Linx TECHNOLOGIES

Master Development System Prototype Board

Data Guide

Wireless made simple®

Warning: Some customers may want Linx radio frequency ("RF") products to control machinery or devices remotely, including machinery or devices that can cause death, bodily injuries, and/or property damage if improperly or inadvertently triggered, particularly in industrial settings or other applications implicating life-safety concerns ("Life and Property Safety Situations").

NO OEM LINX REMOTE CONTROL OR FUNCTION MODULE SHOULD EVER BE USED IN LIFE AND PROPERTY SAFETY SITUATIONS. No OEM Linx Remote Control or Function Module should be modified for Life and Property Safety Situations. Such modification cannot provide sufficient safety and will void the product's regulatory certification and warranty.

Customers may use our (non-Function) Modules, Antenna and Connectors as part of other systems in Life Safety Situations, but only with necessary and industry appropriate redundancies and in compliance with applicable safety standards, including without limitation, ANSI and NFPA standards. It is solely the responsibility of any Linx customer who uses one or more of these products to incorporate appropriate redundancies and safety standards for the Life and Property Safety Situation application.

Do not use this or any Linx product to trigger an action directly from the data line or RSSI lines without a protocol or encoder/decoder to validate the data. Without validation, any signal from another unrelated transmitter in the environment received by the module could inadvertently trigger the action.

All RF products are susceptible to RF interference that can prevent communication. RF products without frequency agility or hopping implemented are more subject to interference. This module does have a frequency hopping protocol built in, but the developer should still be aware of the risk of interference.

Do not use any Linx product over the limits in this data guide. Excessive voltage or extended operation at the maximum voltage could cause product failure. Exceeding the reflow temperature profile could cause product failure which is not immediately evident.

Do not make any physical or electrical modifications to any Linx product. This will void the warranty and regulatory and UL certifications and may cause product failure which is not immediately evident.

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Development System Prototype Board
Data Guide

Figure 1: Master Development System Prototype Board

Description

The Master Development System Prototype Board facilitates prototyping with Linx RF modules. The desired module is mounted on a Carrier Board (sold separately) that plugs into a universal socket on the Prototype Board. All of the module's pins are wired out to headers for easy connection.

A large area of plated through-holes provides an area to build custom circuitry for use with the module. These can be wired to the headers to create a complete stand-alone prototype of the product. The board also provides footprints for common surface mount packages. A unique star pattern on the plated holes also facilitates the addition of SMD components.

The board can be powered with USB or an external supply. Many test points are included to make it easy to measure voltages and currents during development.

The Master Development System Prototype Board provides a complete, stable platform for product prototyping while making wireless simple.

Ordering Information

Ordering Information	
Part Number	**Description**
MDEV-PROTO	Development System Prototype Board
CON-SOC-EVM	EVM Module Socket Kit

Figure 2: Ordering Information

Absolute Maximum Ratings

Absolute Maximum Ratings				
Supply Voltage 5V USB	–0.3	to	+5.5	VDC
Supply Voltage Battery Input	–40	to	+20	VDC
Operating Temperature	–40	to	+85	ºC
Storage Temperature	–40	to	+85	ºC

Exceeding any of the limits of this section may lead to permanent damage to the device. Furthermore, extended operation at these maximum ratings may reduce the life of this device.

Figure 3: Absolute Maximum Ratings

Electrical Specifications

Master Development System Prototype Board Specifications						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Units**	**Notes**
Power Supply						
USB Input Voltage	V_{USB}	4.5	5.0	5.5	VDC	2
BAT Input Voltage	V_{BAT}	4.55		15.0	VDC	3
Input Current	I_{IN}		15		mA	1
Output voltage	V_{CC}		3.3		VDC	
Output Current (USB)	I_{CC}		475		mA	2
Output Current (BAT)	I_{CC}		1000		mA	3
Environmental						
Operating Temp. Range		–40		+85	ºC	

