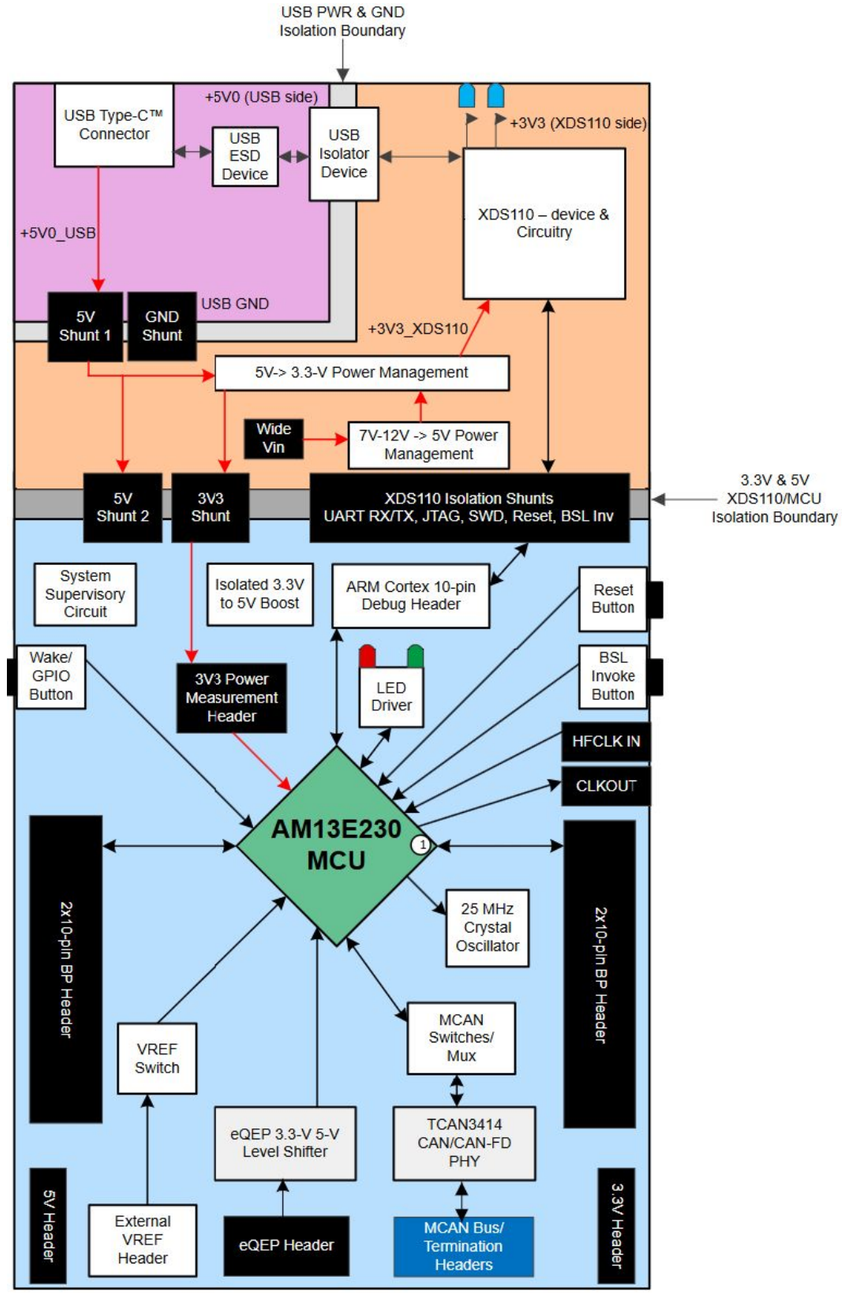
LP-AM13E230
AM13E230 LaunchPad EVM

Revision History				
Rev	ECN #	Approved Date	Approved by	Notes
E1	N/A	Sep 16, 2025	BH	Original engineering release
E2	N/A	Mar 2, 2026	BH	Update BoosterPack pinout to align with expected bootloader default pins I2C pull-up resistors added Silkscreen updates
A	N/A	Oct 18, 2026	PL	Updated version of AM13E230 device Add 002 variant for low-stock components ISOUSB111DW → ADuM3160BRWZ TCAN3414DDFR → TCAN334GDCNR RC0402JR-070RL → CRCW040224R3FKED (for ISOUSB D+/D- series resistors) Change U1 crystal oscillator to 20 MHz Add debounce circuit to nRST push button



