LC760Z (00)&L76-L&L76-LB

Hardware Difference Introduction

GNSS Module Series

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1 Introduction

This document compares Quectel LC760Z (00), L76-L and L76-LB modules and provides a brief summary of their key features and characteristics. Its purpose is to facilitate the migration process from L76-L and L76-LB to the LC760Z (00). For more information, contact Quectel Technical Support (support@quectel.com).

NOTE

This document signifies the differences between LC760Z (00), L76-L and L76-LB in red.

1.1. Special Mark

Table 1: Special Mark

Mark	Definition
●	The symbol indicates that a function or technology is supported by the module(s).

2 Summary

The Quectel LC760Z (00) is basically compatible with the L76-L and L76-LB, but there are some hardware differences between them, briefly outlined in this chapter.

1. Power supply range (There are slight differences in the power supply range.):
   - Typical values of VCC and V_BCKP power supply: Both modules operate at 3.3 V.
   - VCC power supply range: 2.8–3.6 V for LC760Z (00) and 2.8–4.3 V for L76-L and L76-LB.
   - V_BCKP power supply range: 2.8–3.6 V for LC760Z (00), 1.5–4.5 V for L76-L and 2.3–4.3 V for L76-LB.
   - I/O power supply: Following VCC for LC760Z (00), while the typical value of L76-L and L76-LB is 2.8 V.

2. Footprint difference: LC760Z (00) has 10 more LGA pins than L76-L and L76-LB, facilitating the incorporation of more functions.

3. Pin differences:
   - Pin 5: LC760Z (00) designates pin 5 as RESERVED. L76-L and L76-LB use pin 5 as STANDBY to enter or exit Standby mode.
   - Pin 14: LC760Z (00) designates pin 14 as ANT_BIAS to supply power for external RF components, control external LNA and active antenna power and support internal antenna detection. L76-L and L76-LB use pin 14 as VDD_RF to supply power for external RF components.
   - Pin 18: LC760Z (00) designates pin 18 as BOOT to control module startup mode. L76-L and L76-LB use pin 18 as WAKEUP to wake the module from Backup mode. Modify the main control program to make pin 18 of LC760Z (00) compatible with L76-L and L76-LB.
   - I2C interface: LC760Z (00) features an interrupt pin I2C_INT (pin 26) and supports both synchronization and standard communication methods. In contrast, L76-L and L76-LB do not have the I2C_INT pin and only support standard communication method.

4. RF framework: LTE B13 Notch + LNA + SAW for LC760Z (00), while LNA + SAW for L76-L and L76-LB without LTE B13 Notch.

3 Hardware Difference Introduction

3.1. General Information

Table 2: General Information

Module	Appearance	Packaging	Dimensions (mm)	Supply Voltage	
LC760Z (00)		18 LCC pins 10 LGA pins	10.1 × 9.7 × 2.4	VCC	2.8–3.6 V Typ. 3.3 V
				V_BCKP	2.8–3.6 V Typ. 3.3 V
				I/O Voltage	Following VCC
L76-L		18 LCC pins	10.1 × 9.7 × 2.3	VCC	2.8–4.3 V Typ. 3.3 V
				V_BCKP	1.5–4.5 V Typ. 3.3 V
				I/O Voltage	Typ. 2.8 V
L76-LB		18 LCC pins	10.1 × 9.7 × 2.3	VCC	2.8–4.3 V Typ. 3.3 V
				V_BCKP	2.3–4.3 V Typ. 3.3 V
				I/O Voltage	Typ. 2.8 V

3.2. Pin Assignment

The LC760Z (00) module is equipped with 28 pins (18 LCC and 10 LGA pins), and the L76-L and LC76-LB modules are equipped with 18 LCC pins. Pin differences are detailed below.

