Renesas RL78 Family

RL78/L23 Fast Prototyping Board

Introduction:

The RL78/L23 Fast Prototyping Board, featuring the RL78/L23 MCU, is ideal for various prototype development. This board has a USB-UART converter for COM port debug function, enabling programming and debugging without extra tools. It includes an LCD panel (8 digits x 16 segments) and two touch buttons, thus you can start evaluation of the LCD and capacitive touch immediately. In addition, it has high flexibility and expandability by supporting Arduino Uno, Pmod™, Grove interfaces, and through-holes with access to all MCU pins. It supports firmware updating, Wi-Fi, LoRa, and LoRaWAN-based wireless communication by sample code. Renesas also provides an Arduino library that supports creating various programs (sketches) on the Arduino IDE.

1. Getting Started Video:

renesas.com/gs-fpb-rl78

This video guides first-time users of the Fast-Prototyping Board through the steps of installing a development environment, generating a project, and checking the operation to develop software.

Getting Started Video

2. Check the Full Specification:

renesas.com/fpb-rl78l23

You can download the user's manual, the example project and Design Package(Schematic, BOM, 3D View, CAD data).

FPB-RL78L23

3. Package Contents

- FPB-RL78L23
  RL78/L23 Fast Prototyping Board (RTK7RLL230S00001BJ)
- Quick Start Guide (this document)

4. Behavior When Power is Supplied

This board works as a 24-hour clock.

- After power on, “RL78/L23 CLK DEMO” is displayed sequentially on the LCD.
- When switch S1(User switch) is pressed after these letters disappear, the clock time set to “00 .00 .00” and start time counting.
- When switch S1 is pressed while the clock time displayed, the user can set the time data by touch buttons. When touch button 1 is touched, RL78/L23 increments the time data and turns on LED1. When touch button 2 is touched, RL78/L23 decrements the time data and turns on LED2. The setting target switches each time switch S1 is pressed.
- If 5 seconds have passed without touching each button, the clock time is displayed on the LCD.

For details, refer to the following application note:

