

RYWDB51

Industrial grade 2.4GHz and 5GHz Wi-Fi 6 and BLE5.4 module

Datasheet



17.78mm(700mils) x 12.7mm(500mils) x 2.6mm



PRODUCT DESCRIPTION

The RYWDB51 uses TI CC3351 core and provides a comprehensive multi-protocol wireless connectivity solution including IEEE 802.11 a/b/g/n/ax and BLE 5.4

FEATURES

Wi-Fi

- 2.4GHz and 5GHz, 20MHz, single spatial stream.
- MAC, baseband, and RF transceiver with support for IEEE 802.11 a/b/g/n/ax
- OFDMA, trigger frame, MU-MIMO (downlink), basic service set coloring, and target wake time (TWT) for improved efficiency
- Hardware-based encryption and decryption supporting WPA2 and WPA3
- Excellent interoperability
- Support for 4-bit SDIO or SPI host interfaces

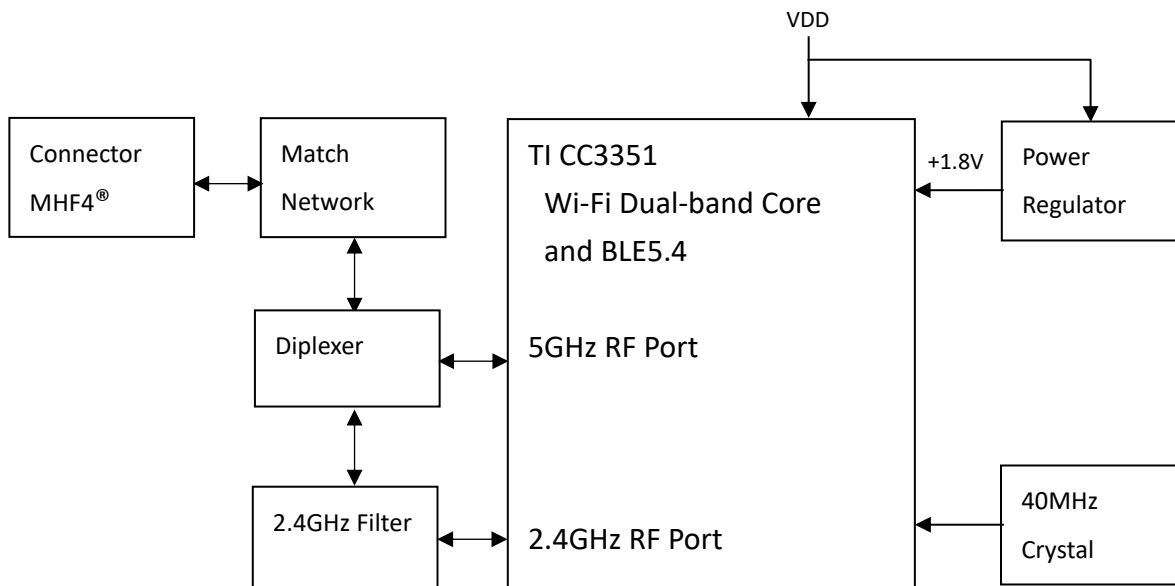
BLE

- LE coded PHYs (long range), LE 2M PHY (high speed) and advertising extension
- Host controller interface (HCI) transport with option for UART or shared SDIO

Hosted Mode

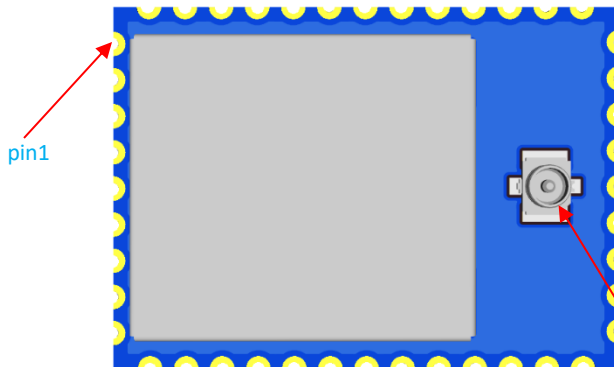
- Host drivers for Linux or RTOS.