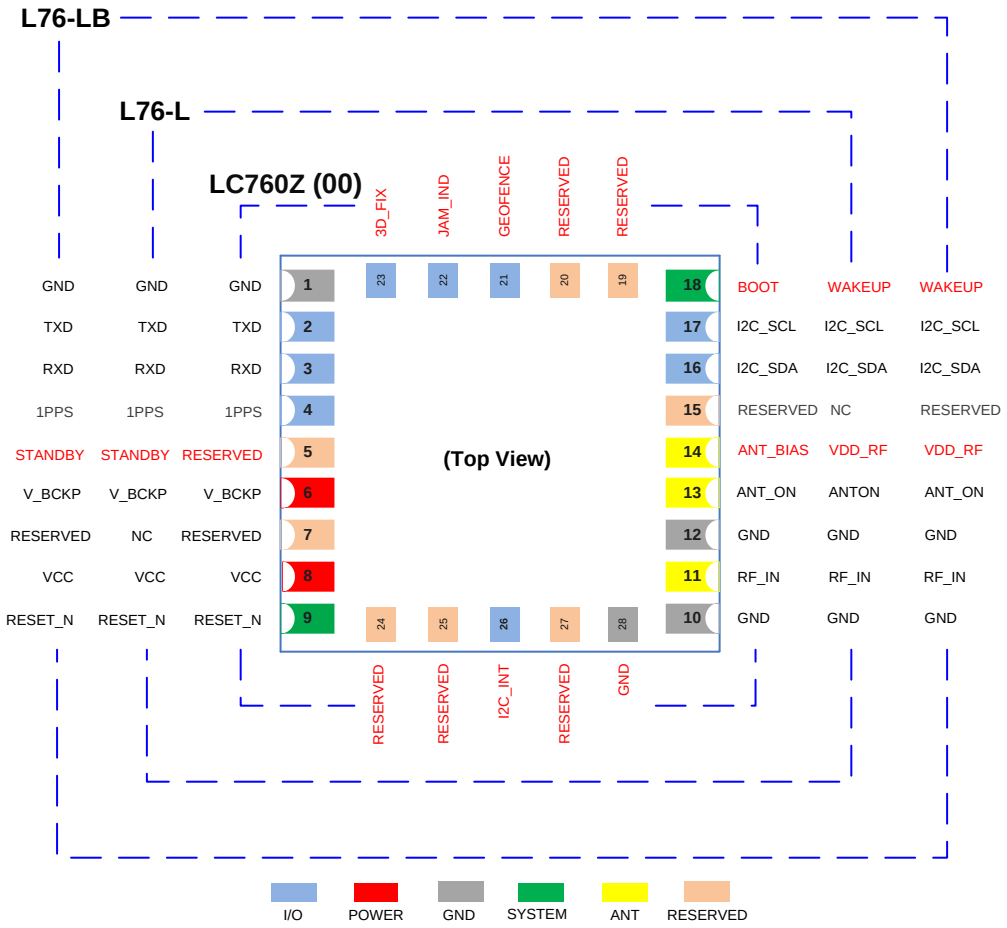

Figure 1: Pin Assignment

Table 3: Pin Description

Pin No.	Pin Name			I/O	Description
	LC760Z (00)	L76-L	L76-LB		
1	GND	GND	GND	-	Ground
2	TXD	TXD	TXD	DO	LC760Z (00): UART interface supports standard NMEA message, PQTM message, Binary message and firmware upgrade. L76-L and L76-LB: UART interface supports
3	RXD	RXD	RXD	DI	

Pin No.	Pin Name			I/O	Description
	LC760Z (00)	L76-L	L76-LB		
					standard NMEA message, PMTK/PQ message and firmware upgrade.
4	1PPS	1PPS	1PPS	DO	One pulse per second
5	RESERVED	STANDBY	STANDBY	DI	LC760Z (00): The pin is RESERVED. L76-L and L76-LB: The pin is STANDBY to enter or exit from Standby mode. It is pulled up internally and edge-triggered.
6	V_BCKP	V_BCKP	V_BCKP	PI	Backup power supply for backup domain
7	RESERVED	NC	RESERVED	-	Reserved
8	VCC	VCC	VCC	PI	Main power supply
9	RESET_N	RESET_N	RESET_N	DI	Resets the module
10	GND	GND	GND	-	Ground
11	RF_IN	RF_IN	RF_IN	AI	GNSS antenna interface
12	GND	GND	GND	-	Ground
13	ANT_ON	ANTON	ANT_ON	DO	LC760Z (00): Controls external LNA and active antenna power. This pin is at a low level in Standby and Backup modes. L76-L: Controls external LNA and active antenna power. This pin is at a low level in Standby, Backup, GLP, AlwaysLocate™ modes and during sleep time in Periodic mode. L76-LB: Controls external LNA and active antenna power. This pin is at low level in Standby, Backup and during sleep time in Periodic modes.
14	ANT_BIAS	VDD_RF	VDD_RF	PO	LC760Z (00): The pin is ANT_BIAS to supply power for external RF components, control external LNA and active antenna power. It also supports antenna detection. L76-L and L76-LB: The pin is VDD_RF to supply power for external RF components.
15	RESERVED	NC	RESERVED	-	Reserved

Pin No.	Pin Name			I/O	Description
	LC760Z (00)	L76-L	L76-LB		
16	I2C_SDA	I2C_SDA	I2C_SDA	DIO	LC760Z (00): I2C interface supports standard NMEA message, PQTM and Binary messages. L76-L and L76-LB: I2C interface supports standard NMEA message, PQTM/PQ message.
17	I2C_SCL	I2C_SCL	I2C_SCL	DI	
18	BOOT	WAKEUP	WAKEUP	DI	LC760Z (00): The pin is BOOT to control module startup mode (active low). L76-L and L76-LB: The pin is WAKEUP to wake up the module from Backup mode (active high).
19	RESERVED	-	-	-	LC760Z (00): The pin is RESERVED. L76-L and L76-LB: No pin.
20	RESERVED	-	-	-	LC760Z (00): The pin is RESERVED. L76-L and L76-LB: No pin.
21	GEOFENCE	-	-	DO	LC760Z (00): The pin is GEOFENCE for geofence status indication. L76-L and L76-LB: No pin.
22	JAM_IND	-	-	DO	LC760Z (00): The pin is JAM_IN for jamming indication. L76-L and L76-LB: No pin.
23	3D_FIX	-	-	DO	LC760Z (00): The pin is 3D_FIX for 3D position fix indication. L76-L and L76-LB: No pin.
24	RESERVED	-	-	-	LC760Z (00): The pin is RESERVED. L76-L and L76-LB: No pin.
25	RESERVED	-	-	-	LC760Z (00): The pin is RESERVED. L76-L and L76-LB: No pin.
26	I2C_INT	-	-	DO	LC760Z (00): This pin is I2C_INT to output interrupt signal for I2C. L76-L and L76-LB: No pin.
27	RESERVED	-	-	-	LC760Z (00): The pin is RESERVED. L76-L and L76-LB: No pin.
28	GND	-	-	-	LC760Z (00): The pin is GND. L76-L and L76-LB: No pin.