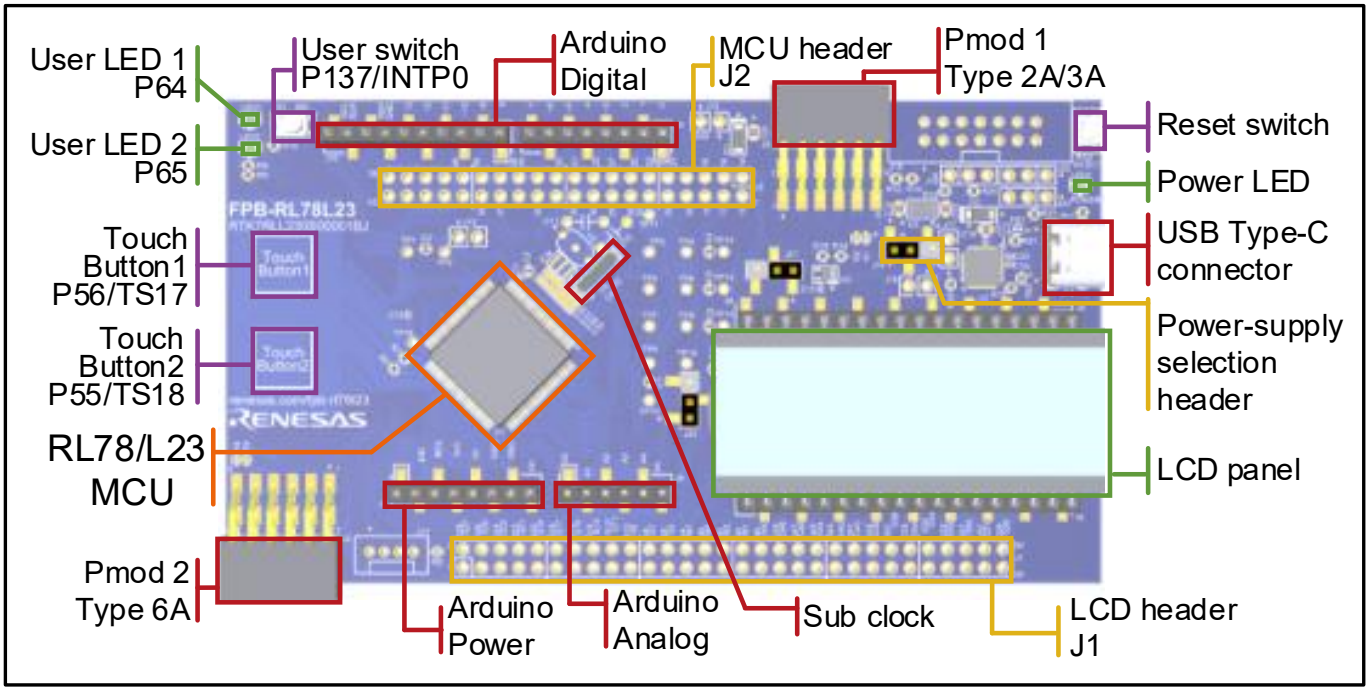
renesas.com/apn-rl78l23- clk-demo

RL78/L23
Clock Demo

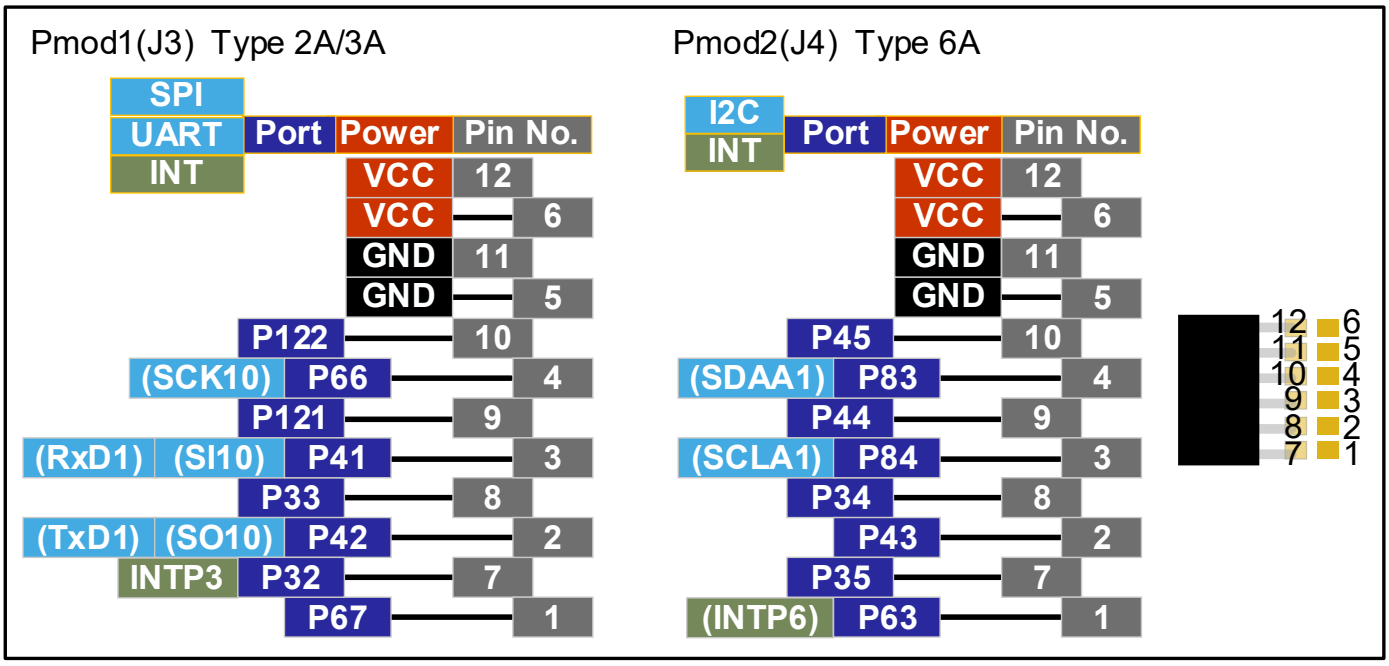
5. Board Specifications

Item	Specification
Evaluation MCU RL78/L23	Part No.: R7F100LPL3CFB; package: 100-pin LFQFP
	512-KB ROM, 32-KB RAM, 8-KB data flash memory
Push switches	Reset switch x 1; User switch x 1
LEDs	Power indicator: green x 1, User: green x 2
LCD	LCD panel x 1
Capacitive touch	Button x 2
USB connector	Connector: USB 2.0 Type-C™
Pmod™ connectors	Connectors: angle type, 12 pins x 2
Arduino® connectors	Arduino UNO R3: 6 pins x 1, 8 pins x 2, 10 pins x 1.

