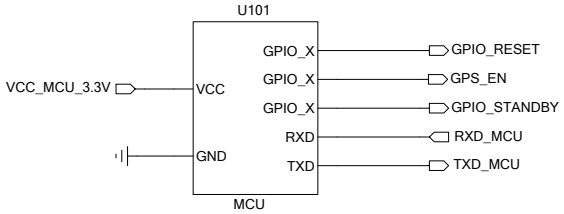
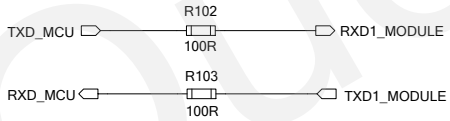
3.3V Power Suppply and UART Circuit

Customer's MCU



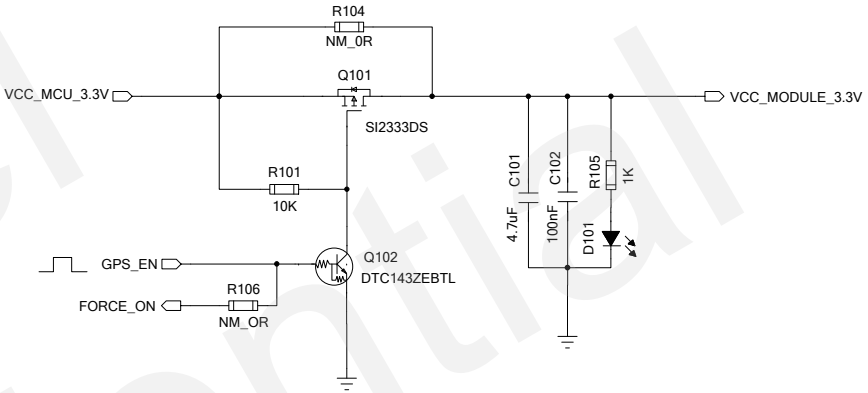
UART Circuit



R102, R103 are reserved for debugging the waveform of UART, and they are also beneficial to ESD protection.

Generally,100R for R102 and R103 is recommended,but 0R also works well.

Power Management Circuit (Optional)



There are two ways to enter into backup mode and back to full on mode, you can choose the dedicated way base on your requirement.

1. Send command: “$PMTK225,4*2F” to enter into backup mode forever. The only way to wake up the module is pulling the FORCE_ON high. Here, Q101, Q102, R101 are not mounted, R104 and R106 are 0 ohm.
2. Cutting off VCC and keeping V_BCKP will make the module enter into backup mode from full on mode. As long as the VCC pin is powered, the module will enter into full on mode immediately. Here, Q101, Q102, R101 are mounted, R104 and R106 are not mounted.

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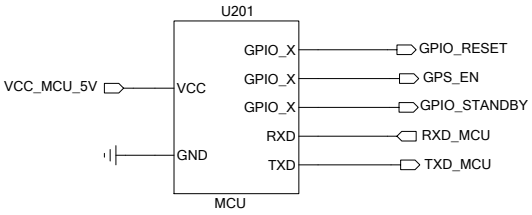
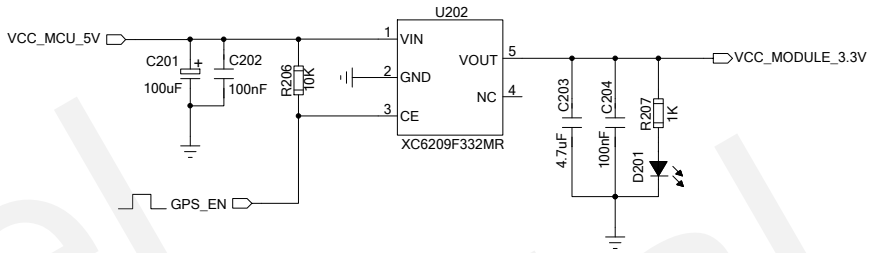
5V Power Suppply and UART Circuit