NOTE

LC760Z (00) supports GEOFENCE, JAM_IND and 3D_FIX functions via pins 21–23, while L76-L and L76-LB do not support. For detailed pin differences between the two modules, see *documents [1]*, *[2]* and *[3] hardware designs*.

3.3. STANDBY

Pin 5 is RESERVED on LC760Z (00) module and STANDBY on L76-L and L76-LB modules.

L76-L and L76-LB use the STANDBY pin to enter or exit Standby mode, while LC760Z (00) does not have the STANDBY pin and only supports the software command to enter or exit Standby mode. If compatibility with L76-L and L76-LB is required, you can use the method 1 mentioned below to enter or exit Standby mode and keep pin 5 floating by modifying the main control program and adjusting BOM.

The methods to enter or exit Standby mode for LC760Z (00), L76-L and L76-LB are shown as below.

Method 1:

- Enter Standby mode: Send corresponding software command (For details about the command, see *documents [4]* and *[5] protocol specifications*).
- Exit Standby mode:
  - LC760Z (00): Send any character via UART interface, wait for the sleep time configured by **CFG-SLEEP (0x06 0x41)** ends or pull the RESET_N pin low for at least 100 ms.
  - L76-L and L76-LB: Send any data via UART interface.

Method 2 (only supported by 76-L and L76-LB):

- Enter Standby mode: Pull the STANDBY pin low.
- Exit Standby mode: Release the STANDBY pin.

3.4. Antenna Power Supply

On L76-L and L76-LB modules, pin 14 is VDD_RF. The VDD_RF pin is used to supply power for external RF components, with DC characteristic consistent with VCC.

On LC760Z (00) module, pin 14 is ANT_BIAS, which has the following functions: supplying power to external RF components, controlling external LNA and active antenna power supply and supporting antenna detection. When using ANT_BIAS pin to power the external active antenna, the module can detect the antenna status based on the current of the pin. The recommended minimum operating voltage is (VCC - 0.15) V, with the typical value of 3.1 V. The ANT_BIAS pin can deliver a typical output current of

25 mA, with the maximum value of 50 mA, meeting the power supply requirements of most RF components. ANT_BIAS pin has no voltage output in Standby mode and Backup mode.

ANT_BIAS pin of LC760Z (00) can be compatible with VDD_RF pin of L76-L and L76-LB, when the current output capacity of ANT_BIAS pin meets the requirements.

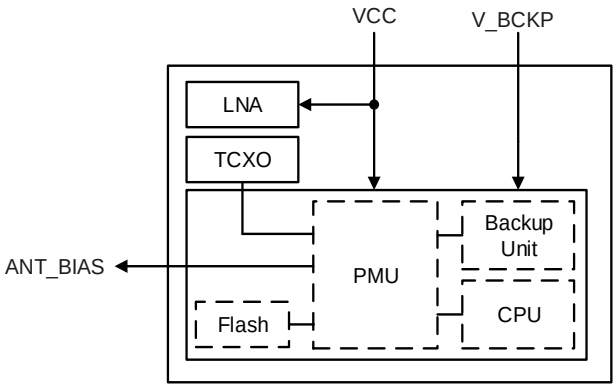

Figure 2: LC760Z (00) Internal Power Supply

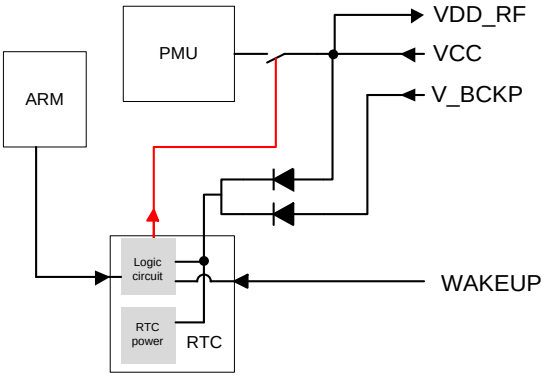

Figure 3: L76-L Internal Power Supply

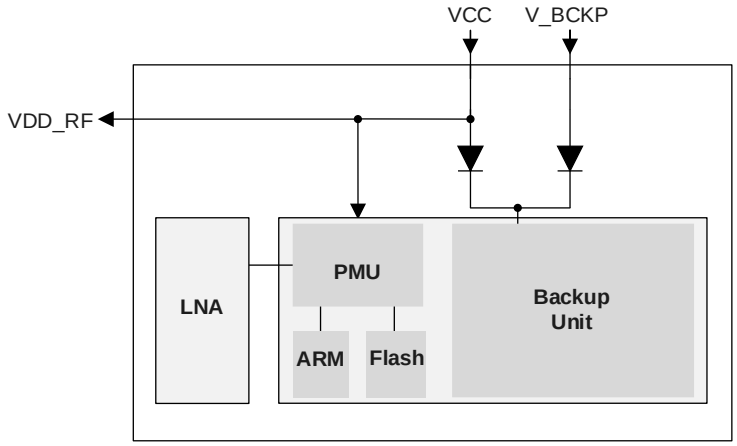

Figure 4: L76-LB Internal Power Supply

3.5. I2C Interface

The LC760Z (00) features an I2C interface of 3 pins: I2C_SDA (pin 16), I2C_SCL (pin 17) and I2C_INT (pin 26). On the other hand, the L76-L and L76-LB modules have an I2C interface of 2 pins: I2C_SDA (pin 16) and I2C_SCL (pin 17).

