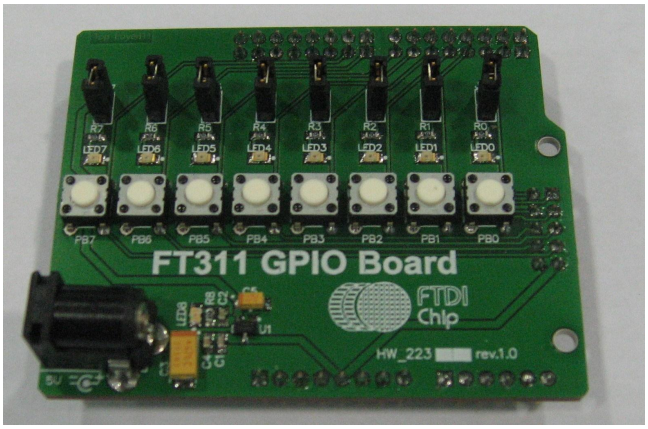
Future Technology Devices International Ltd.

FT311 GPIO Board (UMFT311GP)



The FT311 GPIO Board is a shield board to be used with FT311D Development Module. This board has push button keypad which can be used as a user input and LED which can be used as output.

The FT311 GPIO Board has the following features:

- 8 GPIO lines interface.
- 8 LEDs controlled through the GPIO interface.
- 8 Push Button Switch to be used as user input which is connected to GPIO interface.
- +5V Single Supply Operation.
- Board supply current: 300mA
- board dimensions: 66.60mm x 55.38mm x 22mm (L x W x H).
- Extended operating temperature range; -40 to 85ºC.
- Recommended operating temperature is between 0°C and 55°C.
- Suitable for use with FT311D Module.
- Suitable for use with FT311D Development Board.
- Suitable for use with Vinco Development Module

1 Typical Applications

- The 8 LEDs are used as GPIO output indicators.
- The 8 Push Button Switches are used as user input for GPIO input.
-

1.1 Part Numbers

Part Number	Description
UMFT311GP	FT311 GPIO Board Rev1.0

The FT311 GPIO Board includes the following hardware items as standard

- 1 x FT311 GPIO Board (UMFT311GP).

