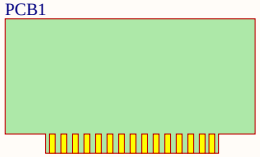
HB8 Host Board

PCB HB8 TMx HOST BOARD R2
PCB1

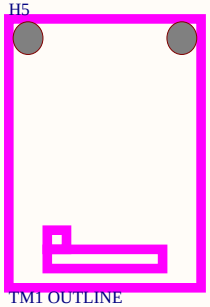


1561-1458

M4
GND 1
2SSB-3.0

M5
GND 1
2SSB-3.0

H5

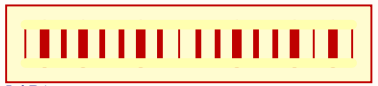


TM1 OUTLINE

SS1

MECH KIT HB8 GENERIC

Date	ECN	Issue	Note
2022-12-01		1	Initial Release
2022-12-07		2	HDMI connector EOL
2022-06-01		3	Prototype easement of antenna clashes and spec issues
2023-08-17		4	LCD power 1ms slew, reverse diode, TS 7 to bottom layer
2023-08-17	2023,029	4	RTC battery safety improvement
2023-10-02		4	Serial option jumpers and USB current restrictors



LAB1

GND H1
GND H3
GND H2
GND H4

FID FID3
FID FID4
FID FID1
FID FID6
FID FID2
FID FID5

BRK1 BREAKOUT
BRK2 BREAKOUT
BRK3 BREAKOUT
BRK4 BREAKOUT

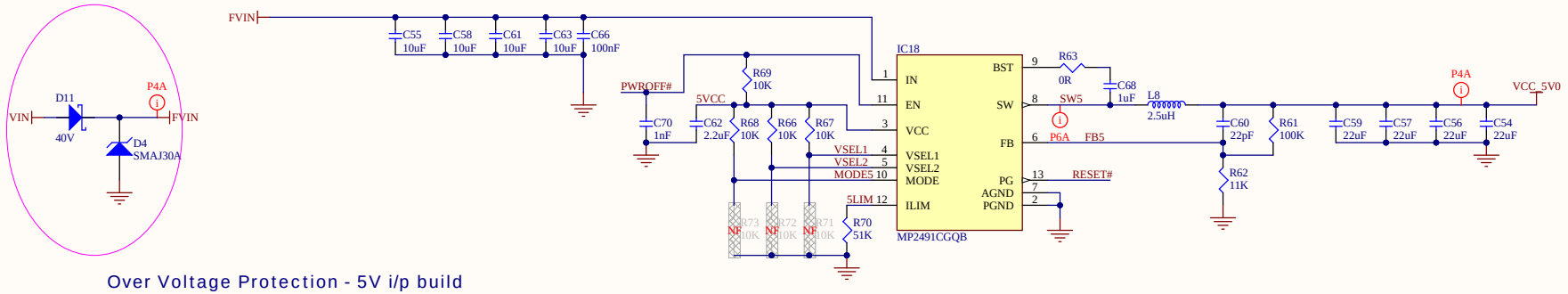
LOG1

BCT_LOGO

bct_logo_small

Blue Chip Technology

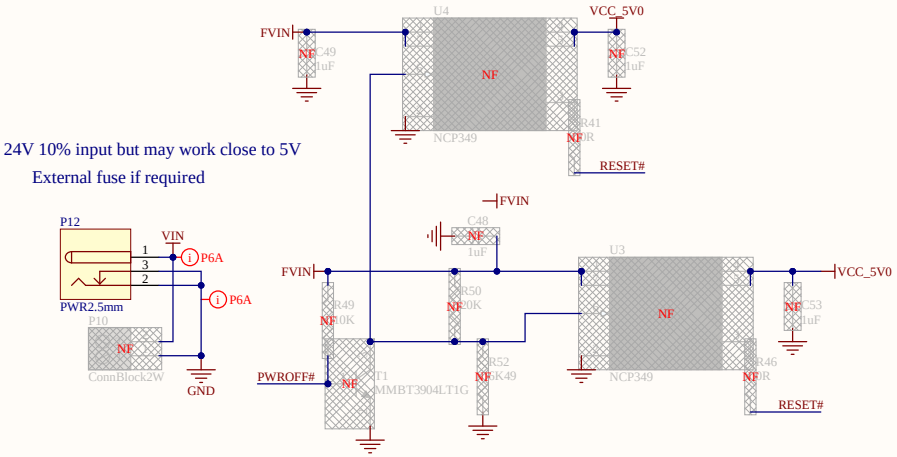
Title: HB8.PrjPCB		
SheetTitle: Title Page		Drawn by: DR
Document No: 1981-1559 HB8_R2_7_LCD		Revision: 4
Date: 2023-10-16	Sheet: 1 of 6	
File Name: 1-HB8-Title.SchDoc		