Compared to L76-L and L76-LB, the I2C interface of LC760Z (00) has one more interrupt pin I2C_INT, which outputs a rising edge interrupt signal to the host before the module outputs the data. After the host receives the interrupt signal, it begins to read the module's data. The length of the read data is longer than the maximum NMEA data length output by the module per second. This synchronous communication method with interrupt pin is more reliable. If you intend to use the I2C interface for your new design, it is recommended to use the above synchronous communication method. However, if compatibility with L76-L and L76-LB is required, you can use asynchronous communication without using the I2C_INT pin, but you must provide continuous clock information to the I2C interface of the module through the read operation.

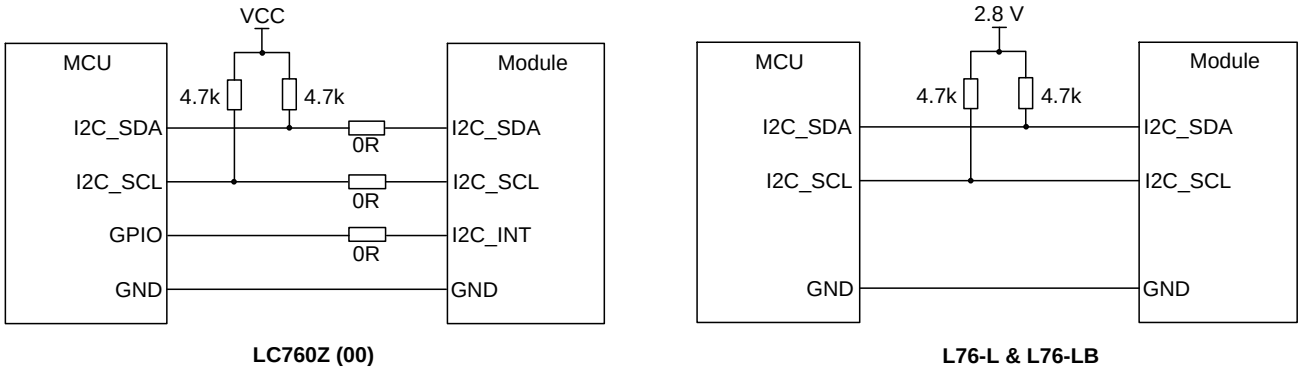

Figure 5: I2C Interface Reference Circuits of LC760Z (00), L76-L and L76-LB

3.6. BOOT and WAKEUP

Pin 18 is BOOT on LC760Z (00) module and WAKEUP on L76-L and L76-LB modules. L76-L and L76-LB use the WAKEUP pin to wake up the module from Backup mode, while LC760Z (00) does not have the WAKEUP pin.

The methods to enter or exit Backup mode for LC760Z (00), L76-L and L76-LB are shown as below.

Method 1:

- Enter Backup mode: Send corresponding software command (For details about the command, see *documents [4]* and *[5] protocol specifications*).
- Exit Backup mode:
  - LC760Z (00): Pull the RESET_N pin low for at least 100 ms or wait for the sleep time configured by **CFG-SLEEP (0x06 0x41)** ends.
  - L76-L and L76-LB: Pull the WAKEUP pin high for at least 10 ms.

Method 2:

- Enter Backup mode: Cut off the VCC power supply for at least 1 s and keep V_BCKP powered.
- Exit Backup mode:
  - LC760Z (00): Pull the RESET_N low and hold it for at least 50 ms before restoring VCC. After the VCC is completely powered on, keep the RESET_N for at least 10 ms and then release it.
  - L76-L and L76-LB: Restore the VCC power supply for the module.

The BOOT pin of LC760Z (00) is used to control module startup mode. It is not allowed to be connected to pulled-up and pulled-down resistors and external capacitor(s). The BOOT pin can be controlled by MCU via an OC circuit or via a direct connection to MCU. When the pin is connected to the GPIO of the MCU, it is recommended to use a GPIO with open-drain output.

If the pin is kept floating during startup or module reset (The voltage level of RESET_N pin shifts from low to high), the module enters normal operation mode. If the pin is pulled down for about 50 ms during startup or module reset, the module enters Boot download mode. The BOOT Pin control sequence of LC760Z (00) is shown in the figures below:

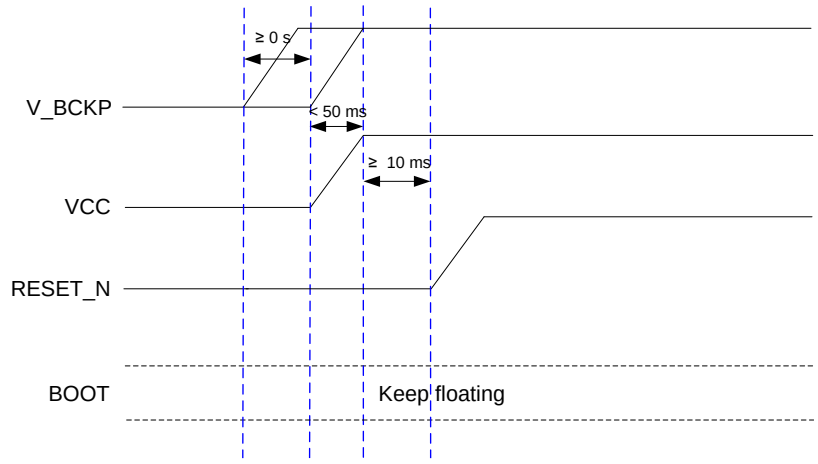

Figure 6: BOOT Pin State (Normal Operating Mode)

