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UM760 Series

Multi-GNSS Single-Frequency Positioning Module

Foreword

About This Document

This manual provides the schematic diagrams, hardware design considerations, and recommended BOM for the Unicore UM760 series modules.

Target Readers

This manual is intended for technical personnel familiar with GNSS receivers.

Statement

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Revision History

Version	Revision History	Date
R1.0	First release.	Mar. 2026

Document Status

Releases	Status Descriptions	Current Status
Primary	This is a pre-release version with target specifications that are subject to revision.	
Alpha release	This is an alpha release version, which has been preliminarily tested and verified. The content may undergo minor modifications based on user feedback and further testing.	
Production release	The document contains the complete and final specifications.	√

1 Reference Circuit Using an Active Antenna

- The voltage range of VCC and V_BCKP are described in Power Supply Requirements.

- Ground all GND pins of the module.

- Connect the RF_IN signal to the antenna and ensure 50 Ω impedance matching.

- Use an external power supply to feed the antenna.
  If the antenna's power supply and the module's main power supply (VCC) use the same power rail, the ESD, surge and overvoltage introduced at the antenna will be directly applied to VCC, which may cause damage to the module. Therefore, it's recommended to design an independent power rail for the antenna to reduce the possibility of damage to the module.
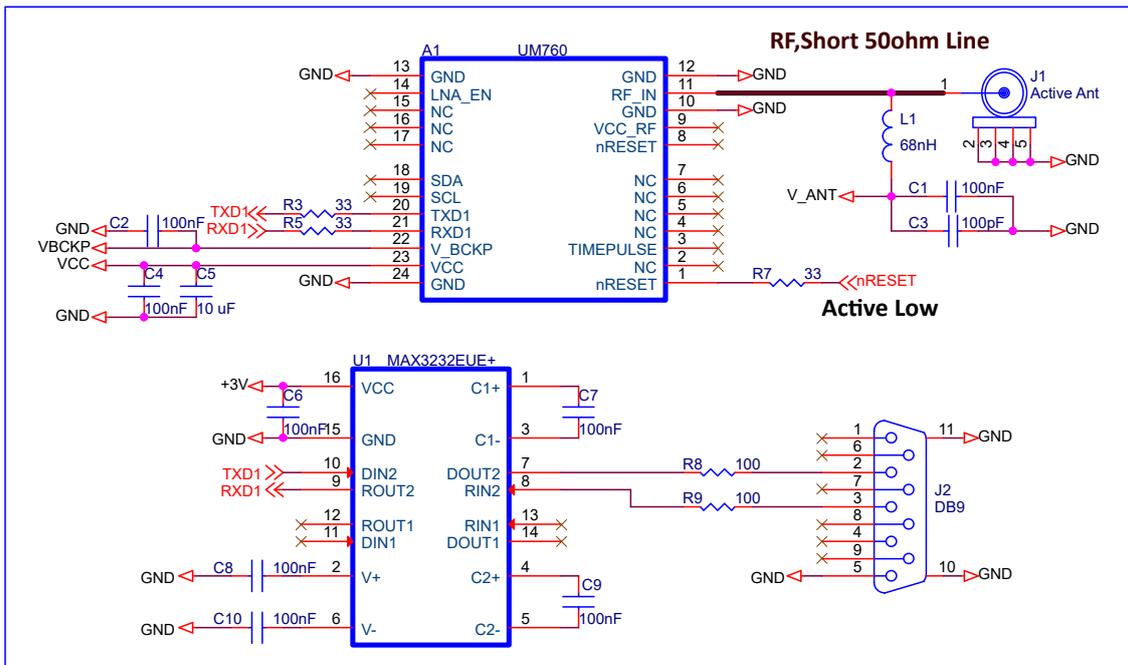

Figure 1-1 Reference Circuit Using an Active Antenna

2 Reference Circuit Using a Passive Antenna

- The voltage range of VCC and V_BCKP are described in Power Supply Requirements.

- Ground all GND pins of the module.

- For optimal system performance when using a passive antenna, an LNA (Low-Noise Amplifier) is required between the antenna and the module's RF_IN pin.