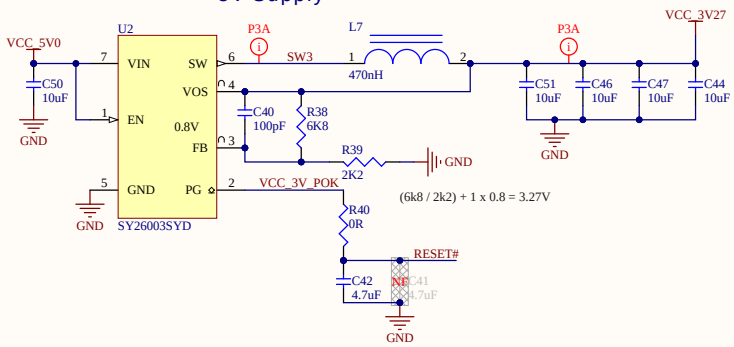
Over Voltage Protection - 5V i/p build

24V 10% input but may work close to 5V

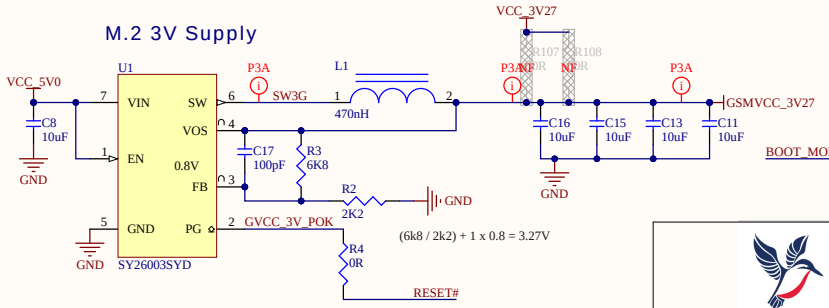
External fuse if required



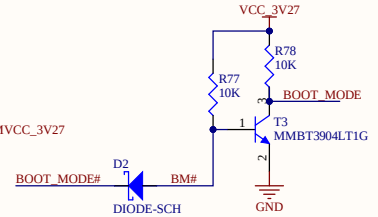
3V Supply



M.2 3V Supply



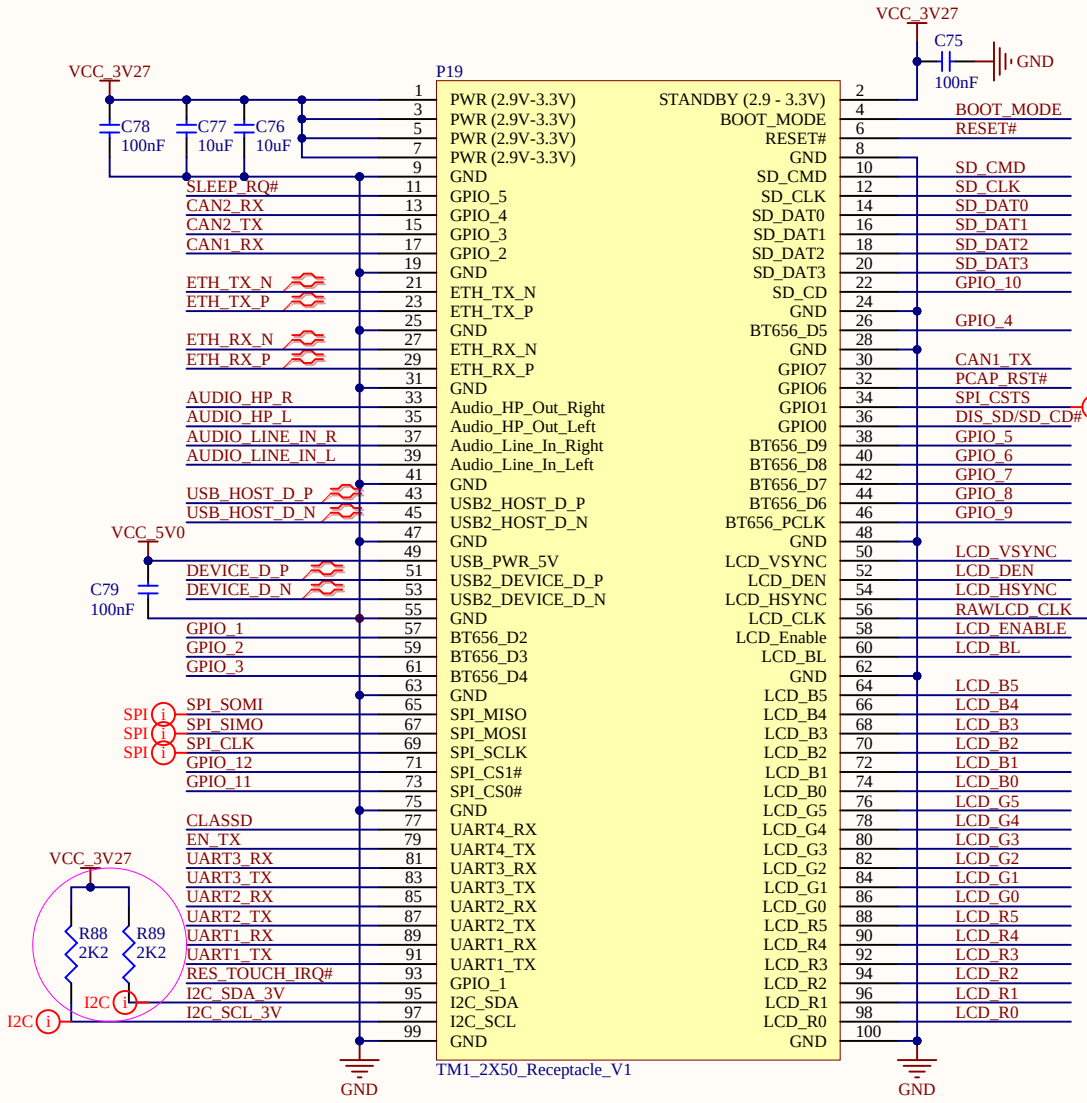