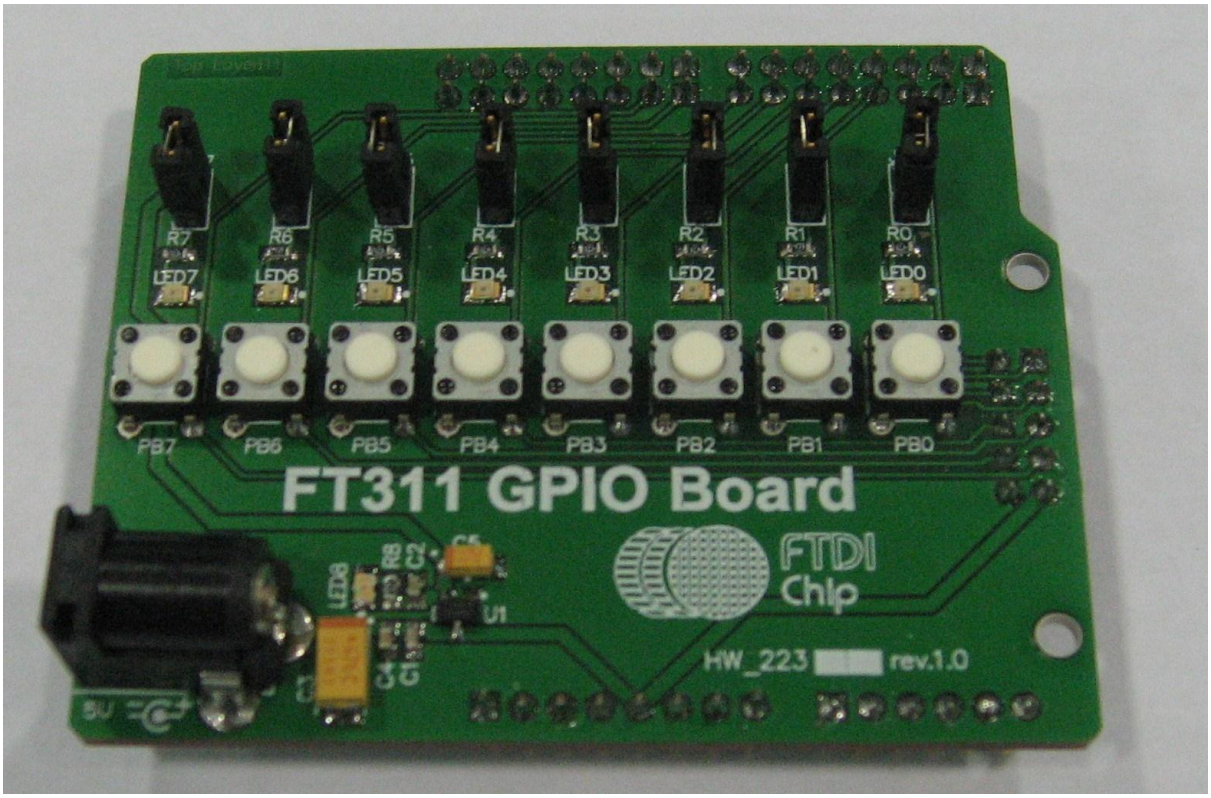


Figure 1.1 : FT311 GPIO Board

2 FT311 GPIO Board Block Diagram

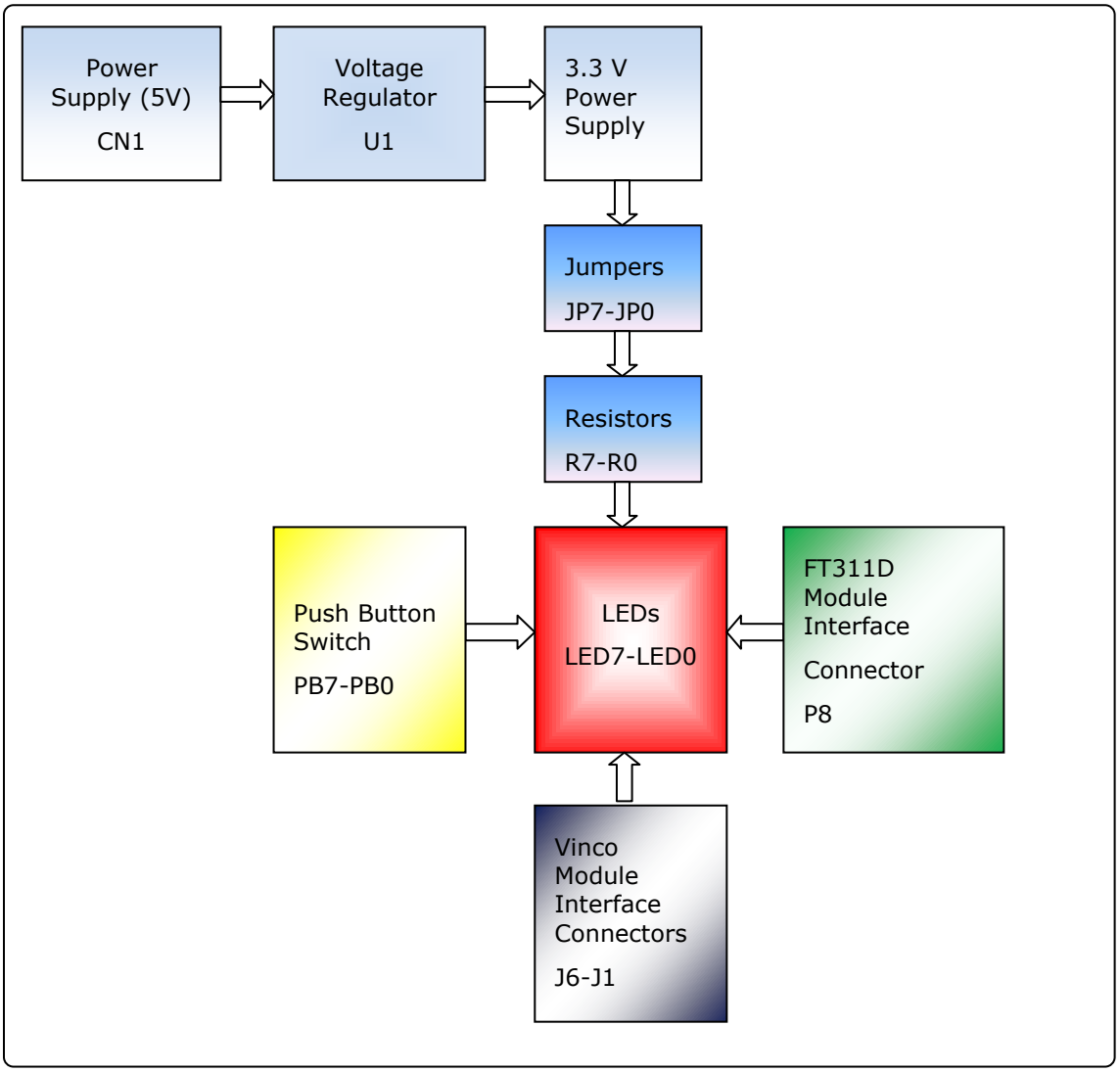


Figure 2.1 : FT311 GPIO Board Block Diagram

For a description of each function please refer to Section 3.

