



# **RF-DG-52PAS CC2652P USB Dongle Hardware Specification**

**Version 1.0**

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## Table of Contents

Table of Contents.....	2
1 Device Overview.....	3
1.1 Description.....	3
1.2 Block Diagram.....	3
1.3 Hardware Parameters.....	3
1.4 Part Number Conventions.....	4
2 Hardware Specifications.....	5
2.1 Packaging Sizes.....	5
2.2 PCBA Layout.....	6
2.3 JTAG Interface.....	6
2.4 Buttons and LEDs.....	7
2.5 RF Control.....	7
2.6 Schematic Diagram.....	8
2.7 Electrostatics Discharge Warnings.....	8
3 Revision History.....	9
4 Contact Us.....	10

## 1 Device Overview

### 1.1 Description

RF-DG-52PAS is a USB dongle based on TI CC2652P. This dongle can be used as ZigBee coordinator. Up to 20 dBm TX power and the SMA connector support the wide transmission range. With ZigBee coordinator firmware, it supports the smart home platforms such as Home Assistant, open HAB, ZigBee2MQTT.

### 1.2 Block Diagram

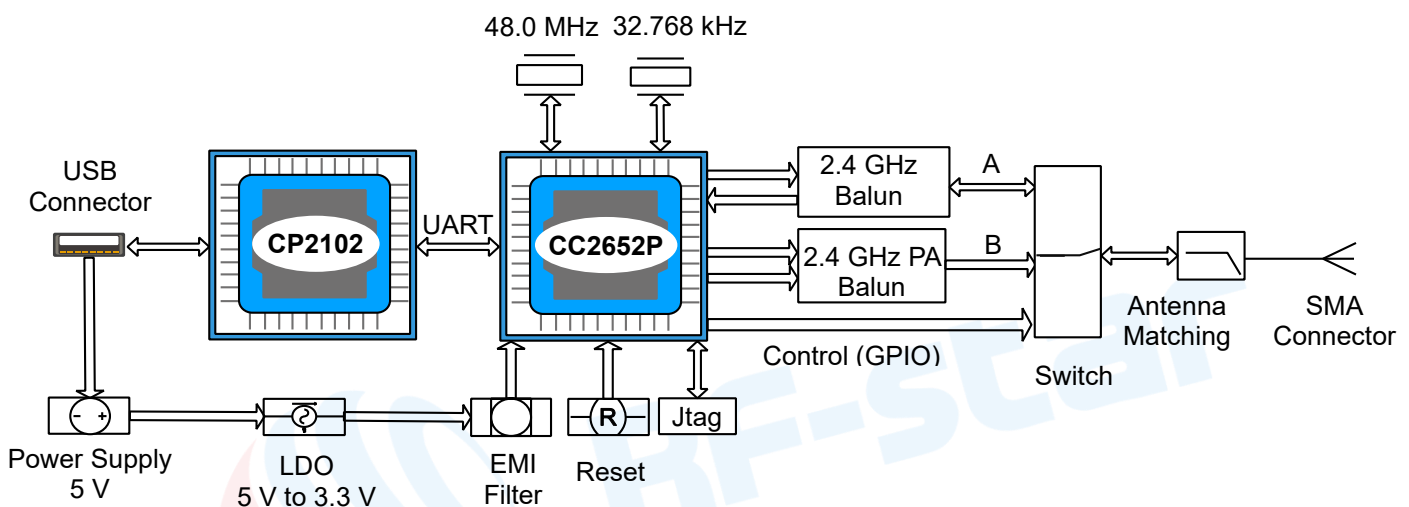


Figure 1. Block Diagram of RF-DG-52PAS

### 1.3 Hardware Parameters

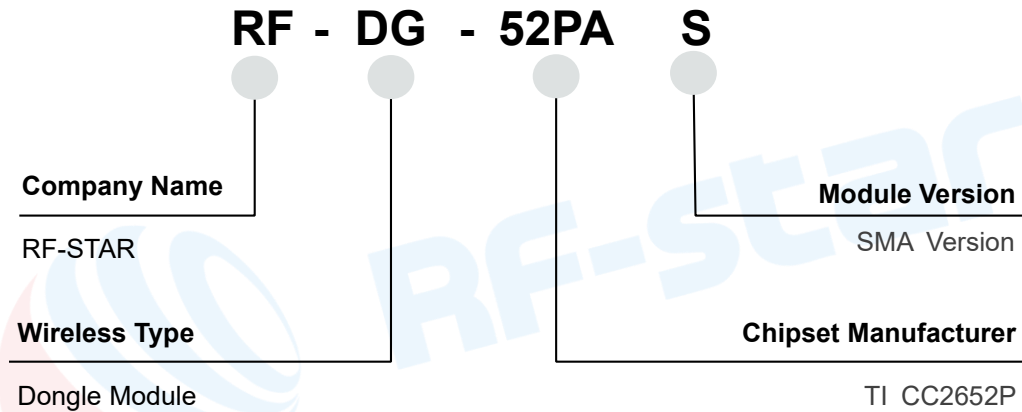
Table 1. Parameters of RF-DG-52PAS

Chipset	CC2652P
Supply Power Voltage	USB
Protocol	Thread, ZigBee, BLE5.3, IEEE 802.15.4, 6LoWPAN, proprietary systems, SimpleLink™, TI 15.4 stack (2.4 GHz)
Frequency	2360 MHz ~ 2500 MHz
Maximum Transmit Power	20 dBm
Receiving Sensitivity	-100 dBm @ 802.15.4 (2.4 GHz) -105 dBm @ 125 kbps BLE Coded PHY
Crystal	48 MHz, 32.768 kHz
RAM	88 KB
Flash	352 KB

Package	SMT Packaging
Frequency Error	±20 kHz
Dimension	73.3 mm x 20.0 mm x 7.5 mm (without enclosure) 73.3 mm x 23.6 mm x 14.1 mm (without enclosure)
Type of Antenna	SMA connector
Operating Temperature	-40 °C ~ +85 °C
Storage Temperature	-40 °C ~ +125 °C

### 1.4 Part Number Conventions

The part numbers are of the form of RF-DG-52PAS where the fields are defined as follows:



## 2 Hardware Specifications

### 2.1 Packaging Sizes

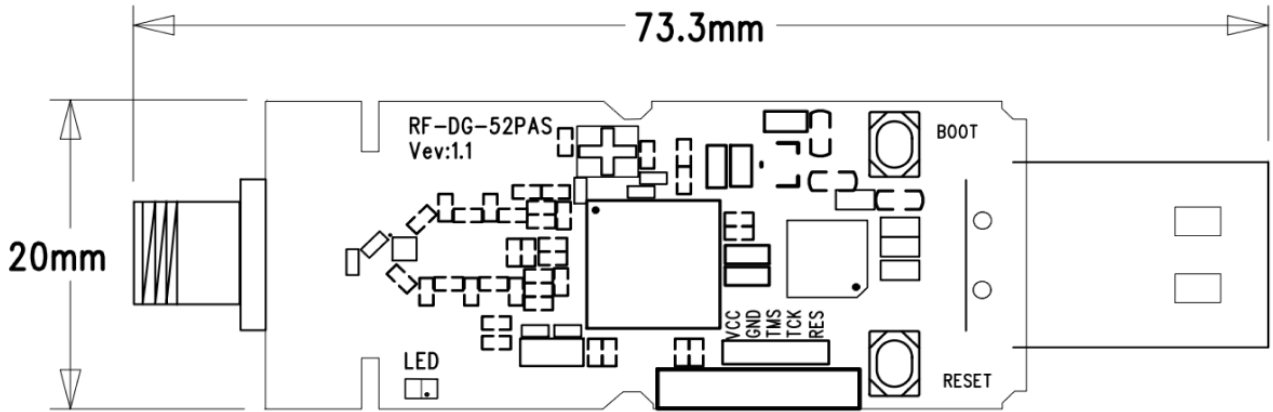


Figure 2. PCBA Dimension of RF-DG-52PAS

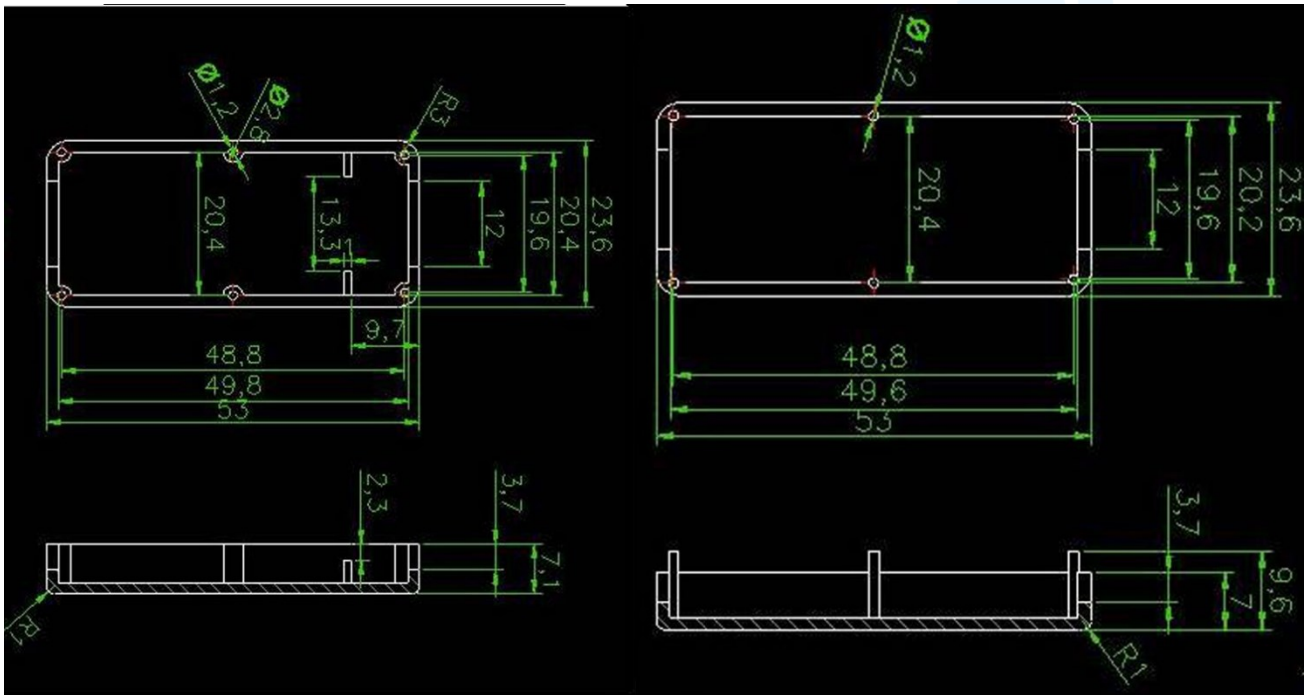


Figure 3. Enclosure Dimension of RF-DG-52PAS

## 2.2 PCBA Layout

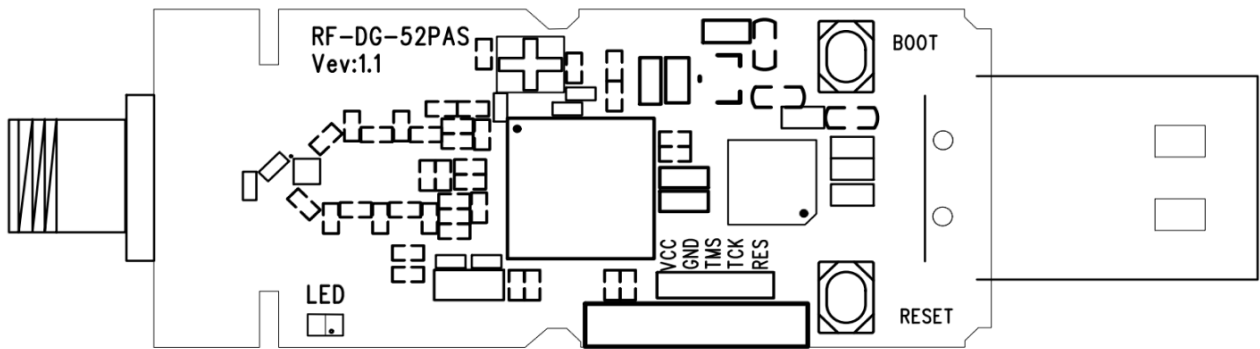


Figure 4. Top View Layout of RF-DG-52PAS