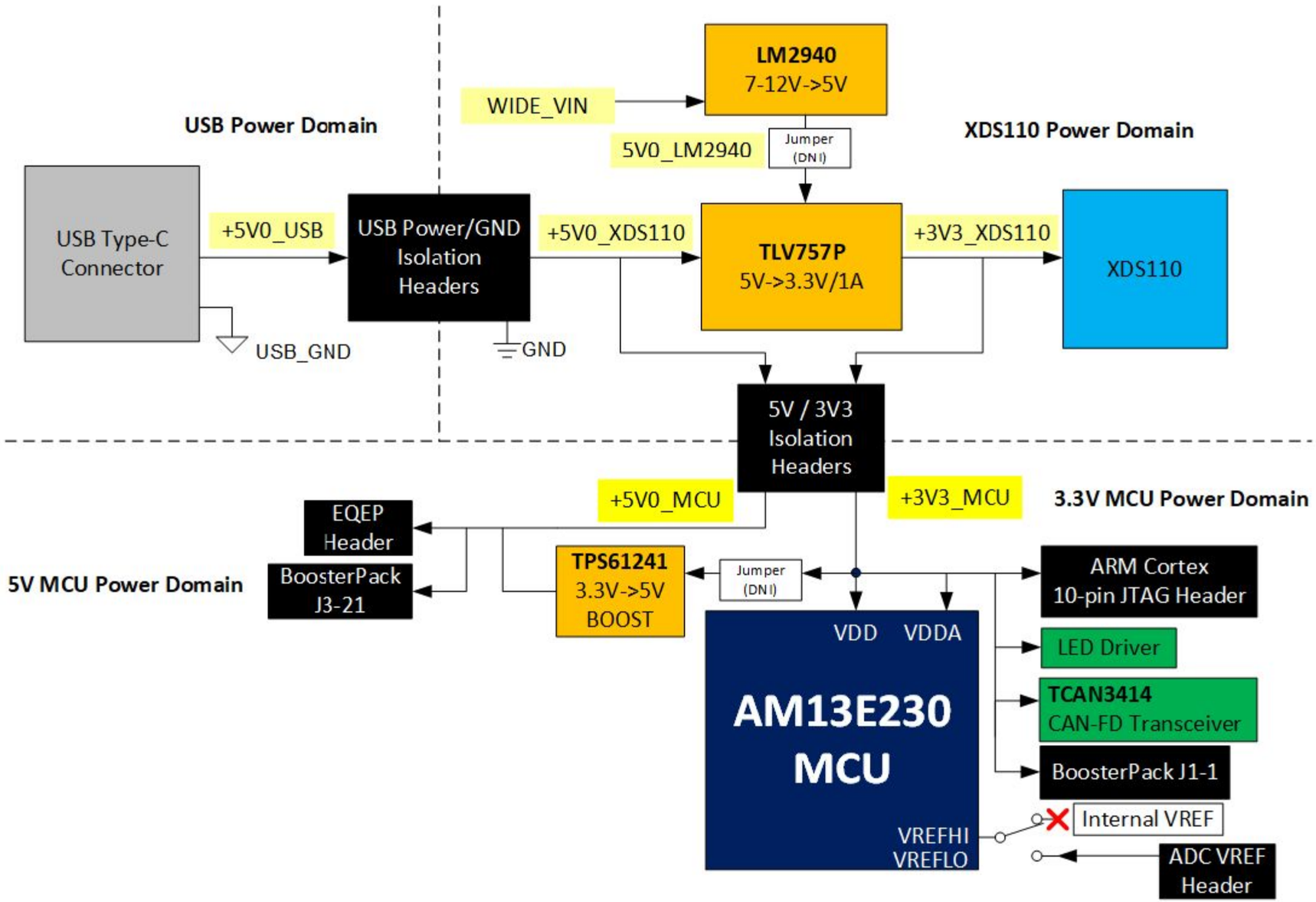
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Orderable: LP-AM13E230		Designed for: Public Release	Mod. Date: 10/20/2026
TID #: N/A		Project Title: LP-AM13E230	
Number: MCU178	Rev: A	Sheet Title:	
SVN Rev: Version control disabled		Assembly Variant: 001	Sheet: 1 of 10
Drawn By: Brennan Hartigan		File: MCU178A_01_BlockDiagram.SchDoc	Size: B
Engineer: Peter Luong		Contact: http://www.ti.com/support	