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3 Function Description

The FT311 GPIO Board is intended for use as a hardware platform to enable easy evaluation of GPIO and PWM interfaces in the FT311D Development Module. The FT311 GPIO Board has LEDs and switches to validate the GPIO and PWM interface of the FT311D device by a user to begin developing Android Open Accessory applications based on the FT311D device. The FT311 GPIO Board can also be used with the Vinco Development Module as a LED and keypad interface.

3.1 Key Features

FT311 GPIO Board consists of

- 8 LEDs. They are LED7, LED6, LED5, LED4, LED3, LED2, LED1 and LED0
- 8 switches. They are PB7, PB6, PB5, PB4, PB3, PB2, PB1 and PB0
- 8 jumpers for enabling 3.3V supply for the LEDs. They are JP7, JP6, JP5, JP4, JP3, JP2, JP1 and JP0
- Connector P8 to interface with the FT311D Module
- Power supply socket CN1 to connect external 5V DC supply.
- Connectors to interface with Vinco Development Module. They are J1, J2, J3, J4, J5 and J6
- Voltage regulator U1 to convert 5V to 3.3V

3.2 Functional Block Descriptions

The following paragraphs describe each function within FT311 GPIO Board. Please refer to the block diagram shown in **Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.**.

Power Supply
The FT311 GPIO Board consists of a power supply socket CN1. External power is plugged into CN1. The 5V power is converted to 3.3V using linear voltage regulator U1.

Jumpers
The Jumpers JP7-JP0 are used to open or close a 3.3V supply to the corresponding resistors R7-R0.

Resistors
The resistors R7-R0 are the current limiting resistors limiting the current flow to the corresponding LED.

LEDs
The LED7–LED0 can be controlled from any of the 3 interfaces; Push Button Switch, FT311D Module Interface Connector and Vinco Interface connectors.

Push Button Switch
The Push Button Switches PB7-PB0 can be used to switch ON the LEDs. When a Push button switch is pressed the corresponding LED is ON. When Push button switch is not pressed the LED is OFF. The Push button will send a logic 1 in the default state and logic 0 in the pressed state to the corresponding interface pins to act as GPIO inputs to the FT311D device.

FT311D Module Interface Connector
The LEDs can be controlled from the FT311D Module. The LEDs are OFF by default. When the GPIO pin connected to the FT311D Module is driven LOW the corresponding LED is ON.

Vinco Interface Connector
The Vinco Interface Connector is used to connect the FT311 GPIO Board to the Vinco Development Module. The LEDs can be controlled using this interface. By default the LEDs are OFF. When the GPIO pin connected to the Vinco Development Module is driven LOW the corresponding LED is ON.

3.2.1 Components

Component	Board Designator	Description
LED diode	LED0, LED1, LED2, LED3, LED4, LED5, LED6, LED7	Red LED
LED diode	LED8	Yellow LED
2 contact jumper	JP0, JP1, JP2, JP3, JP4, JP5, JP6, JP7	SIP-2
Linear Voltage Regulator	U1	AIC1722-33PUTR, 300mA Low Dropout Linear Voltage Regulator
Capacitor bipolar	C1, C2, C4	0.1uF
Push button momentary switch	PB0, PB1, PB2, PB3, PB4, PB5, PB6, PB7	EVQPAC04, Push button momentary switch; 4.3 - 5.0mm height
Resistor	R0, R1, R2, R3, R4, R5, R6, R7, R8	470R
Capacitor TANTALUM	C5	4.7uF, CAP TANTALUM 4.7UF 6.3V 20% SMD
Polarized Capacitor	C3	47uF

Table 3.1 : Board Components

3.2.2 Interfaces

Interface	**Board Designator**	**Description**
FT311D Module Interface connector	P8	Female Socket 5X2. Used to connect to the FT311D Module
Vinco Development Module Interface connectors	J1, J2, J3, J4, J5	8 Pin male Header 2.54mm
	J6	6 Pin; 0.1" (2.54mm); Single Row; male header
Power Supply Connector	CN1	2.1mm Power Jack