Customer's MCU

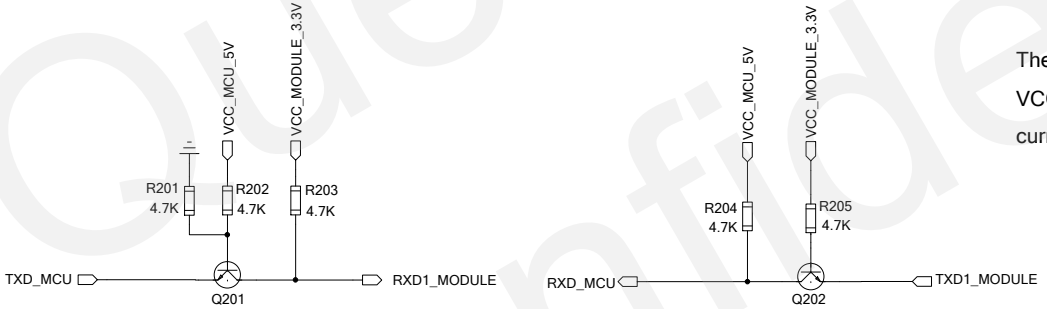


LDO Circuit



It's highly recommended to use an external LDO without built-in output high-speed discharge function to ensure the output voltage drop time is greater than 100ms (from 2.7V to 0.5V).

Level Shifting for UART



The transistor circuit will realize the voltage level shifting between VCC_MCU_5V and VCC_MODULE_3.3V, and block the leakage current from one power-on device to another power-off device.

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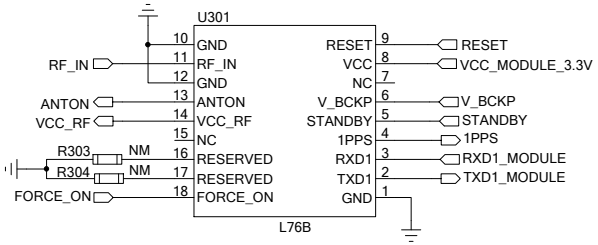
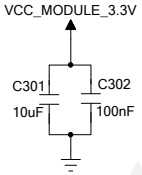
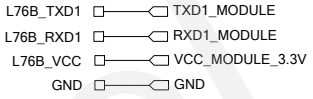
Module Interface

Module Interface



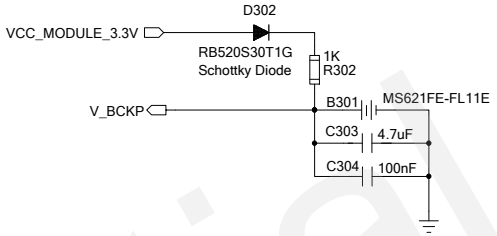


Test Points



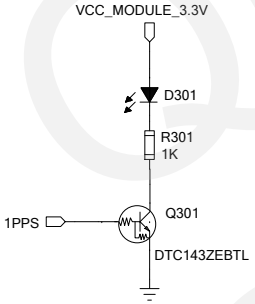
1. UART1 can be used to output NMEA message and input PMTK commands.
2. R303, R304 are reserved to modify band rate for the future.
   Keep R303, R304 unmounded in L76B module.
3. The test points are reserved for debugging the GNSS module.

Charge Circuit for RTC Logic



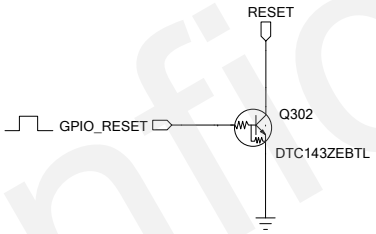
V_BCKP is designed to supply power for L76B RTC logic circuit when VCC_MODULE_3.3V is powered off.

Indicating Circuit



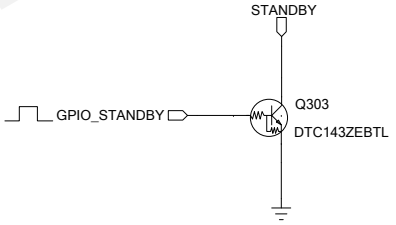
The 1PPS indicator will blink at 1Hz frequency after fixing the position.