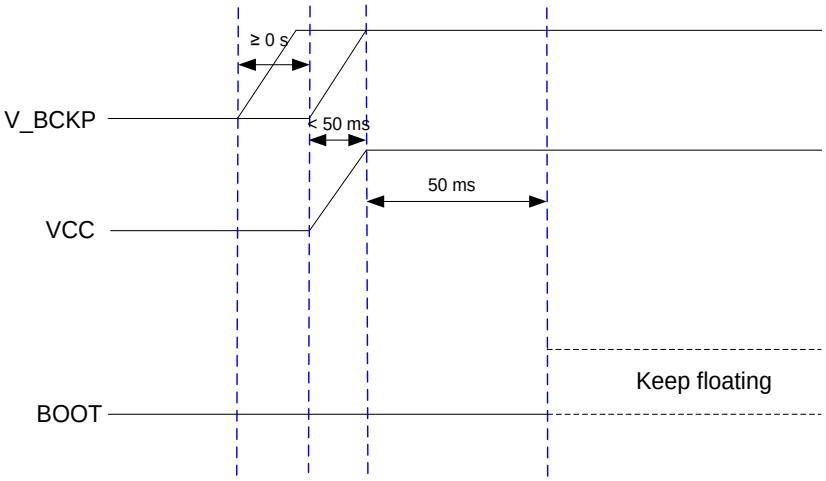

Figure 7: BOOT Pin Control Sequence 1 (Boot Download Mode)

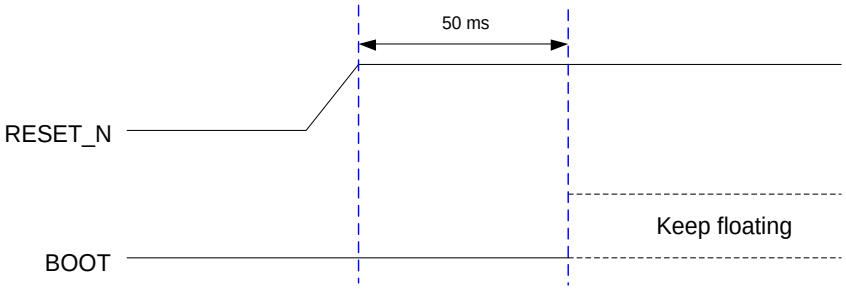

Figure 8: BOOT Pin Control Sequence 2 (Boot Download Mode)

In summary, while there are differences in the hardware design of pin 18 between LC760Z (00) and L76-L and L76-LB, compatibility across all modules can be achieved by modifying the main control program and adjusting BOM. The related reference designs are shown below. For details, see *documents [6]*, *[7]* and *[8]* *reference designs*.

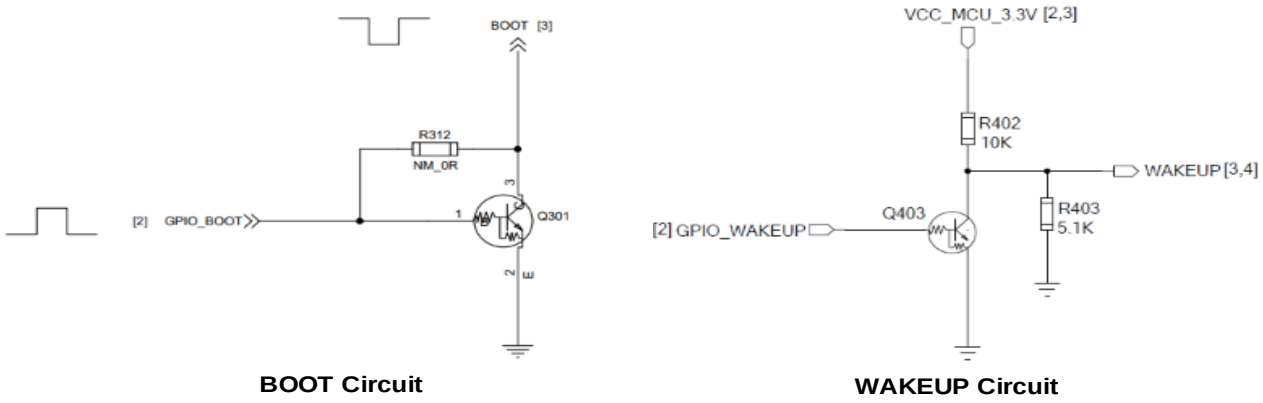

Figure 9: BOOT and WAKEUP Circuits

3.7. RF Framework

The RF framework is LTE B13 Notch + LNA + SAW for LC760Z (00), while LNA + SAW for L76-L and L76-LB without LTE B13 Notch.