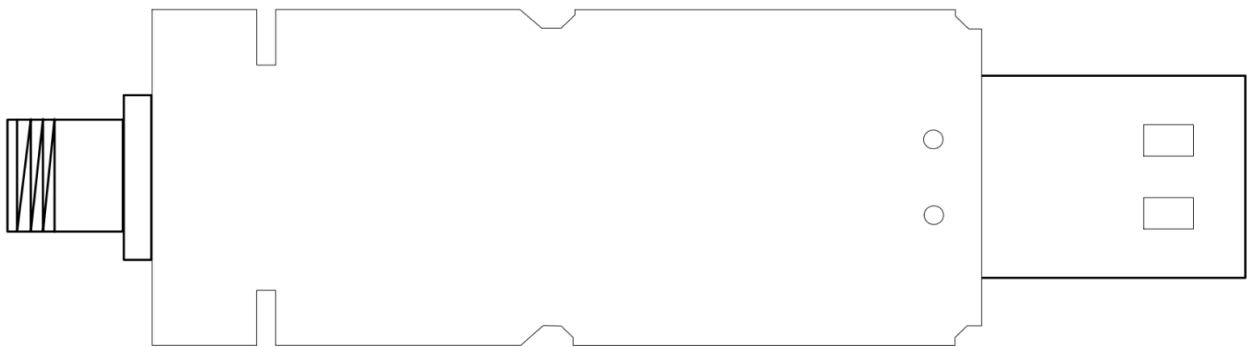


Figure 5. Bottom View Layout of RF-DG-52PAS

## 2.3 JTAG Interface

RF-DG-52PAS can lead out the firmware flash pins by the 5-pin-2.54 mm pin headers or 5-pin-1.27 mm pin headers. The pin functions of the two pin headers are the same in order. Please use XDS110 to flash the firmware and debug.