1. Board only with no module carrier attached
2. Powered from USB bus
3. Powered from BAT input

Figure 4: Electrical Specifications

Prototype Board Objects

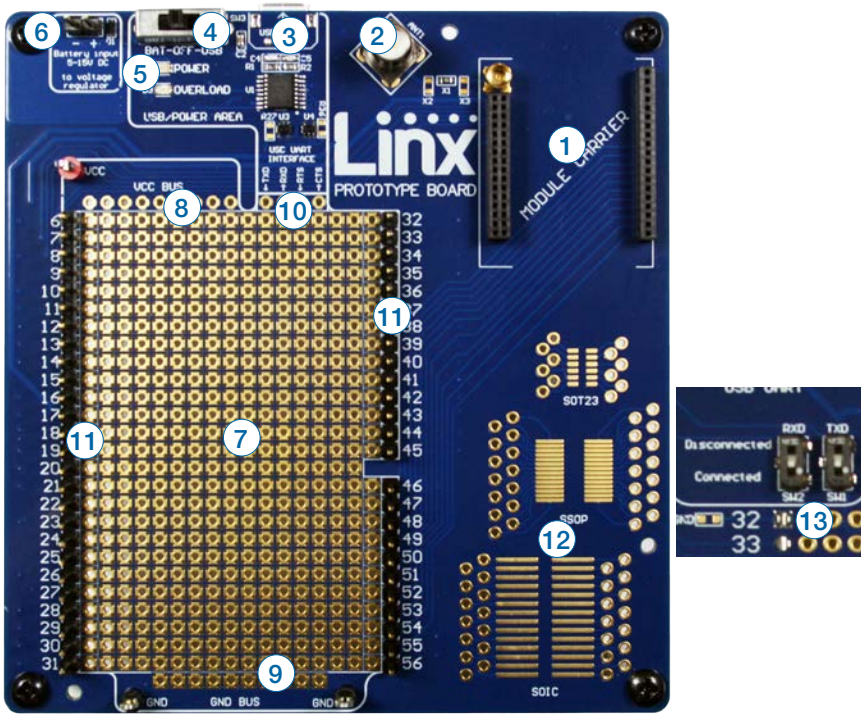

Figure 5: Prototype Board

1. Carrier Board Socket
2. RP-SMA Antenna Connector
3. Micro USB Connector
4. Power Switch
5. Power LED
6. External Battery Connection
7. Prototyping Area
8. 3.3V Supply Bus
9. Ground Bus
10. USB UART Interface Lines
11. Module Interface Breakout Headers
12. Standard SMT Package Footprints
13. Command Data Interface Routing Switches (on back)

Warning: This product incorporates numerous static-sensitive components. Always wear an ESD wrist strap and observe proper ESD handling procedures when working with this device. Failure to observe this precaution may result in module damage or failure.