Boot Mode Inversion



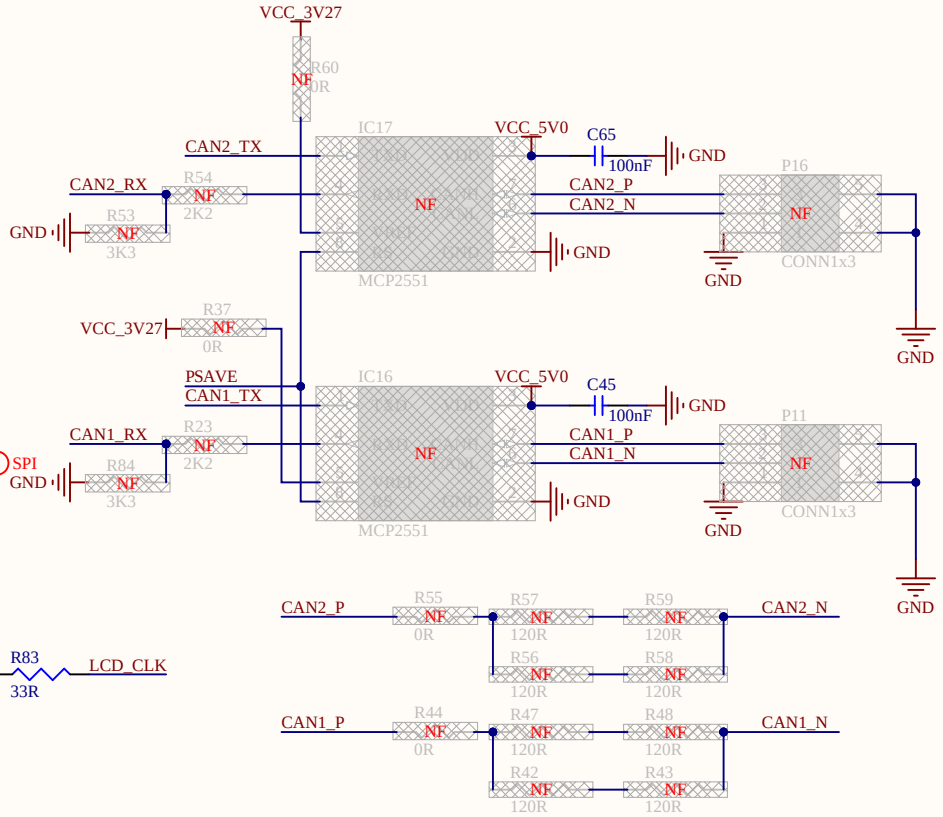
Blue Chip Technology

Title: HB8.PrjPCB	
SheetTitle: Power Supplies	Drawn by: DR
Document No: 1981-1559 HB8_R2_7_LCD	Revision: 4
Date: 2023-10-16	Sheet: 2 of 6
File Name: 2-Power.SchDoc	

TMx C1 Connector