BLOCK DIAGRAM



PIN DESCRIPTION

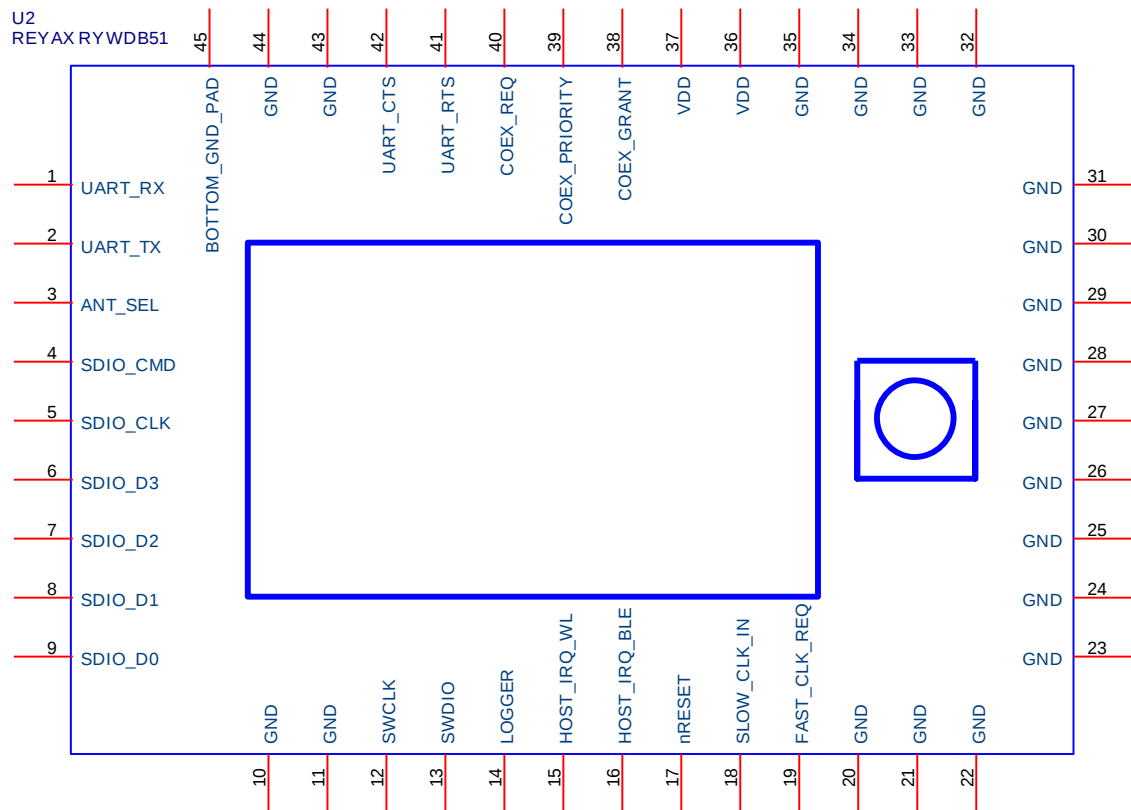
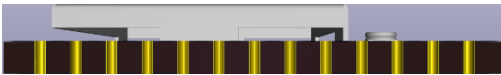
TOP VIEW