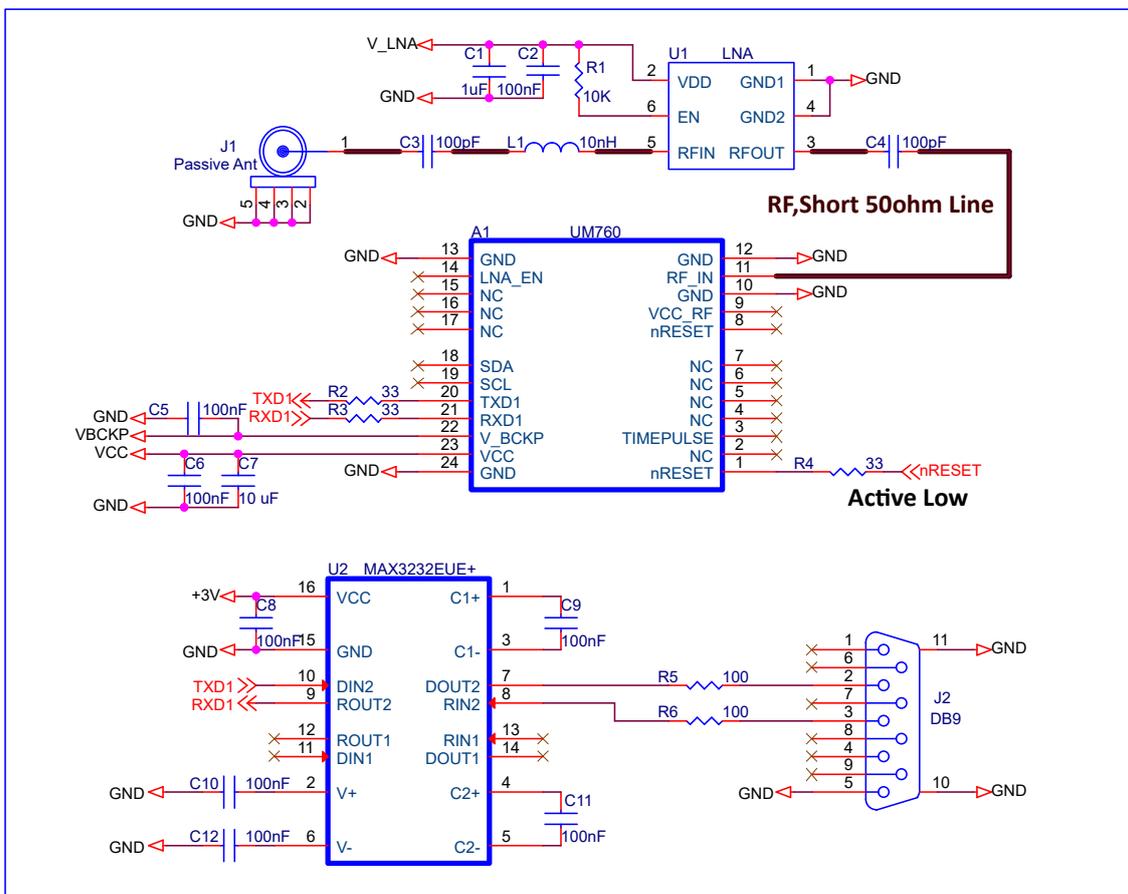- Ensure 50 Ω impedance matching for the RF routing (antenna → LNA → RF_IN).

Figure 2-1 Reference Circuit Using a Passive Antenna

3 Power Supply Requirements

3.1 Main Supply (VCC)

The voltage range of VCC is 2.7 V ~ 3.6 V.

Notes:

- The initial level of VCC when powered on needs to be less than 0.4 V.

- The power-on ramp of VCC needs to be monotonic, without plateaus.

- The undershoot and ringing of VCC when powered on need to be within 5% of VCC.

- Power-on waveform: The time interval from 10% rising to 90% needs to be within 100 μs ~ 10 ms.

- Power-on time interval: The time interval between the power-off (VCC < 0.4 V) to the next power-on is recommended to be larger than 500 ms.

3.2 Backup Supply (V_BCKP)

When using hot start, backup power supply is required for the module. The voltage range of V_BCKP is 1.7 V ~ 3.6 V.

Notes:

- The initial level of V_BCKP when powered on needs to be less than 0.4 V.

- The power-on ramp of V_BCKP needs to be monotonic, without plateaus.

- The undershoot and ringing of V_BCKP when powered on need to be within 5% of V_BCKP.

- Power-on waveform: The time interval from 10% rising to 90% needs to be within 100 μs ~ 10 ms.

- Power-on time interval: The time interval between the power-off (V_BCKP < 0.4 V) to the next power-on is recommended to be larger than 500 ms.

- The V_BCKP pin cannot be floating or connected to ground. When hot start is not used, V_BCKP must be connected to VCC or backup power.

4 Recommended BOM

Table 4-1 Recommended BOM

	Component	Order No.	Manufacturer
U1	RS-232 Transceivers	TRS3122ERGER	TI
U2	LNA	MXDLN14TP	MAXSCEND

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