Dual CAN Interface (TM2 Only)



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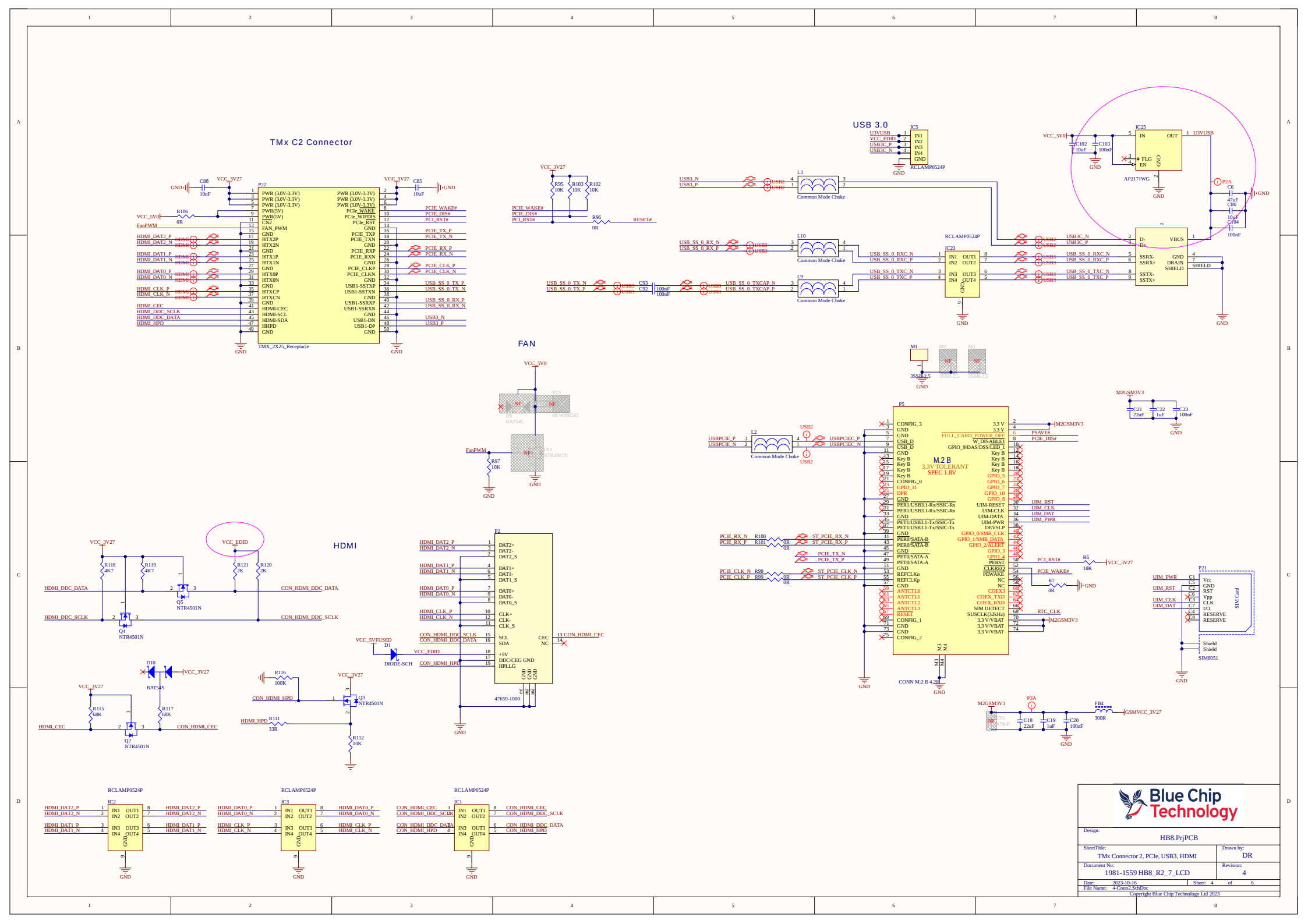
Title: HB8.PrjPCB	
SheetTitle: TMx Connector 1, Dual CAN	Drawn by: DR
Document No: 1981-1559 HB8_R2_7_LCD	Revision: 4
Date: 2023-10-16	Sheet: 3 of 6
File Name: 3-Conn1.SchDoc	


