

1. General Description

The XMICRO-BP8 is an eight-slot XMICRO backplane with an ATX-compatible power input.

1.1 Features

- 8 card slots
- Compatible with standard ATX power supplies
- DC power input for Pico ATX power supplies
- Active signal termination

1.2 System Outline

Table 1: DC Specifications

RAIL	MAX. CURRENT TOTAL	MAX. CURRENT PER CARD	MAX. CURRENT PER CONTACT	SLOT 7 VOLTAGE DROP @ MAX. I
+12V	10.0 A	2.0 A	2.0 A	270 mV
+5V	10.0 A	4.0 A	2.0 A	250 mV
+5VSB	2.0 A	1.0 A	1.0 A	300 mV
+3.3V	10.0 A	2.0 A	2.0 A	210 mV
-12V	2.0 A	1.0 A	1.0 A	270 mV
DC IN	10.0 A	-	-	-

*All current ratings continuous

Table 2: Backplane Configuration

SETTING	FUNCTION
JP1	Fan voltage select
JP2	+2.85V termination regulator enable
JP3	Bus termination voltage select
JP4	PSU power-off bleeder enable/disable
JP5	Bridge chassis/signal ground
JP6	Power-on reset enable

2. Power Supply

2.1 PSU Selection

The backplane accepts standard ATX power supplies. Because of the relatively low power requirements of XMICRO systems, virtually any PC power supply will have suitable power delivery specifications.

The XMICRO-BP8 was designed to accept “Pico” style PSU-on-connector modules. A center-positive barrel jack (J4) is provided at the rear of the board to supply these modules with DC input power. This input is routed to a 4-pin Molex Mini-Fit Jr. connector (J3) with the standard ATX CPU pinout.

The PicoPSU-160-XT is recommended and directly compatible with the DC input jack.

2.2 Grounding

When the DC input jack is not used, such as with full-sized ATX power supplies, jumper JP5 should be shorted. This connects the system chassis to the PSU ground to provide a return path for stray ESD/EMF.

2.3 PSU Bleeder

During development, some PSUs, particularly Pico-style PSUs, were found to have excessive power-down times if certain rails are unloaded. A PSU bleeder circuit was added to the backplane to drain residual charge from the power rails, and to make the power-down faster and more stable.

The operation of this circuit is selected by jumper JP4, which must be set to ensure proper operation. For most ATX supplies, JP4 may be set to the OFF position. If power-down time is found to be excessive, JP4 may be set to the ON position, provided the power-down time is improved. This can be roughly visibly gauged by the Reset indicator fading slowly during power-down.

LED D5 indicates that the bleeder is active. It should only flash briefly when the power is switched off. If D5 is illuminated while the system is powered on, this indicates a fault in the circuit and JP4 should be confirmed. While the bleeder was designed to be capable of continuous operation in case of faults, it will generate excessive heat and should not be allowed to operate in this way.

3. Signal Termination

The XMICRO-BP8 contains a termination network for all bus signal lines. This pulls all signals to +2.85V through a 270Ω resistor at each end of the backplane. This pulls signal lines to a known high state when not driven, and reduces ringing on fast signal edges. The termination network provides a significant load on signals, and as such cards must have drivers capable of sourcing/sinking at least 20mA per signal when it is fitted.

The termination network was designed with some flexibility for experimentation and troubleshooting, however in typical operation JP2 should be closed and JP3 should be set to “2.85V”.