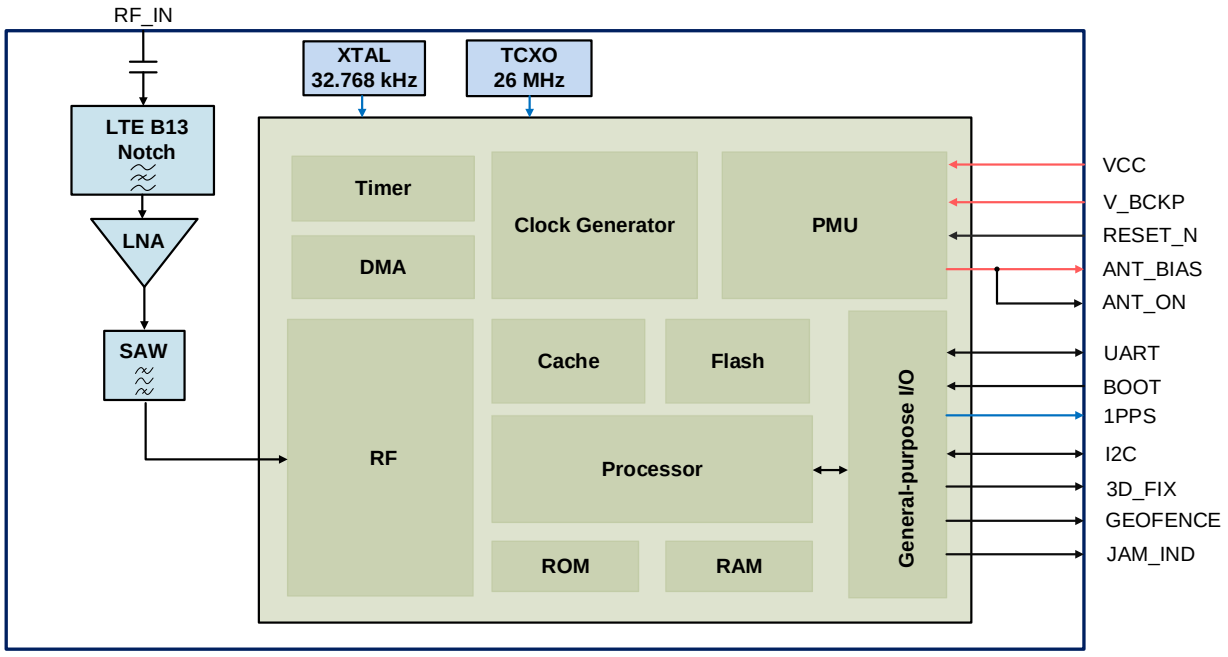

Figure 10: LC760Z (00) Block Diagram

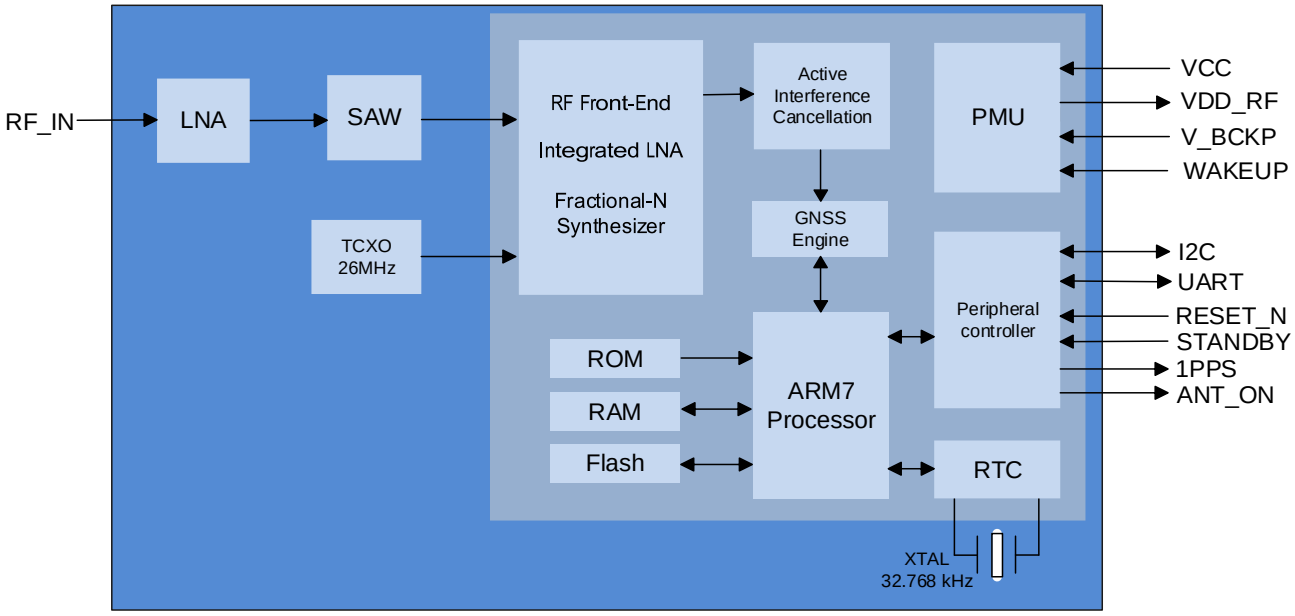

Figure 11: L76-L and L76-LB Block Diagrams

3.8. Module Performance

3.8.1. Power Consumption

Table 4: Power Consumption

Power Consumption [1]	LC760Z (00)		L76-L	L76-LB		Unit
	GPS + GLONASS + Galileo + QZSS	GPS + Galileo + BDS + QZSS	GPS + GLONASS+ QZSS	GPS + BDS+ QZSS	GPS + GLONASS + QZSS	
Acquisition	23	20	31	29	31	mA
Tracking	22	20	31	29	29	mA
Standby mode [2]	1.4	1.4	0.5	0.8	0.8	mA
Backup mode [3]	13	13	8	8	8	μA