Table 3.2 : Board Interfaces

3.2.3 FT311 GPIO Board Layout

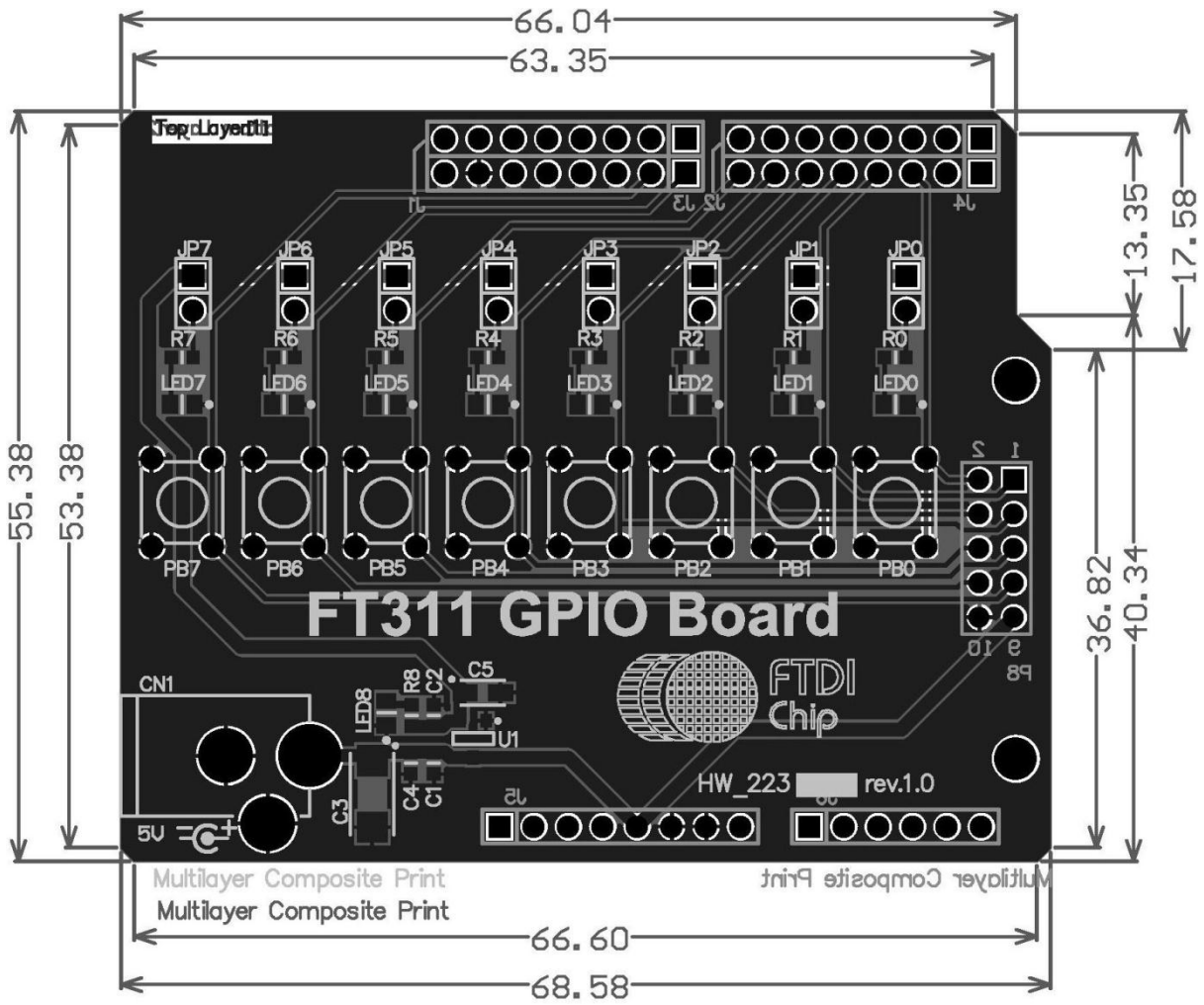

Figure 3.1 : FT311 GPIO Board Layout

4 Schematics

Schematics for the FT311 GPIO Board is shown in the figure 4.1 below.

