

LG69T (AM,AQ,AS)

Reference Design

GNSS Module Series

Version: 1.0.0

Date: 2022-01-17

Status: Preliminary



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About the Document

Document Information

Title	LG69T (AM,AQ,AS) Reference Design
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Subtitle	GNSS Module Series
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Document Type	Reference Design
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Document Status	Preliminary
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Revision History

Version	Date	Description
-	2022-01-17	Creation of the document
1.0.0	2022-01-17	Preliminary

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1 Reference Design

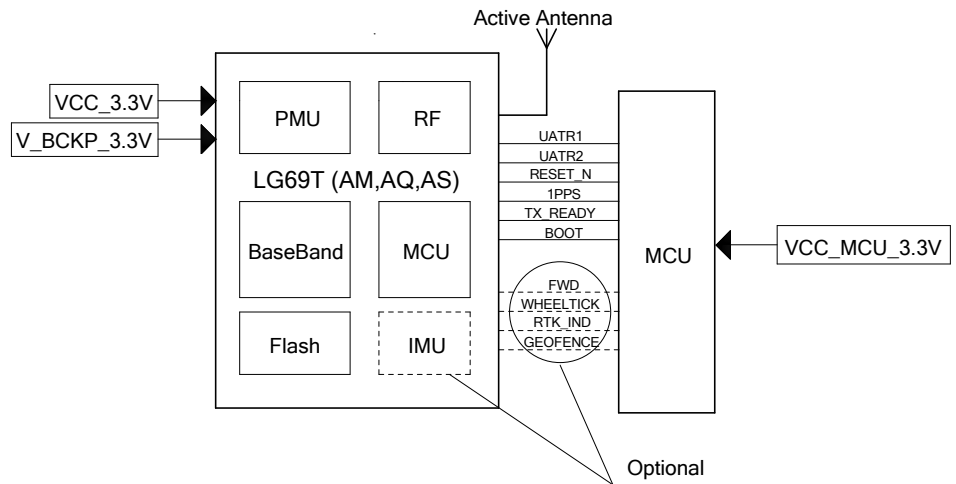
1.1. Introduction

This document provides the reference design of Quectel LG69T (AM), LG69T (AQ), and LG69T (AS) GNSS modules, including the design of block diagram, power supply, MCU interface, module interfaces and antenna interface.

1.2. Schematics

The schematics illustrated in the following pages are provided for your reference only.

Block Diagram

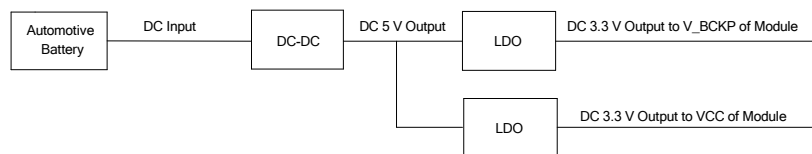


NOTE:
 The IMU, WHELTICK, FWD, RTK_IND, and GEOFENCE are optional:
 1) The IMU, WHELTICK and FWD are used for LG69T (AQ) module.
 2) The RTK_IND and GEOFENCE are used for LG69T (AM) and LG69T (AQ) modules.

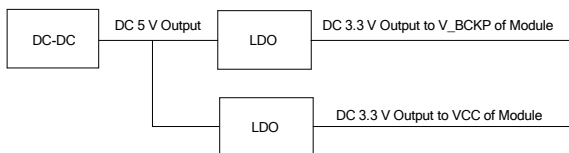
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Power Supply

Power Supply for LG69T (AM) module



Power Supply for LG69T (AS) and LG69T (AQ) modules



NOTE:

1. It is recommended to choose a low noise LDO with a minimum output current of 1 A.
2. It is recommended to control the power supply of the module via MCU to save power, or restart the module when the module enters an abnormal state.

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MCU Interface

NOTE 1

MCU

1 VCC

2 GND

3 RXD1 [4]

4 TXD1 [4]

5 RXD2 [4]

6 TXD2 [4]

7 WHEELTICK [4]

8 FWD [4]

9 BOOT_MCU [4]

10 1PPS [4]

11 RTK_IND [4]

12 GEOFENCE [4]

13 TX_READY [4]

14 RESET_N [4]

U201

Q201

NOTE 2

NOTE:

1. U201 is an MCU that the power domain of GPIO interfaces is 3.3 V.
2. An OC driver circuit is recommended here.

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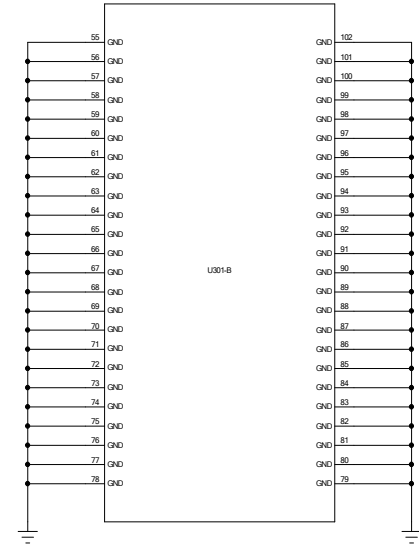
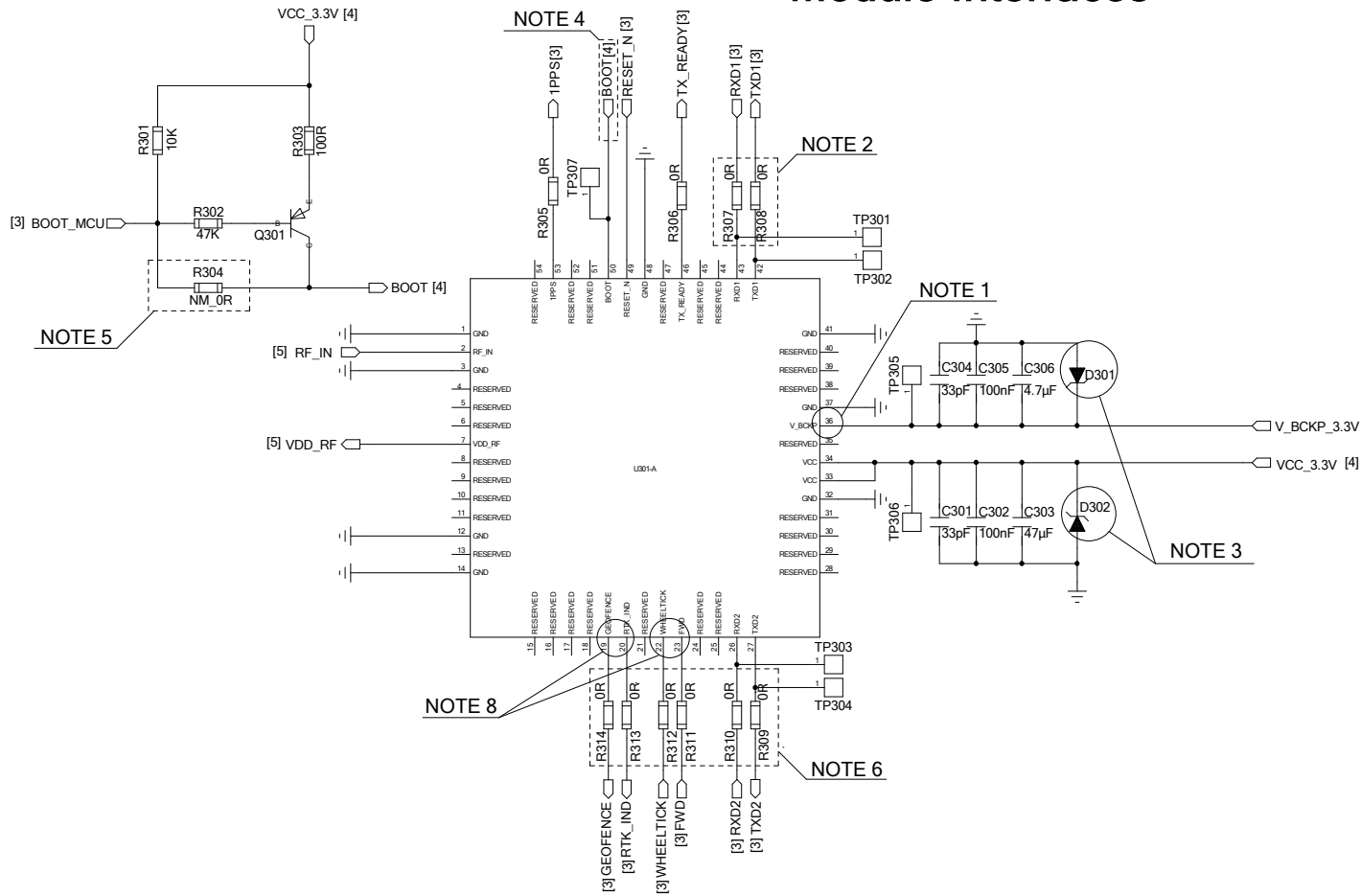
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Module Interfaces



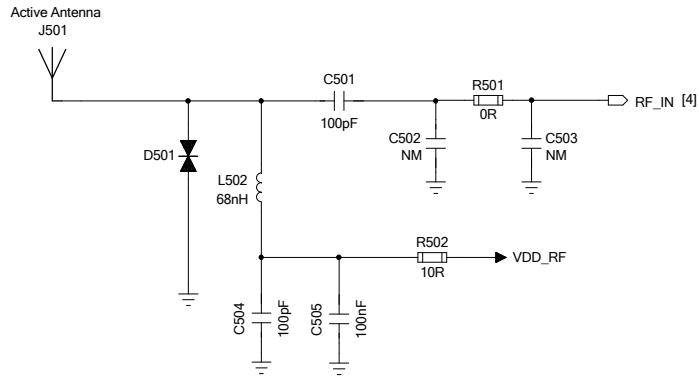
NOTE:

- V_BCKP must be connected to power supply for startup, and it should be always powered if hot (warm) start is needed.
- UART1 interface is used for standard NMEA or RTCM messages output, PQTM commands input and output, and firmware upgrade by default.
- D301 and D302 are ESD protection devices, which are recommended to be placed near the VCC.
- While the BOOT pin is kept at high level for about 50 ms during startup, the module enters Boot download mode.
- NM components are designed to be compatible with other models of LG69T module.
- All 0R resistors on signal lines are used for debugging and should be placed close to the module.
- Keep all RESERVED and unused pins unconnected, and ensure all GND pins are connected to the ground network.
- The Pin 19 and 20 are RTK_IND and GEOFENCE for LG69T (AM) and LG69T (AQ) modules, and RESERVED for LG69T (AS) module. The Pin 22 and 23 are WHEELTICK and FWD for LG69T (AQ) module, and RESERVED for LG69T (AM) and LG69T (AS) modules.

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Antenna Interface



NOTE:

1. It is recommended to use an active antenna with proper parameters.
2. The Π type circuit (C502, C503, and R501) is reserved for antenna impedance matching. By default, C502 and C503 are not mounted and R501 is 0 Ω .
3. The impedance of RF trace should be controlled as 50 Ω and the trace length should be kept as short as possible.
4. For more information, see *Quectel_LG69T(AM,AQ,AS)_Hardware_Design*.

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