4. Off-board Components

4.1 Power Switch

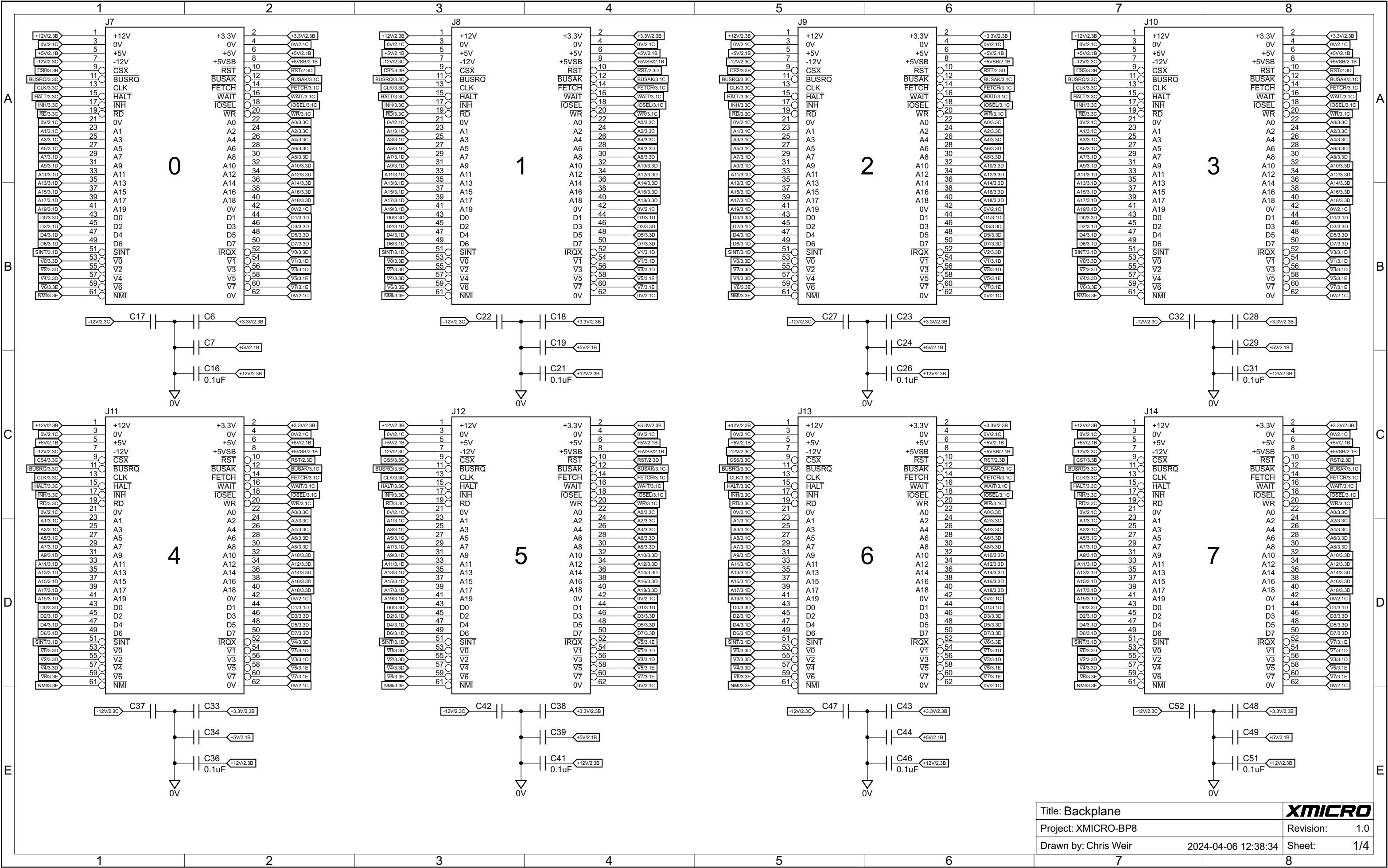
The backplane is fitted with an onboard power switch (S1) for development or operation without a chassis. An external power switch may be connected at header J5. When an external switch is used, S1 must be set in the OFF position.

4.2 Power Indicator

A power indicator LED is provided on the rear of the backplane. An additional header (J6) is available for an external LED if desired. This connector provides a low-impedance 3.3V when the system power is on, so an appropriate current-limiting resistor should be fitted to any LED connected to it.

4.3 Fan

A fan header (J1) is available for optional active cooling. Jumper JP1 selects a fan voltage and may be set to +5V for low noise, or +12V for full speed. An external fan controller may also be used on +12V.