Pin Assignments

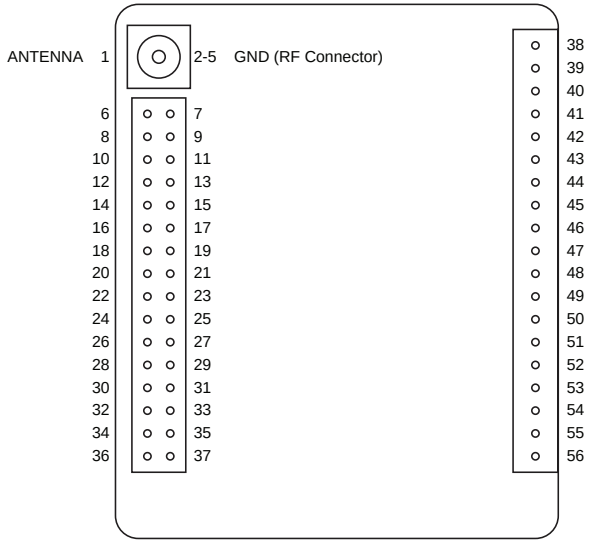

Figure 6: Carrier Board Pin Assignments

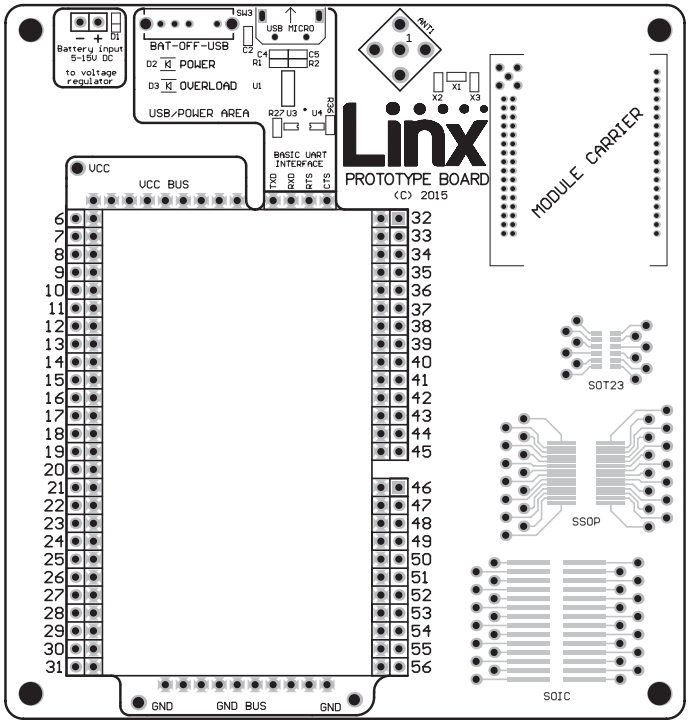

Figure 7: Prototype Board Pin Assignments

Dimensions

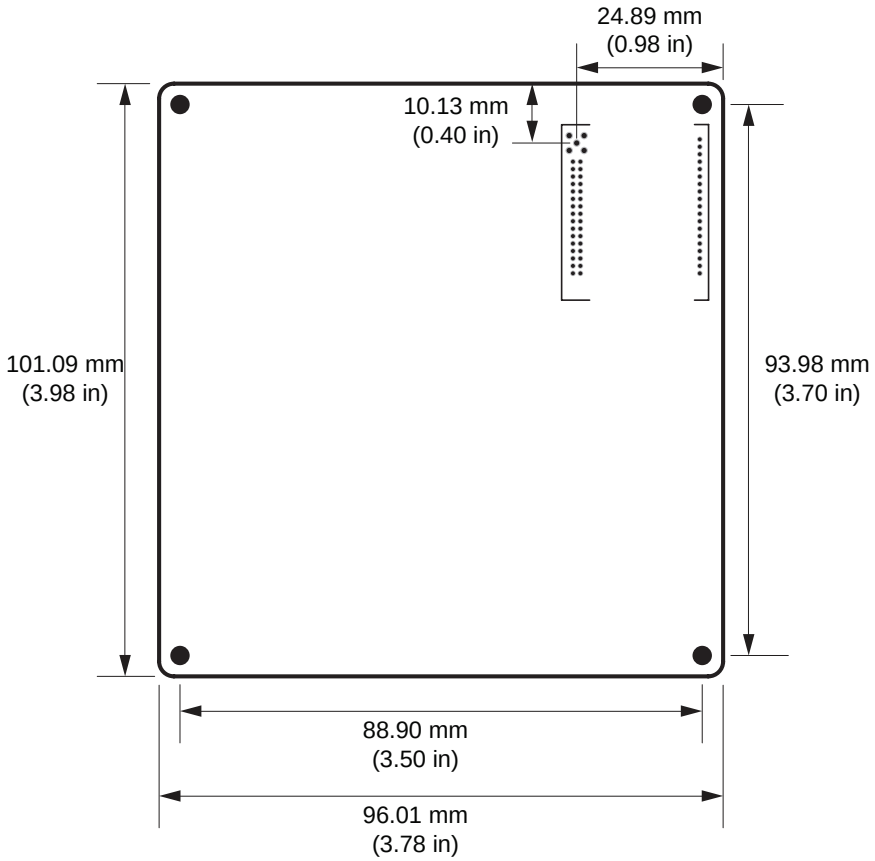

Figure 8: Prototype Board Dimensions

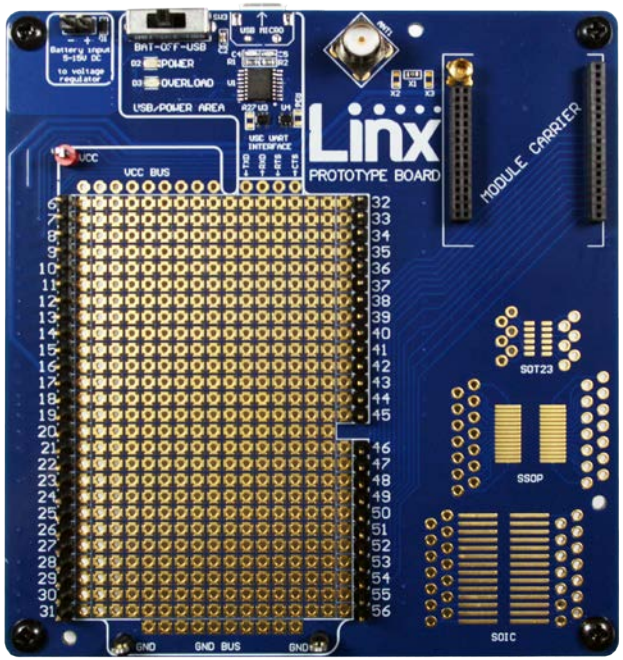

Figure 9: Prototype Board

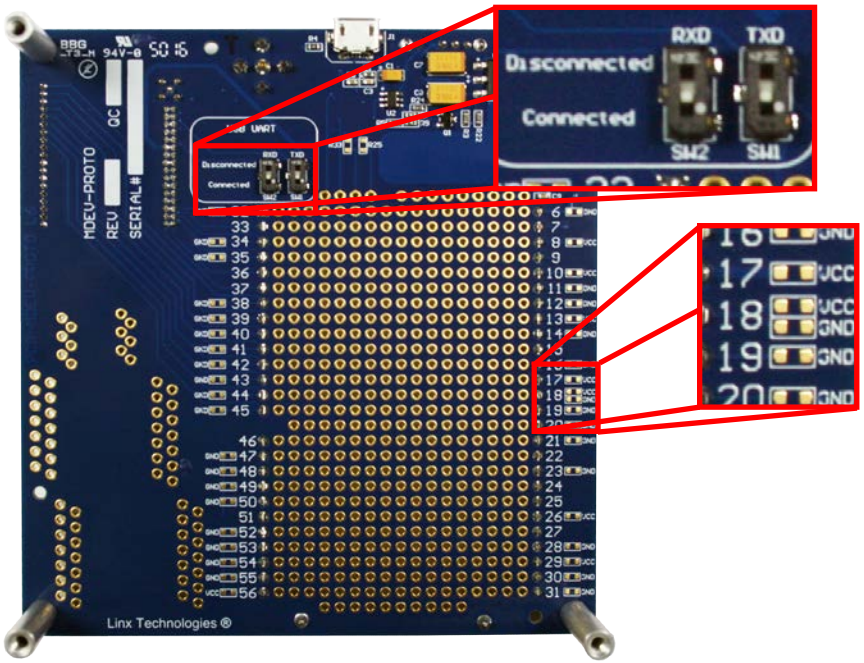

Figure 10: Prototype Board Bottom Side

Using the Prototype Board

A Carrier Board plugs into the socket on the top left of the Prototype Board. The board is normally powered by USB through the micro USB connector at the top of the board. Alternatively, the board can be powered with an external supply through the headers at the top left of the board.

The OVERLOAD LED indicates that that too much current is being pulled from the USB bus. This is used to prevent damage to the parts or the bus. The overload condition is reset once the excess current draw is removed. The USB input current is limited to 500mA when connected to a standard USB bus to prevent overdrawing the bus. The limit is automatically increased to 1000mA when the Prototype Board detects that it is plugged into a USB charging device such as a USB wall charger.

Supply for the Carrier Board is connected through R17 on the bottom of the board. This can be removed and replaced by another supply or used to measure the current consumption of the Carrier Board.

This board features a prototyping area to facilitate the addition of application-specific circuitry. The prototyping area contains plated through-holes so that external circuitry can be placed on the board. The holes are set at 0.100” on center with a 0.040” diameter, accommodating most industry-standard SIP and DIP packages. Footprints for standard surface mount packages are also included to aid prototyping.

At the top of the prototyping area is a row connected to the 3.3V power supply and at the bottom is a row connected to ground. External circuitry can be interfaced to the Carrier Board through the breakout headers. The numbers next to the headers correspond to the pin numbers on the Carrier Board. Figure shows the pin assignments for the Carrier Board.

SW1 and SW2 connect the USB / UART interface to the Command Data Interface lines on the module. This allows the prototype board to be used with software on a computer. When in the “USB Connected position”, the module is connected to the USB / UART interface. When in the “Header Only” position the the module is connected to the prototype area headers.

Footprints for 0603 size resistors are on most lines so that pull-ups or pull-downs can easily be added to the lines. The pads are connected to V_{CC} or GND based on the most common configuration for the modules used on the board. The schematic at the end of this document shows how each line is connected.

