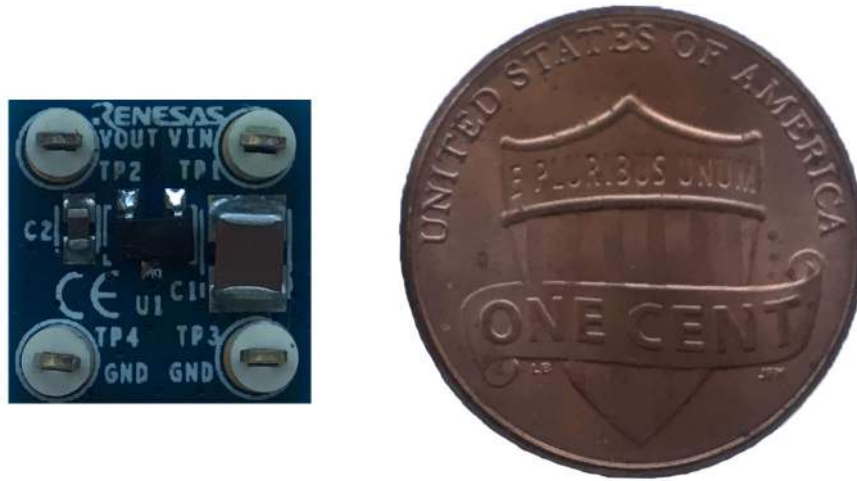


Figure 2. RTKA214401DR0000BU Evaluation Board (Top)

### 2.3 Circuit Schematic

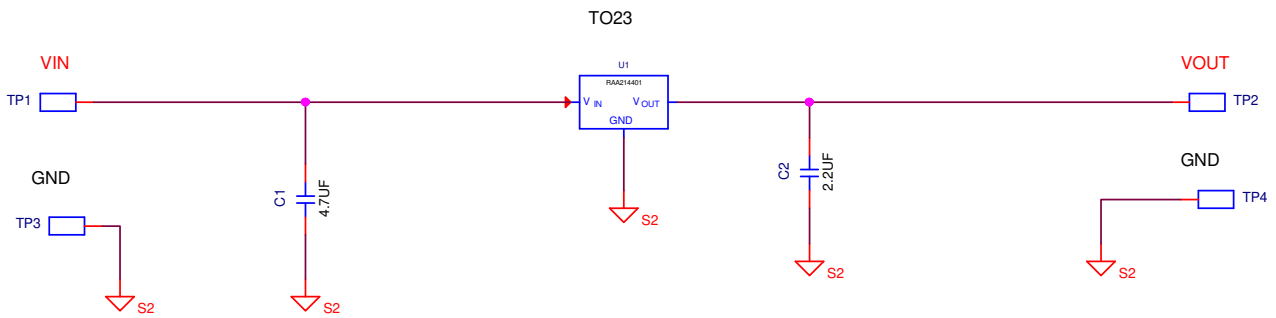


Figure 3. RTKA214401DE0010BU Schematic

### 2.4 Bill of Materials

Ref Des	Qty	Description	Manufacturer	Part Number
TP1-TP4	4	Miniature White Test Point 0.100 Pad 0.040 Thole	KEYSTONE	5002
C1	1	Ceramic Chip Cap	TDK	CGA6M3X7S2A475K200AB
C2	1	CERAMIC CAP	Taiyo Yuden	LMK107B7225KA-T
U1	1	Super Low Quiescent Current LDO Regulator	Renesas	RAA214401

## 2.5 Board Layout

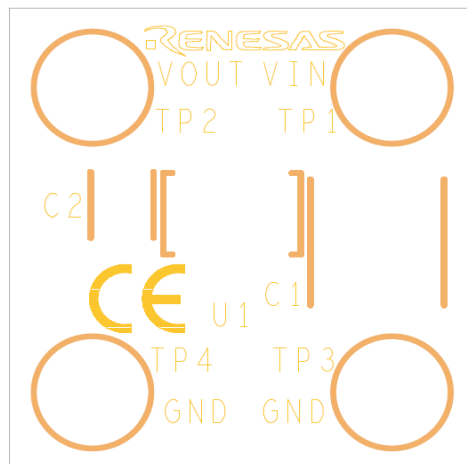


Figure 4. Silkscreen Top Layer

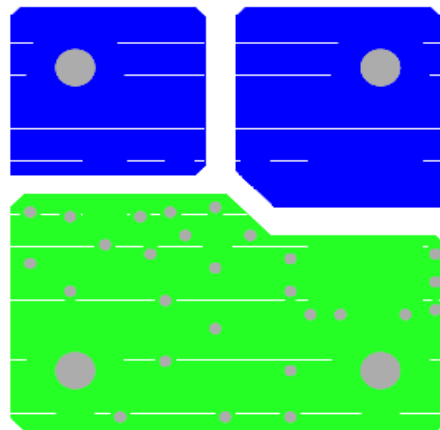


Figure 5. Layer 1

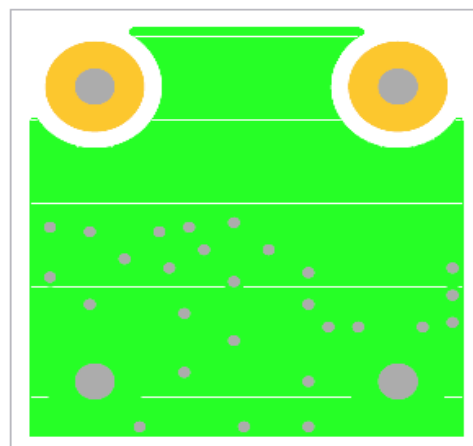


Figure 6. Layer 2

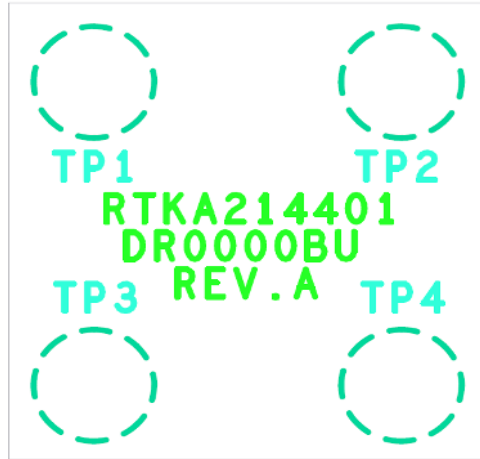


Figure 7. Silkscreen Bottom Layer

### 3. Revision History

Rev.	Date	Description
1.0	Jan.27.21	Initial release

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(Rev.1.0 Mar 2020)

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