Reset Circuit



1. If the reset function is unused, the RESET pin can be connected to the VCC directly.
2. RESET has been pulled up internally.

Standby Circuit



1. STANDBY has been pulled up internally.
2. Enter into standby mode: change the STANDBY pin from high to low level.
3. Exit from standby mode: change the STANDBY pin from low to high level.

For more details, please refer to L76 Series Hardware Design.

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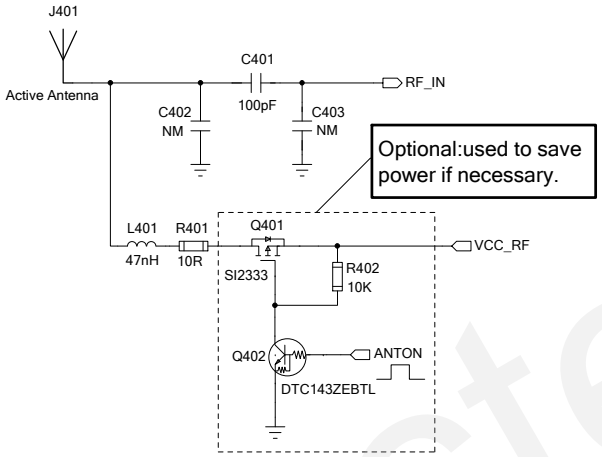
Antenna Interface

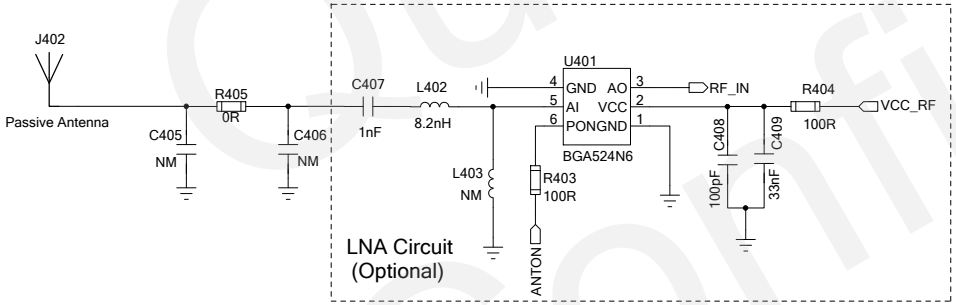
Active Antenna



1. Pi circuit (C401, C402, C403) is reserved for impedance matching for antenna. By default, C402 and C403 are not mounted, C401 is 100pF.
2. VCC_RF can be used as power supply for active antenna, its typical value is 3.3V, the voltage range is 2.8V-4.3V (VCC_RF=VCC). If it does not meet the requirement of the active antenna, an external LDO could be used.
3. The voltage level of ANTON will be pulled down in standby mode.
4. If the L76B module never enter into standby mode in the design, the ANTON pin should be kept floated.
5. Impedance of RF trace should be controlled by 50 ohm and the length should be kept as short as possible.

For more details, please refer to L76 Series Hardware Design.

Passive Antenna



1. Pi circuit (R405, C405, C406) is reserved for impedance matching for antenna. By default, C405 and C406 are not mounted, R405 is0R
2. If an external LNA is added between passive antenna and L76B module, the total sensitivity will be improved about 3dB, which is beneficial for improving TTFF.
3. One typical reference circuit with BGA524N6 is given in the left figure. Here, C407, L402, L403 form a reserved matching circuit for the LNA BGA524N6. By default, C407 is 1nF, L402 is 8.2nH and L403 is not mounted.
4. VCC_RF can be used as power supply for LNA, its typical value is 3.3V, the voltage range is 2.8V-4.3V (VCC_RF=VCC).
5. ANTON is an optional pin which can be used to control the enable pin of an external LNA. If “ANTON” function is not used, please connect the pin “LNA ENABLE” to VCC to keep LNA always on.
6. Impedance of RF trace should be controlled by 50 ohm and the length should be kept as short as possible.

For more details, please refer to L76 Series Hardware Design.

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