Prototype Board Schematic

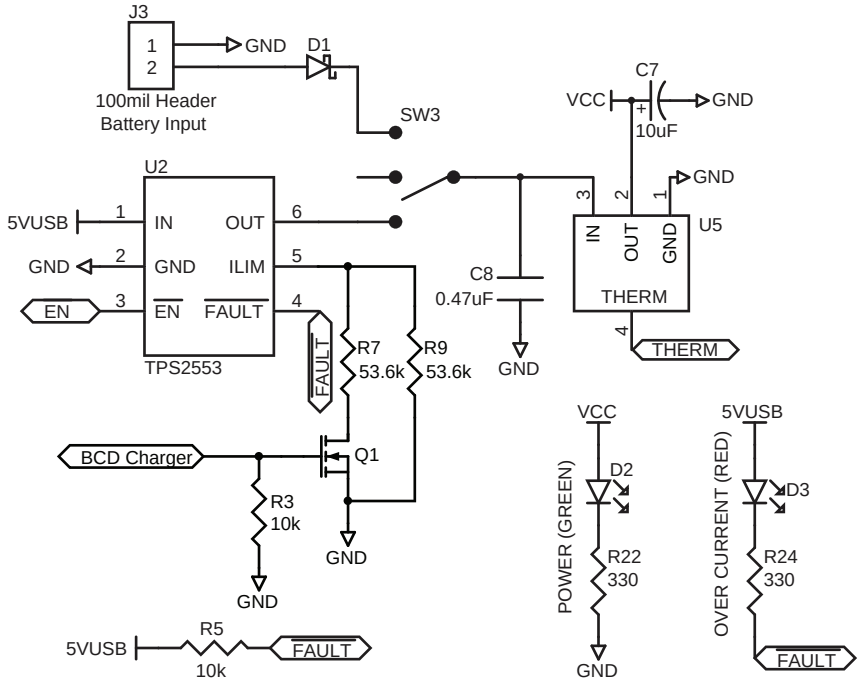

Figure 11: Prototype Board Power Supply Area Schematic

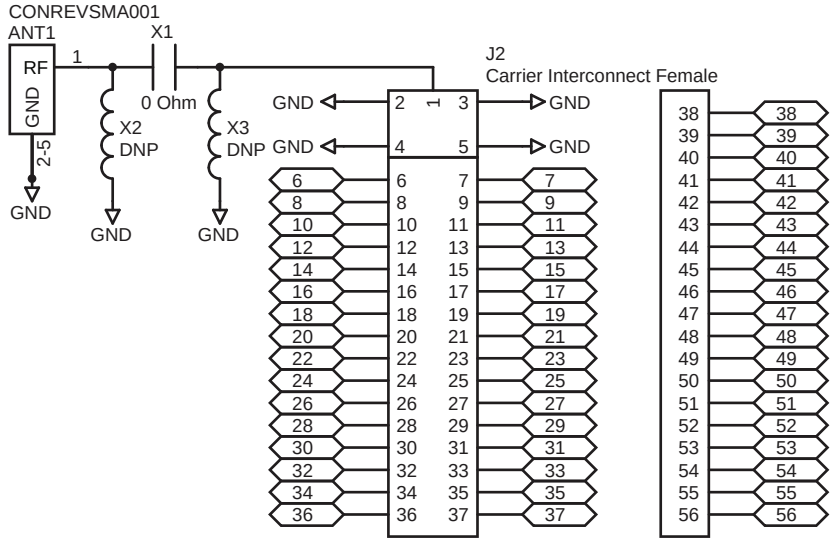

Figure 12: Prototype Board RF Carrier Area Schematic