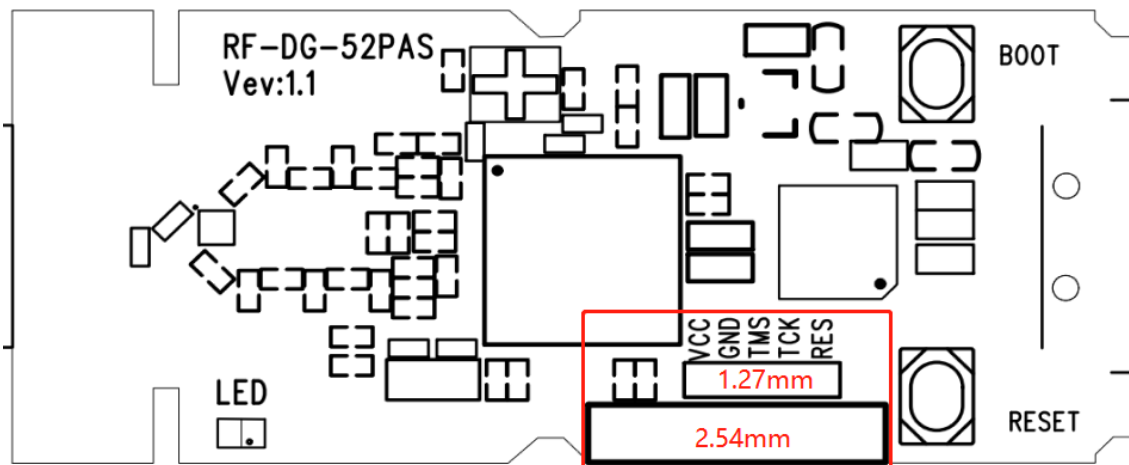


Figure 6. JTAG Pins of RF-DG-52PAS

## 2.4 Buttons and LEDs

RF-DG-52PAS has a Red-Blue LED light, which can be used as the signal indicator (to be defined by the user) or power supply indicator. At the same time, the dongle has the RESET button and one button to be defined by the user.

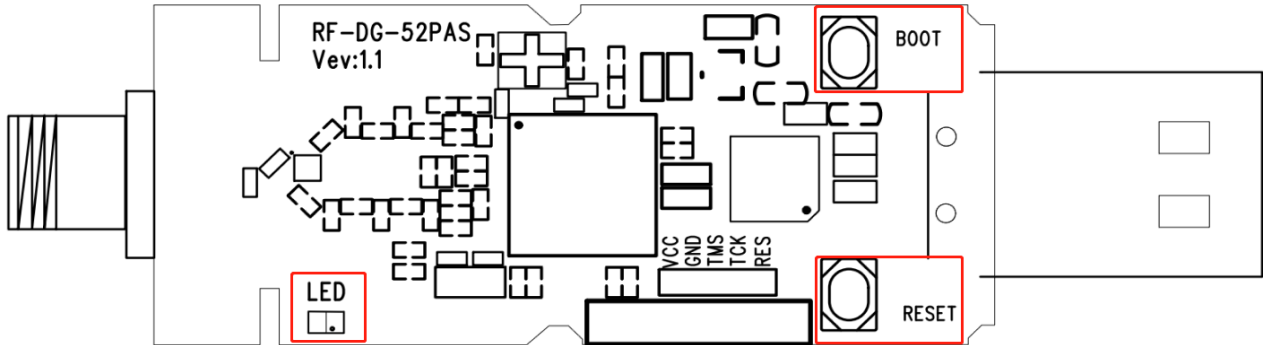


Figure 7. Buttons and LEDs diagram of RF-DG-52PAS

Part	Description	GPIO
LED	Red	DIO7
LED	Blue	VDDS
BOOT	Button	DIO15
RESET	Button	RESET_N