[1] Room temperature, all satellites at -130 dBm.
[2] For more information about entering the Standby mode, see *documents [1]*, *[2]* and *[3] hardware designs*.
[3] For more information entering the Backup mode, see *documents [1]*, *[2]* and *[3] hardware designs.*

NOTE

1. LC760Z does not support simultaneous reception of GLONASS and BDS satellite signals. To switch from the configuration that includes receiving BDS satellite signals to those that support GLONASS satellite signals, contact Quectel Technical Support (support@quectel.com) to obtain the corresponding firmware version and vice versa.
2. L76-LB has two firmware versions that support different default constellations. Contact Quectel Technical Support (support@quectel.com) for details if necessary.

3.8.2. Electrical Specification

Table 5: Absolute Maximum Ratings

Parameter	Description	LC760Z (00)		L76-L		L76-LB		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	
VCC	Main Power Supply Voltage	-0.5	3.6	-0.3	4.5	-0.3	4.3	V
V_BCKP	Backup Supply Voltage	-0.5	3.6	-0.3	4.5	-0.3	4.5	V
V_{IN}_IO	Input Voltage at I/O Pins	-0.5	3.6	-0.3	3.1	-0.3	3.1	V
P_{RF_IN}	Input Power at RF_IN	-	0	-	15	-	15	dBm
T_storage	Storage Temperature	-40	90	-40	90	-40	90	°C

Table 6: Recommended Operating Conditions for LC760Z (00) and L76-L

Parameter	Description	LC760Z (00)			L76-L			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
VCC	Main Power Supply Voltage	2.8	3.3	3.6	2.8	3.3	4.3	V
V_BCKP	Backup Supply Voltage	2.8	3.3	3.6	1.5	3.3	4.5	V
IO_Domain	Digital I/O Pin Domain Voltage	-	VCC	-	-	2.8	-	V
V_{IL}	Digital I/O Pin Low-level Input Voltage	0	-	0.3 × VCC	-0.3	-	0.7	V
V_{IH}	Digital I/O Pin High-level Input Voltage	0.7 × VCC	-	VCC	2.1	-	3.1	V
V_{OL}	Digital I/O Pin Low-level Output Voltage	-	-	0.4	-	-	0.42	V

Parameter	Description	LC760Z (00)			L76-L			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V_{OH}	Digital I/O Pin High-level Output Voltage	2.64	-	-	2.4	2.8	-	V
RESET_N	Low-level Input Voltage	0	-	0.3 × V_BCKP	-0.3	-	0.7	V
WAKEUP	High-level Input Voltage	-	-	-	0.825	-	1.4	V
BOOT	Low-level Input Voltage	0	-	0.3 × V_BCKP	-	-	-	V
ANT_BIAS	Output Voltage	VCC - 0.15	3.1	-	-	-	-	V
ANT_ON	Output Voltage	VCC - 0.15	3.1	-	-	-	-	V
VDD_RF	Output Voltage	-	-	-	-	VCC	-	V
I_{ANT_BIAS}	ANT_BIAS Output Current	-	25	50	-	-	-	mA
T_operating	Operating Temperature	-40	25	+85	-40	25	+85	°C

Table 7: Recommended Operating Conditions for LC760Z (00) and L76-LB

Parameter	Description	LC760Z (00)			L76-LB			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
VCC	Main Power Supply Voltage	2.8	3.3	3.6	2.8	3.3	4.3	V
V_BCKP	Backup Supply Voltage	2.8	3.3	3.6	2.3	3.3	4.3	V
IO_Domain	Digital I/O Pin Domain Voltage	-	VCC	-	-	2.8	-	V
V_{IL}	Digital I/O Pin Low-level Input Voltage	0	-	0.3 × VCC	-0.3	-	0.7	V
V_{IH}	Digital I/O Pin High-level Input Voltage	0.7 × VCC	-	VCC	2.1	-	3.1	V
V_{OL}	Digital I/O Pin Low-level Output Voltage	-	-	0.4	-	-	0.42	V
V_{OH}	Digital I/O Pin High-level Output Voltage	2.64	-	-	2.4	-	-	V
RESET_N	Low-level Input Voltage	0	-	0.3 × V_BCKP	-0.3	-	0.7	V
BOOT	Low-level Input Voltage	0	-	0.3 × V_BCKP	-	-	-	V

Parameter	Description	LC760Z (00)			L76-LB			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
WAKEUP	High-level Input Voltage	-	-	-	0.85	-	1.4	V
ANT_BIAS	Output Voltage	VCC - 0.15	3.1	-	-	-	-	V
ANT_ON	Output Voltage	VCC - 0.15	3.1	-	-	-	-	V
VDD_RF	Output Voltage	-	-	-	-	VCC	-	V
I_{ANT_BIAS}	ANT_BIAS Output Current	-	25	50	-	-	-	mA
T_operating	Operating Temperature	-40	25	+85	-40	25	+85	°C

NOTE

Operation beyond the “Operating Conditions” is not recommended and extended exposure beyond the “Operating Conditions” may affect device reliability.