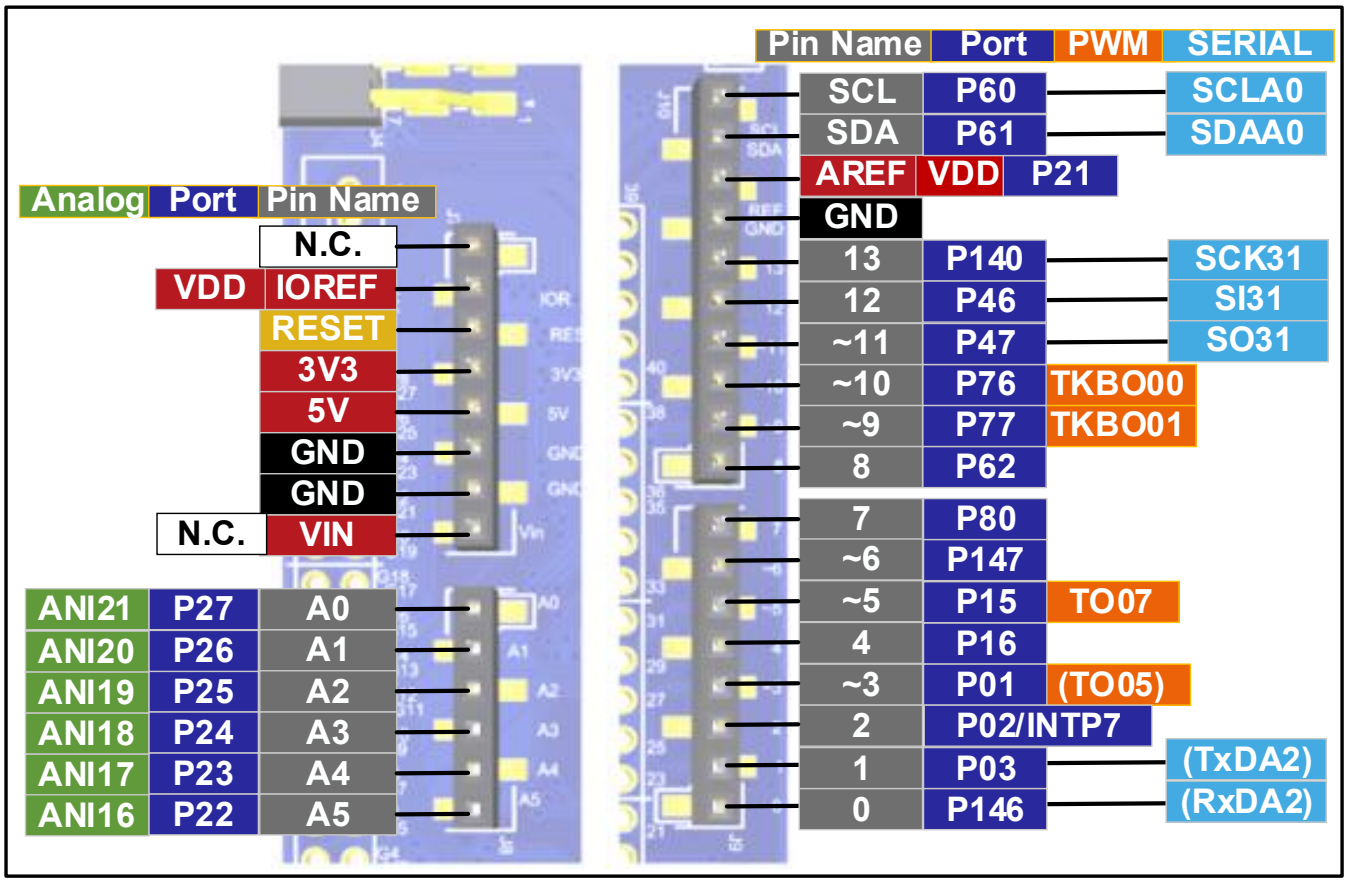
6. Parts Layout



7. Pmod


Pmod1(J3) Type 2A/3A
SPI
UART
INT
Port
Power
Pin No.
VCC 12
VCC 6
GND 11
GND 5
P122 10
(SCK10) P66 4
P121 9
(RxD1) (SI10) P41 3
P33 8
(TxD1) (SO10) P42 2
INTP3 P32 7
P67 1
Pmod2(J4) Type 6A
I2C
INT
Port
Power
Pin No.
VCC 12
VCC 6
GND 11
GND 5
P45 10
(SDAA1) P83 4
P44 9
(SCLA1) P84 3
P34 8
P43 2
P35 7
(INTP6) P63 1
12 6
11 5
10 4
9 3
8 2
7 1

8. Arduino


Pin Name Port PWM SERIAL
SCL P60 SCLA0
SDA P61 SDAA0
AREF VDD P21
GND
13 P140 SCK31
12 P46 SI31
~11 P47 SO31
~10 P76 TKBO00
~9 P77 TKBO01
8 P62
7 P80
~6 P147
~5 P15 TO07
4 P16
~3 P01 (TO05)
2 P02/INTP7
1 P03 (TxDA2)
0 P146 (RxDA2)
Analog Port Pin Name
N.C.
VDD IOREF
RESET
3V3
5V
GND
GND
N.C. VIN
ANI21 P27 A0
ANI20 P26 A1
ANI19 P25 A2
ANI18 P24 A3
ANI17 P23 A4
ANI16 P22 A5

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	-	-	New.
1.01	Aug.20.25	-	Modified format.