TMx C2 Connector
USB 3.0
FAN
HDMI
M.2 B
3.3V TOLERANT
SPEC 1.8V
Blue Chip Technology
Design:
HB8.PrjPCB
SheetTitle:
TMx Connector 2, PCIe, USB3, HDMI
Drawn by:
DR
Document No:
1981-1559 HB8_R2_7_LCD
Revision:
4
Date: 2023-10-16
Sheet: 4 of 6
File Name: 4-Conn2.SchDoc
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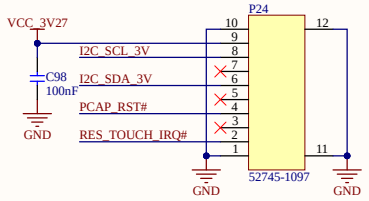
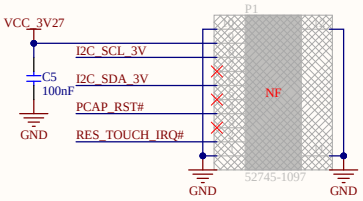
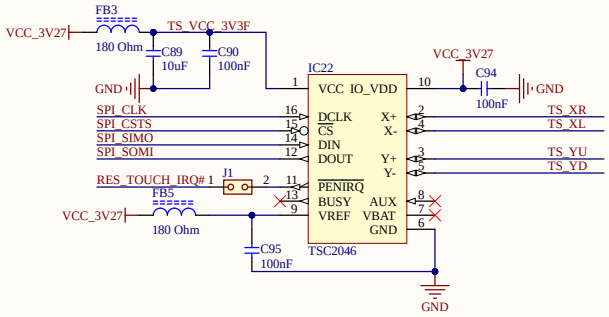
TOUCHSCREEN - PCT