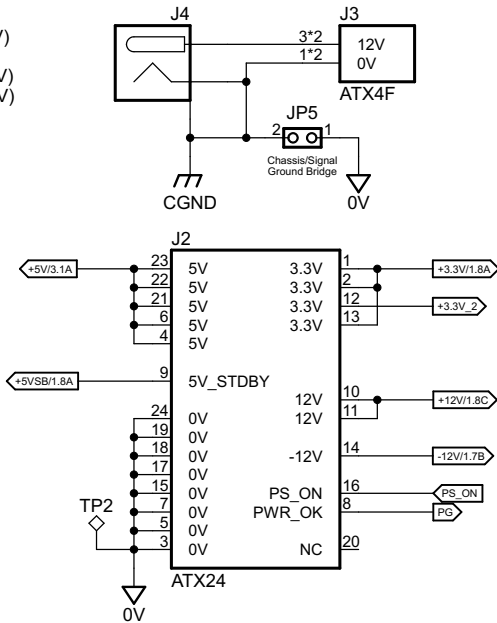


Power Supply

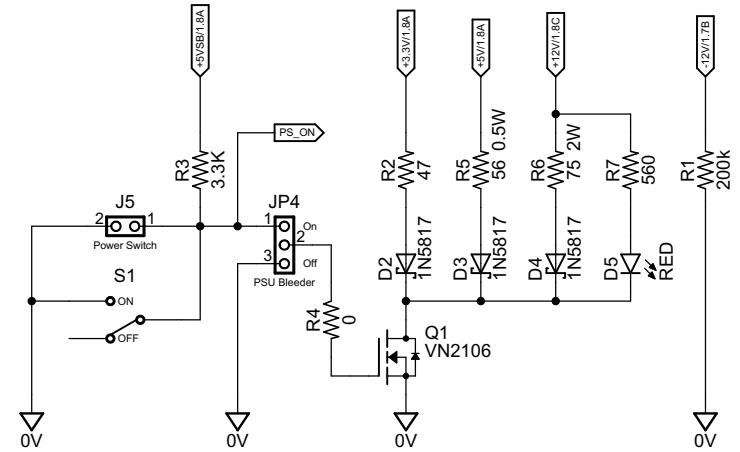
Backplane Power Rails

Maximum continuous current rating (expected voltage drop at slot 7)
DC in 10A

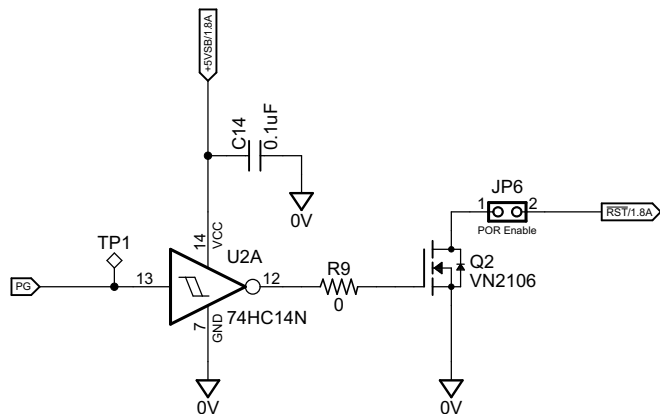
+12V 10A (270mV)
+5V 10A (250mV)
+5VSB 2A (300mV)
+3.3V 10A (210mV)
-12V 2A (270mV)