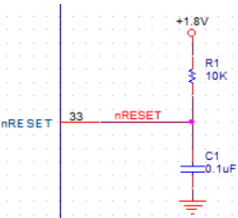


BOTTOM VIEW



SIDE VIEW



Pin	Name	Input/Output	Description
1	UART_RX	I	UART RX for BLE HCI
2	UART_TX	O	UART TX for BLE HCI
3	ANT_SEL	O	Antenna select control line
4	SDIO_CMD	I/O	SDIO command or SPI PICO
5	SDIO_CLK	I	SDIO clock or SPI clock
6	SDIO_D3	I/O	SDIO data D3 or SPI CS
7	SDIO_D2	I/O	SDIO data D2
8	SDIO_D1	I/O	SDIO data D1
9	SDIO_D0	I/O	SDIO data D0 or SPI POCI
10	GND		Ground
11	GND		Ground
12	SWCLK	I	Serial wire debug clock
13	SWDIO	I/O	Serial wire debug I/O
14	LOGGER	O	Tracer (UART TX debug logger)
15	HOST_IRQ_WL	O	Interrupt request to host for WLAN
16	HOST_IRQ_BLE	O	Interrupt request to host for BLE (in shared SDIO mode)
17	nRESET	I	Reset line for enabling or disabling device (active low) Module internal circuit 
18	SLOW_CLK_IN	I	32.768kHz RTC clock input