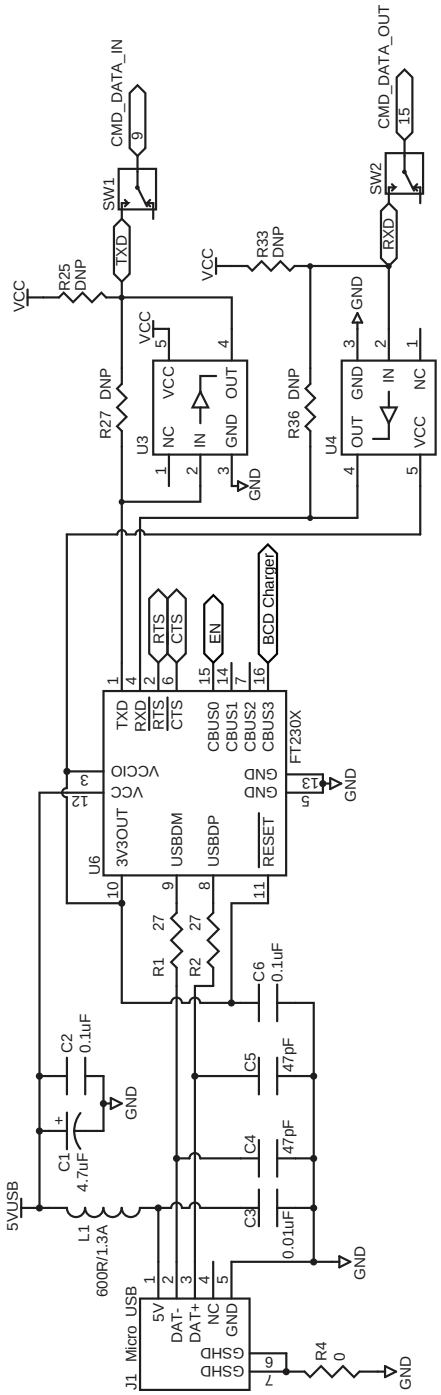

Figure 13: Prototype Board USB Area Schematic

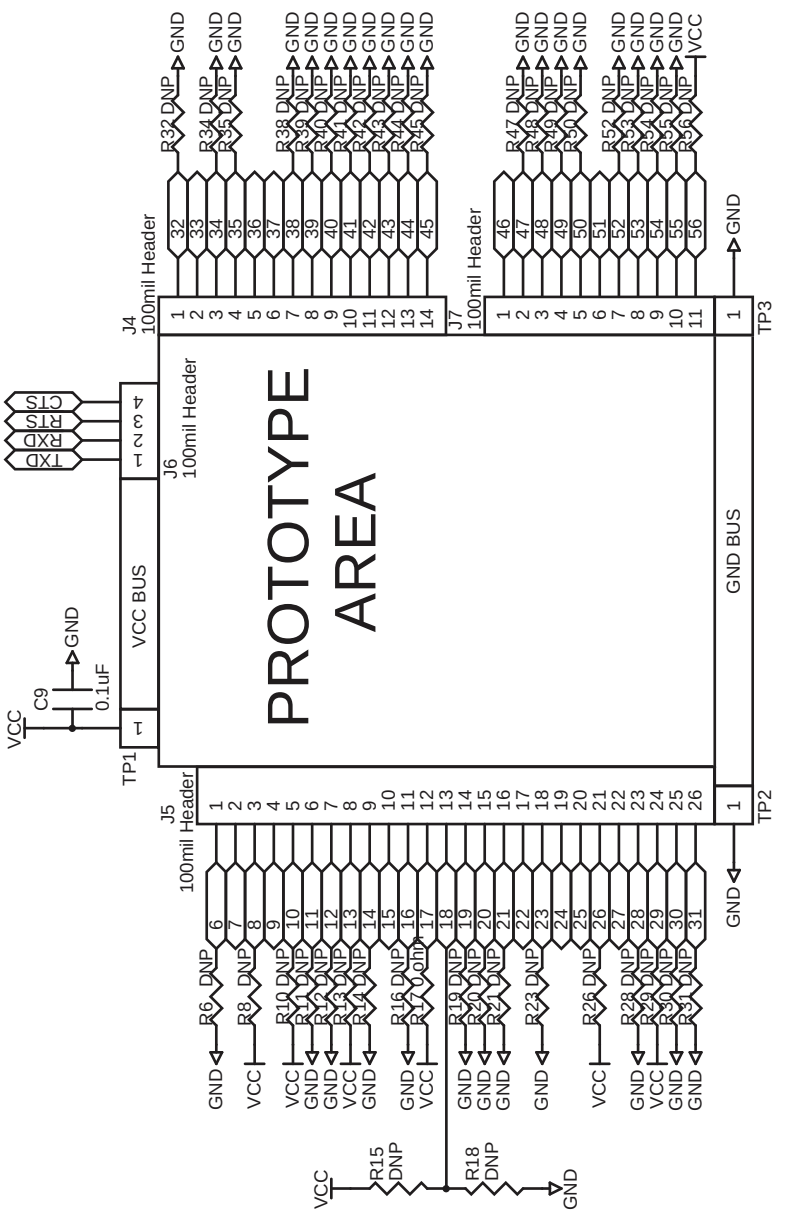

Figure 14: Prototype Board Prototype Area Schematic

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