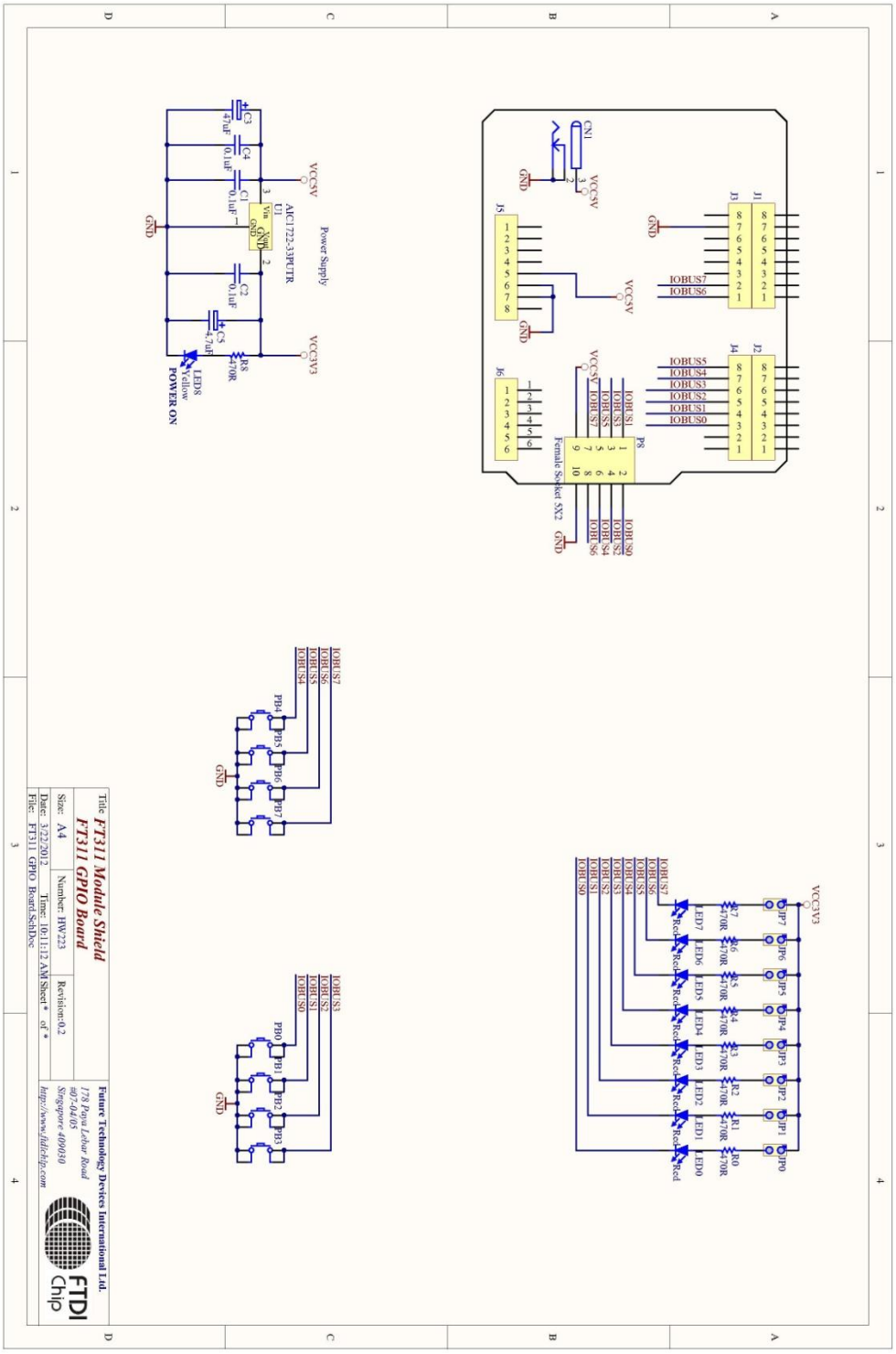

Figure 4.1 : FT311 GPIO Board Schematics

5 Absolute Maximum Ratings

The absolute maximum ratings for FT311 GPIO Board are shown in **Error! Reference source not found.**. These are in accordance with the Absolute Maximum Rating System (IEC 60134). Exceeding these may cause permanent damage to the device.

Parameter	Value	Unit
Storage Temperature	**-65°C to 150°C**	**Degrees C**
Ambient Temperature (Power Applied)	**-40°C to 80°C**	**Degrees C.**
Recommended Operating Temperature	**0°C to 55°C**	**Degrees C.**
Vcc Supply Voltage	**0 to +5.25**	**V**
DC Input Voltage - All other Inputs	**-0.5 to +3.3**	**V**

Table 5.1 : Absolute Maximum Ratings

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Appendix A – References

Useful Application Notes

FT311D Module

Vinco Development Module

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