19	FAST_CLK_REQ	O	Fast clock request from the device
20	GND		Ground
21	GND		Ground
22	GND		Ground
23	GND		Ground
24	GND		Ground
25	GND		Ground
26	GND		Ground
27	GND		Ground
28	GND		Ground

29	GND		Ground
30	GND		Ground
31	GND		Ground
32	GND		Ground
33	GND		Ground
34	GND		Ground
35	GND		Ground
36	VDD	Power	Power Input
37	VDD	Power	Power Input
38	COEX_GRANT	O	External coexistence interface - grant
39	COEX_PRIORITY	I	External coexistence interface - priority
40	COEX_REQ	I	External coexistence interface - request
41	UART_RTS	O	Device RTS signal – flow control for BLE HCI
42	UART_CTS	I	Device CTS signal – flow control for BLE HCI
43	GND		Ground
44	GND		Ground
45	BOTTOM_GND_PAD		PAD on the bottom of the module

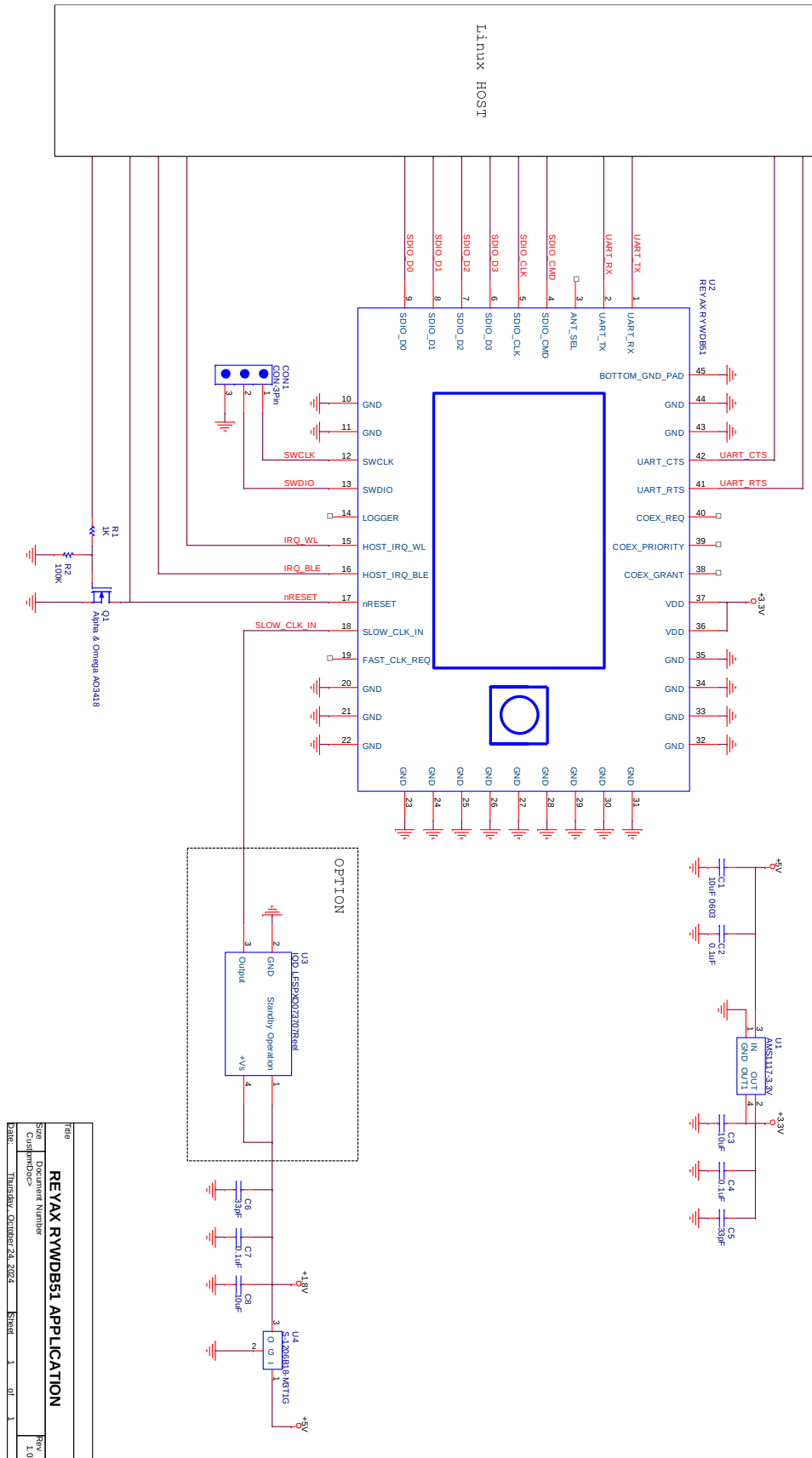
*For more detail, please refer to the TI CC3351 Product Information.