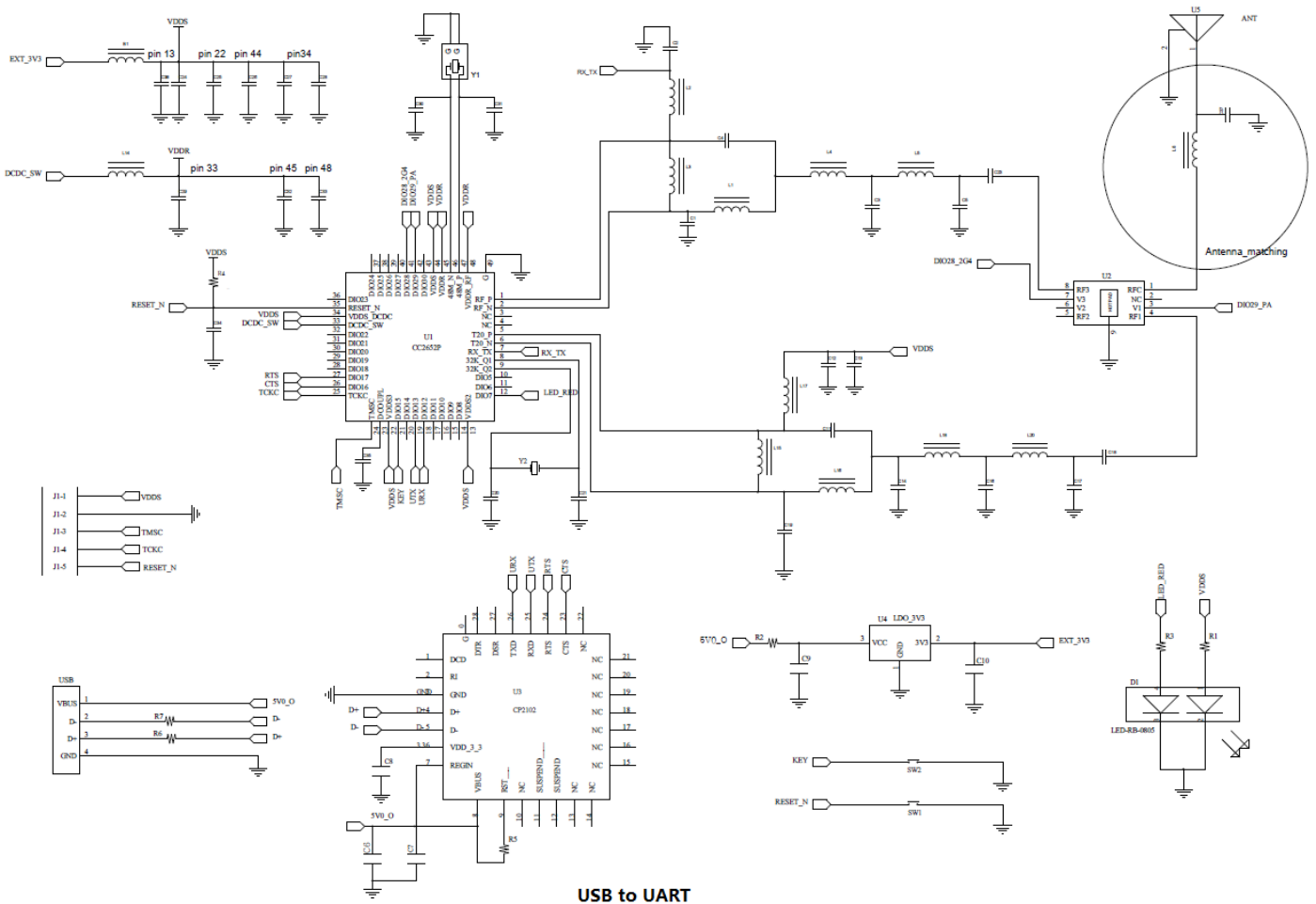
## 2.5 RF Control

RF-DG-52PAS can switch the RF PA to control the TX power by changing the output of DIO28 and DIO29.

Table 2. RF PA Control of RF-DG-52PAS

Power	DIO28	DIO29
+5 ~ +20 dBm (PA)	0	1
< 5 dBm	1	0

## 2.6 Schematic Diagram



## 2.7 Electrostatics Discharge Warnings

The module will be damaged by the discharge of static. RF-star suggests that all modules should follow the 3 precautions below:

1. According to the anti-static measures, bare hands are not allowed to touch modules.
2. Modules must be placed in anti-static areas.
3. Take the anti-static circuitry (when inputting HV or VHF) into consideration in product design.

Static may result in the degradation in performance of the module, even causing failure.



### 3 Revision History

Date	Version No.	Description
2022.11.14	V1.0	The initial version is released.
2023.05.26	V1.0	Update the company address.

Note:

1. The document will be optimized and updated from time to time. Before using this document, please make sure it is the latest version.
2. To obtain the latest document, please download it from the official website: [www.rfstariot.com](http://www.rfstariot.com) and [www.szrfstar.com](http://www.szrfstar.com).



## 4 Contact Us

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