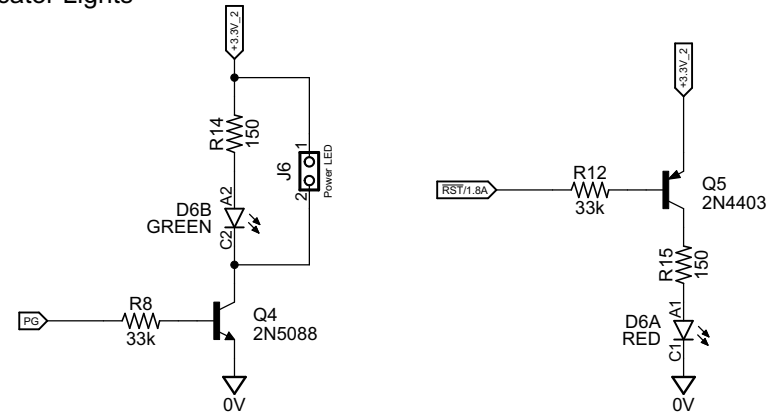
PSU Bleeder



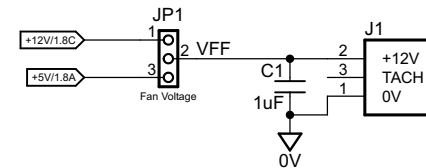
Power-On Reset



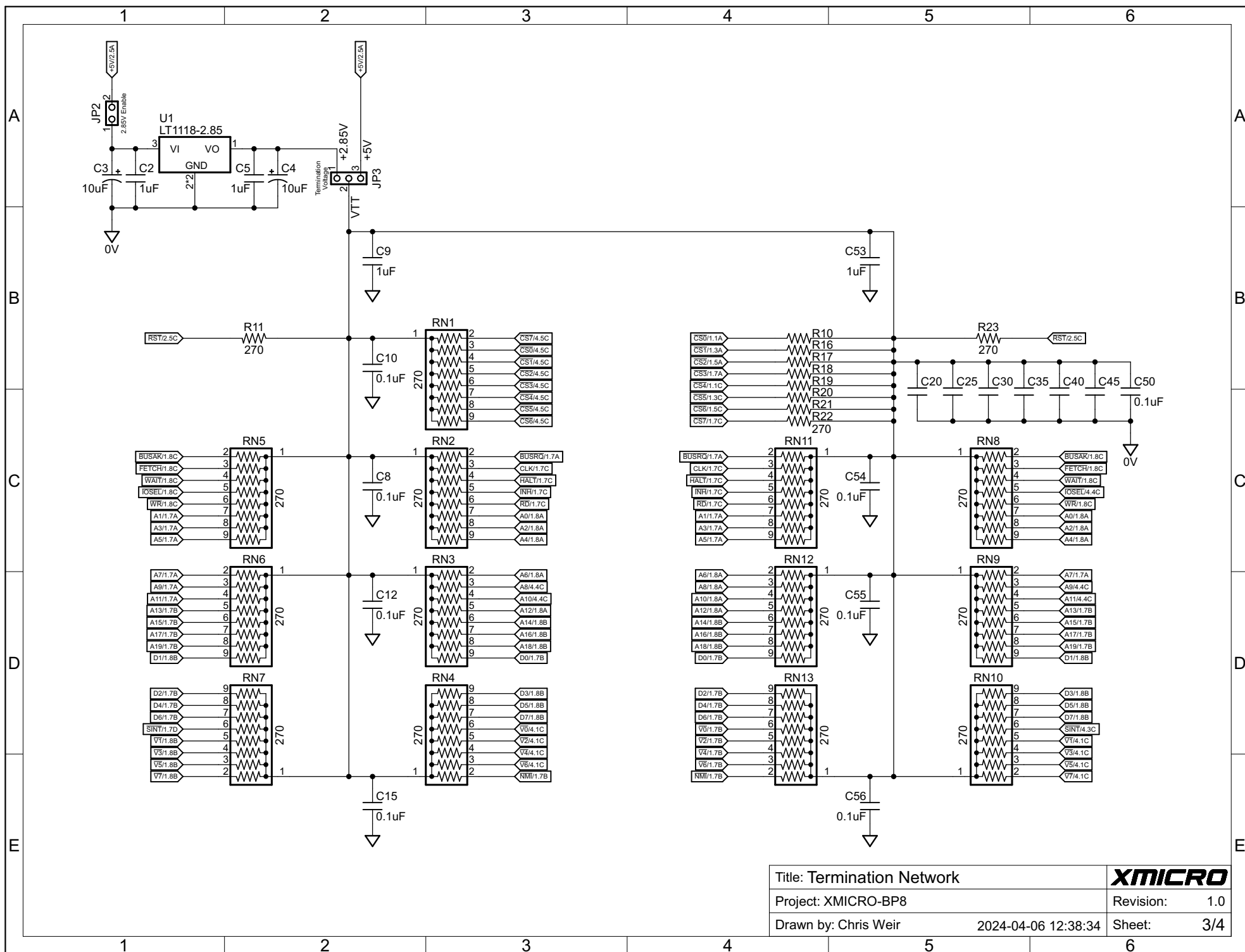
Indicator Lights

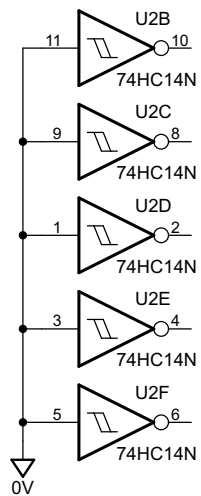
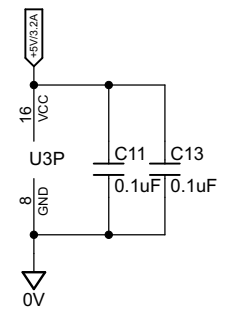
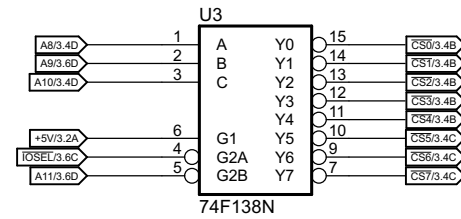
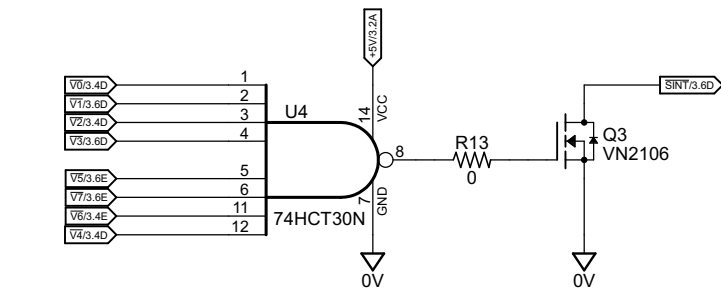


Fan



Title: Power/Reset	XMICRO
Project: XMICRO-BP8	Revision: 1.0
Drawn by: Chris Weir	2024-04-06 12:38:34 Sheet: 2/4





Title: Card Routing/Misc.		XMICRO	
Project: XMICRO-BP8		Revision:	1.0
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