SPECIFICATION

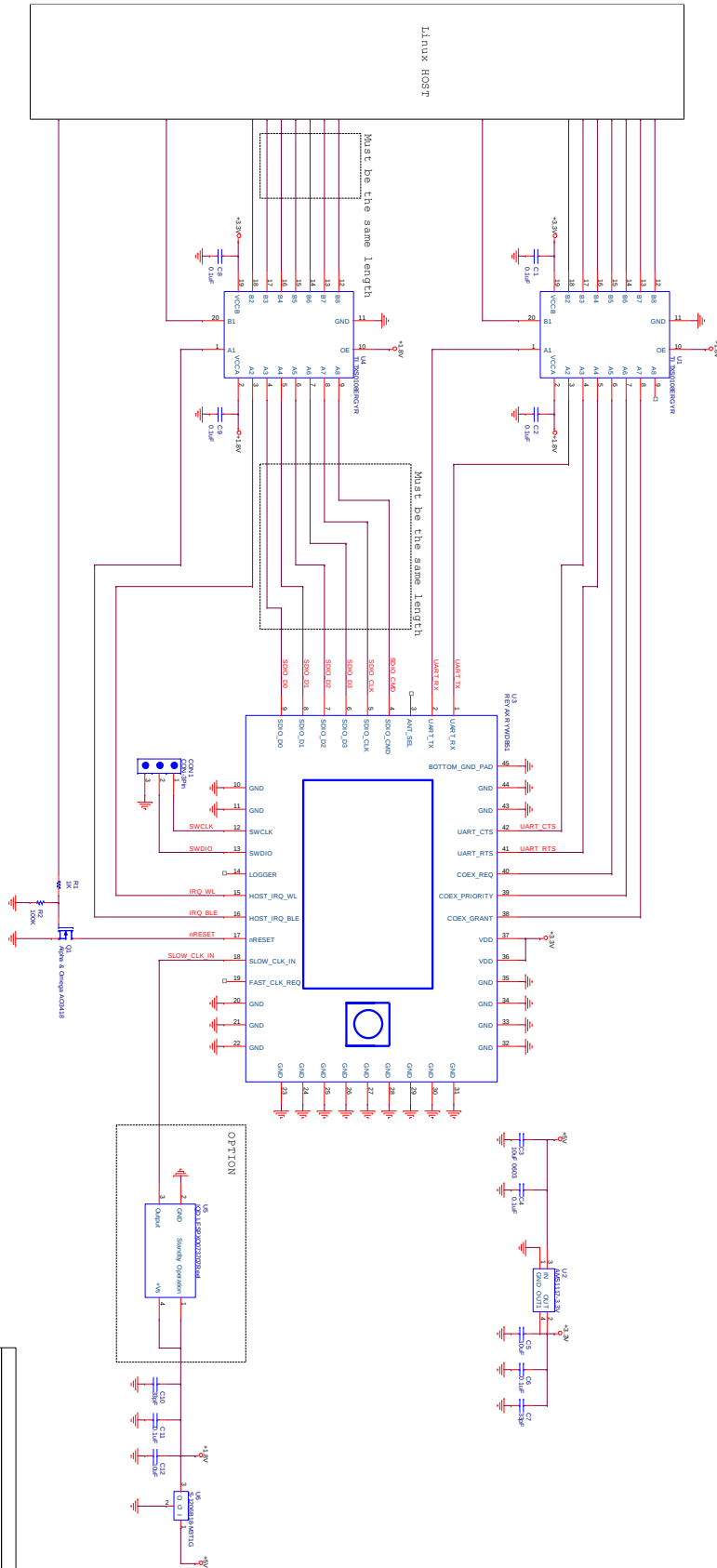
Item	Min.	Typical	Max.	Unit	Description
Operation Voltage	3	3.3	3.6	V	VDD
Continuous TX Current			450	mA	1 DSSS, TX power = 20.5 dBm
Continuous RX Current		62		mA	
Shutdown Current		12		uA	External supplies are available, device held in reset (nReset is low)
Sleep Current		332		uA	Low power mode - RAM in retention
VIO	1.62	1.8	1.98	V	
Digital Input Level High	0.65*VIO		VIO	V	VIH
Digital Input Level Low	0		0.35*VIO	V	VIL
Digital Output Level High	VIO-0.45		VIO	V	VOH @4mA
Digital Output Level Low	0		0.45	V	VOL @4mA
Operational Frequency Range	2412 5180		2472 5845	MHz	2.4GHz WLAN & BLE 5GHz WLAN
2.4GHz BLE RX Sensitivity		-102.2		dBm	PER <30.2%
2.4GHz BLE TX Power			20	dBm	Output Power, highest setting
2.4GHz BLE RX Sensitivity		-102.2		dBm	PER <30.2%
2.4GHz BLE TX Power			20	dBm	Output Power, highest setting
5GHz WLAN RX Sensitivity		-93.2		dBm	6 Mbps OFDM
5GHz WLAN TX Power			19.5	dBm	6 Mbps OFDM, VDD=+3.3V
Throughput			50	Mbps	
SDIO High Speed fclock		52		MHz	
SDIO fclock		26		MHz	
Weight		3		g	
Operating temperature	-40	25	+90	℃	

*For more detail, please refer to the TI CC3351 Product Information.