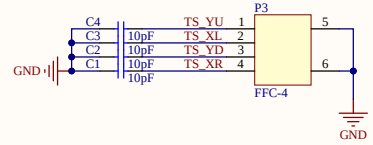




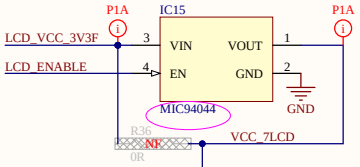
TOUCHSCREEN - RESISTIVE

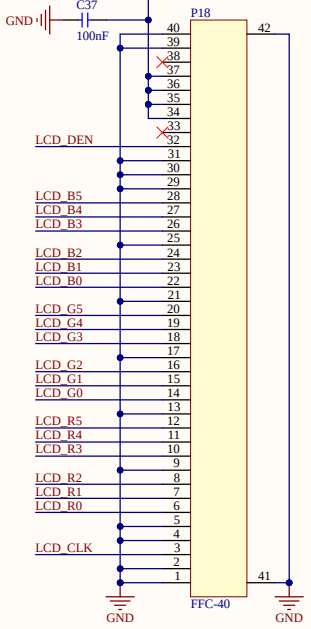


Fit J1 for resistive touch screen. Remove for capacitive touch screen

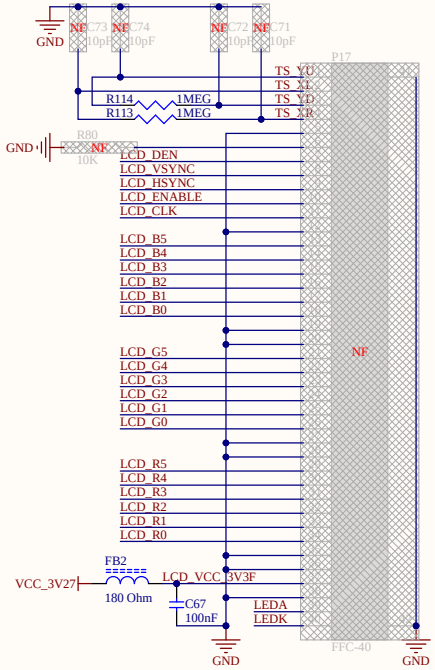


LCD



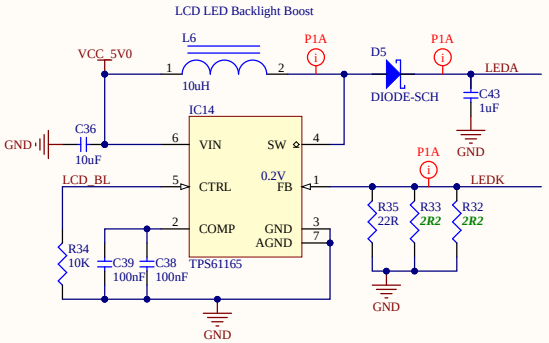


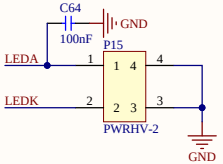
7" LCD
SAME FACE FFC



4.3" LCD
CAPTIVE FFC

BACKLIGHT





LCD specs: Set:

	Typ	Max	
40		60 mA	53 mA
160	200 mA		191 mA

Blue Chip Technology

Title: HB8.PrjPCB	
SheetTitle: LCD and Touch	Drawn by: DR
Document No: 1981-1559 HB8_R2_7_LCD	Revision: 4
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File Name: 5-LCD.SchDoc	

50 Way Expansion Header

10/100 ETHERNET

USB 2.0 Host

USB 2.0 Device Connector / USB 2.0 Mini PCI Express Host

uSD CARD

RS232, RS422, RS485

RS232

RS485/422

RTC

AUDIO AMP

The TMx specification defines pins 51 and 53 as supporting a USB 2.0 device, however TM1, TM2, and TM3 actually implement a USB OTG controllers internally. I.e. The port can be configured as either a host or device port.

The HB8 makes the most of this capability by allowing the port to be connected to an external USB B (Device) connector or to a mini PCI express connector in host mode.

Electrically the USB D+/D- signals are connected to the USB B connector (P11) when a cable is inserted (VBUS detected), and connected to the mini PCIe connector when VBUS is absent.

As a USB OTG ID is not connected in the design, the OTG controller cannot dynamically switch roles. It is expected that software will configure the role based on the desired system usecase. For designs requiring dynamic switching, the TMx modules can expose the USB ID pin via pin muxing.

Configuration Options

Microphone:
The TMx specification defines pin 39 as either a Line-In left channel, or as a microphone input. The standard build configuration provides a stereo line input. To configure the line-in left channel as a microphone replace C30 with a 0R 0402 resistor.

UART2 / COM2:
Optionally the RS232 transceiver for UART2 / COM2 can be bypassed, to operate at TTL levels. This can be useful if an expansion board is developed for the 50 way expansion header that features a UART device that does not require RS232 levels. E.g. GSM, or GPS, ZIGBEE module. This can be achieved by removing R10, R11, R14, R16, R17, and fitting R18, R20.

UART3:
UART 3 by default is routed through an RS422/RS485 transceiver. Optionally UART 3 can be routed through an RS232 transceiver to give a third RS232 port. This can be achieved by removing R12, R109, R110, and fitting R19, R1, R5.

Design:	HB8.PrjPCB
SheetTitle:	USB 2, Serial, Ethernet, RTC, 50 Way Expansion
Drawn by:	DR
Document No:	1981-1559 HB8_R2_7_LCD
Revision:	4
Date:	2023-10-16
Sheet:	6 of 6
File Name:	6-USB-Serial-Ethernet-Audio.SchDoc