Table 8: LC760Z (00), L76-L and L76-LB Supply Current – 1

Parameter	Description	Condition	LC760Z (00)		L76-L		L76-LB			
			GPS + GLONASS + Galileo + QZSS		GPS + GLONASS + QZSS		GPS + BDS + QZSS		GPS + GLONASS + QZSS	
			$I_{Typ.}$ [4]	I_{PEAK} [4]	$I_{Typ.}$ [4]	I_{PEAK} [4]	$I_{Typ.}$ [4]	I_{PEAK} [4]	$I_{Typ.}$ [4]	I_{PEAK} [4]
I_{VCC} [5]	Current at VCC	Acquisition	23 mA	37 mA	31 mA	-	29 mA	55 mA	31 mA	54 mA
		Tracking	22 mA	37 mA	31 mA	-	29 mA	55 mA	29 mA	54 mA
		Standby mode	1.35 mA	3.2 mA	0.5 mA	-	0.728 mA	0.83 mA	0.728 mA	0.83 mA
I_{V_BCKP} [6]	Current at V_BCKP	Continuous mode	136 μA	193 μA	-	-	61 μA	204 μA	61 μA	204 μA
		Standby mode	51 μA	83 μA	-	-	12 μA	45 μA	12 μA	45 μA
		Backup mode	13 μA	39 μA	8 μA	-	8 μA	33 μA	8 μA	33 μA

[4] Room temperature, measurements are taken with typical voltage.
[5] Used to determine the maximum current capability of power supply.
[6] Used to determine the required battery current capacity.

Table 9: LC760Z (00), L76-L and L76-LB Supply Current – 2

Parameter	Description	Condition	LC760Z (00)		L76-L		L76-LB			
			GPS + Galileo + BDS + QZSS		GPS + GLONASS + QZSS		GPS + BDS+ QZSS		GPS + GLONASS + QZSS	
			$I_{Typ.}$ [4]	I_{PEAK} [4]	$I_{Typ.}$ [4]	I_{PEAK} [4]	$I_{Typ.}$ [4]	I_{PEAK} [4]	$I_{Typ.}$ [4]	I_{PEAK} [4]
I_{VCC} [5]	Current at VCC	Acquisition	20 mA	33 mA	31 mA	-	29 mA	55 mA	31 mA	54 mA
		Tracking	20 mA	33 mA	31 mA	-	29 mA	55 mA	29 mA	54 mA
		Standby mode	1.35 mA	3.2 mA	0.5 mA	-	0.728 mA	0.83 mA	0.728 mA	0.83 mA
I_{V_BCKP} [6]	Current at V_BCKP	Continuous mode	136 μA	193 μA	-	-	61 μA	204 μA	61 μA	204 μA
		Standby mode	51 μA	83 μA	-	-	12 μA	45 μA	12 μA	45 μA
		Backup mode	13 μA	39 μA	8 μA	-	8 μA	33 μA	8 μA	33 μA

3.8.3. RF Sensitivity

Table 10: Conducted RF Sensitivity

Configuration	LC760Z (00)	L76-L	L76-LB	Unit
	GPS + GLONASS + Galileo + QZSS/ GPS + Galileo + BDS + QZSS	GPS + GLONASS + QZSS	GPS + BDS + QZSS/ GPS + GLONASS + QZSS	
Acquisition	-149	-149	-149	dBm
Reacquisition	-158	-161	-159	dBm
Tracking	-160	-167	-165	dBm

4 Appendix References

Table 11: Related Documents

Document Name	
[1]	Quectel_LC760Z(00)_Hardware_Design
[2]	Quectel_L76&L76-L_Hardware_Design
[3]	Quectel_L76-LB_Hardware_Design
[4]	Quectel_LC260Z(00)&LC760Z_GNSS_Protocol_Specification
[5]	Quectel_LG77L(C)&Lx0&Lx6&LC86L_Series_Protocol_Specification
[6]	Quectel_LC760Z_Reference_Design
[7]	Quectel_L76&L76-L_Reference_Design
[8]	Quectel_L76-LB_Reference_Design

Table 12: Terms and Abbreviations

Abbreviation	Description
1PPS	One Pulse Per Second
AI	Analog Input
ARM	Advanced RISC Machine
BDS	BeiDou Navigation Satellite System
BOM	Bill of Material
CPU	Circular Error Probable
DC	Direct Current
DI	Digital Input
DO	Digital Output

Abbreviation	Description
Galileo	Galileo Satellite Navigation System (EU)
GLONASS	Global Navigation Satellite System (Russia)
GND	Ground
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
I/O	Input/Output
I_{PEAK}	Peak Current
I2C	Inter-integrated Circuit
LCC	Leadless Chip Carrier (package)
LGA	Land Grid Array
LNA	Low-noise Amplifier
MCU	Microcontroller Unit/Microprogrammed Control Unit
NMEA	NMEA (National Marine Electronics Association) 0183 Interface Standard
PI	Power Input
PMTK	Proprietary Protocol Defined by the Chipset Supplier
PMU	Power Management Unit
PO	Power Output
PQ	Quectel Proprietary Protocol
PQTM	Quectel Proprietary Protocol
QZSS	Quasi-zenith Satellite System
RTC	Real-time Clock
RXD	Receive Data (Pin)
TCXO	Temperature Compensated Crystal Oscillator
TXD	Transmit Data (Pin)
UART	Universal Asynchronous Receiver/Transmitter