APPLICATION SCHEMATIC

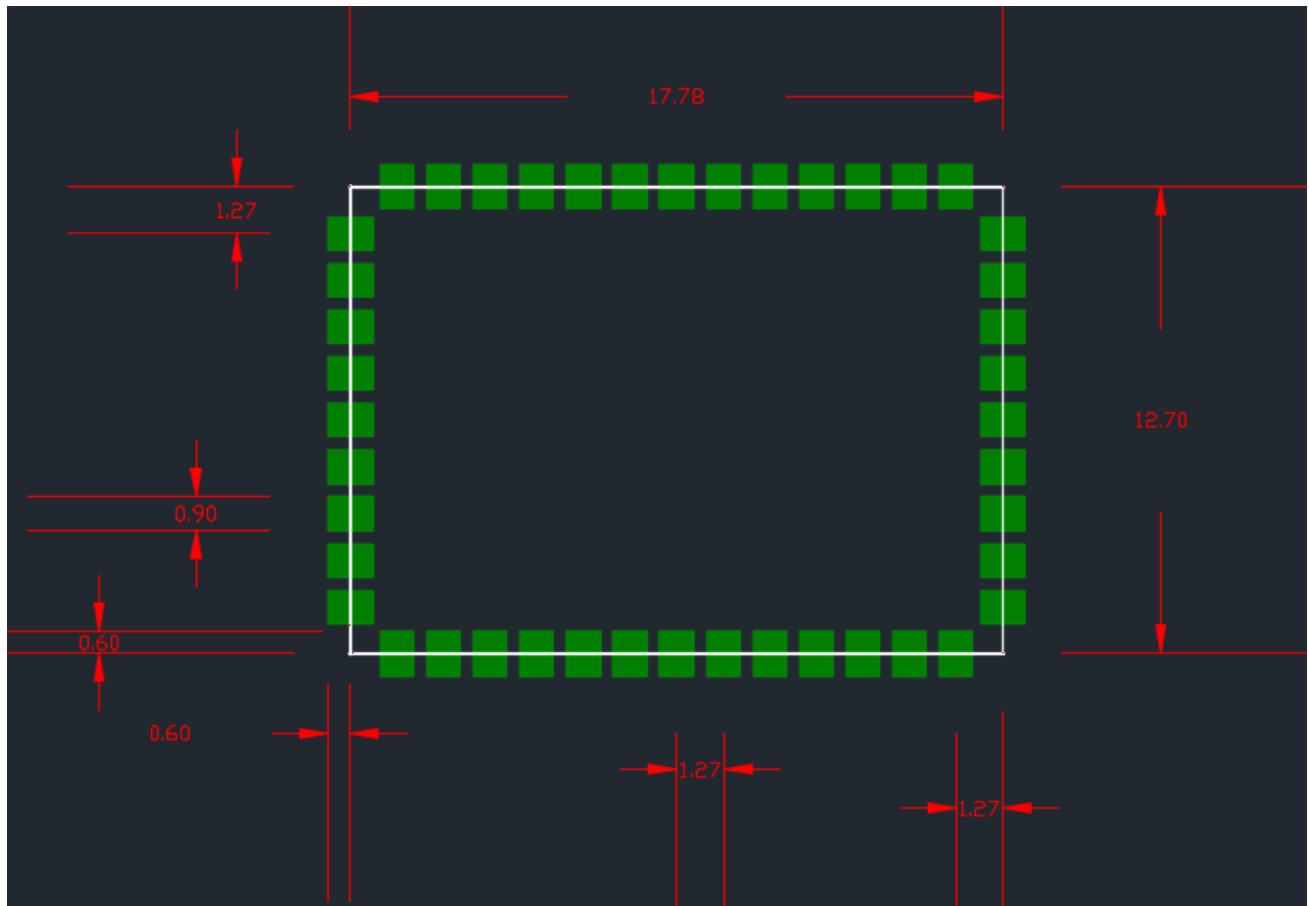


APPLICATION SCHEMATIC2 1.8V to 3.3V



REV	DESCRIPTION	DATE
1.0	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.1	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.2	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.3	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.4	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.5	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.6	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.7	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.8	REYAX RYWDB51 APPLICATION 2	2024.04.20
1.9	REYAX RYWDB51 APPLICATION 2	2024.04.20
2.0	REYAX RYWDB51 APPLICATION 2	2024.04.20

LAYOUT FOOTPRINT RECOMMENDATION



unit: mm Tolerance : $\pm 0.1\text{mm}$

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