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Power Tree



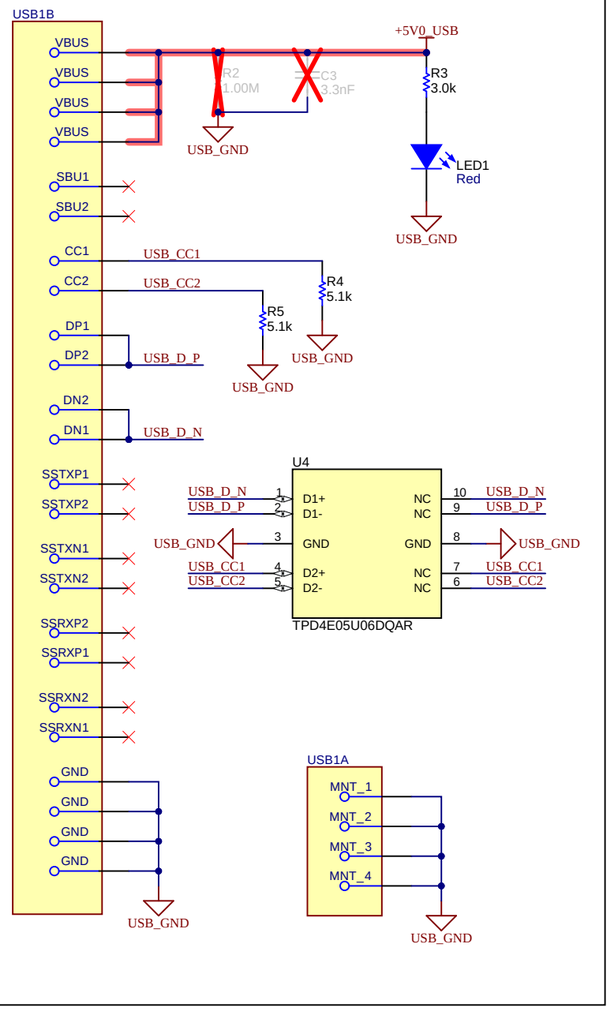
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Number: MCU178 Rev: A	Sheet Title:	
SVN Rev: Version control disabled	Assembly Variant: 001	Sheet: 2 of 10
Drawn By: Brennan Hartigan	File: MCU178A_02_PowerTree.SchDoc	Size: B
Engineer: Peter Luong	Contact: http://www.ti.com/support	

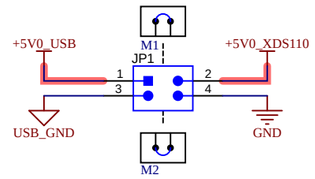
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USB-C Connector



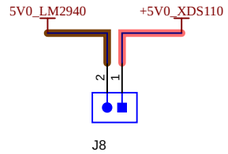
PWR & GND Isolation Boundary



To supply the system 5V from the USB Type-C connector, populate the jumper on JP1-5V0.

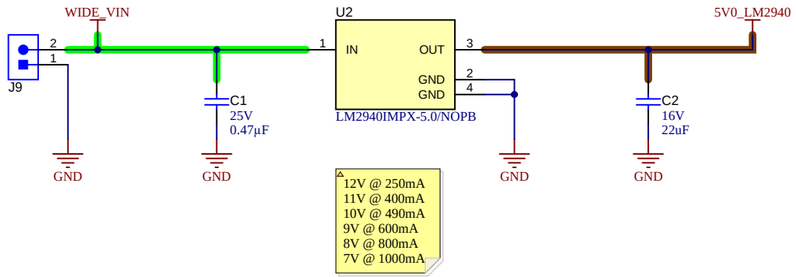
To supply the system using the Wide Vin header J9, DNI the jumper on JP1-5V0 and populate it on J8.

Wide Vin Supply Jumper



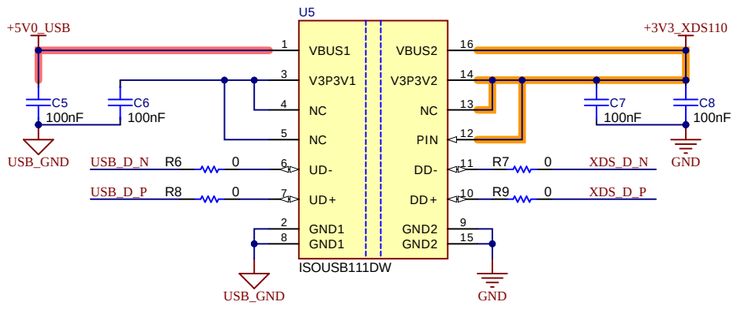
If supplying the system from J8 and debugging over the USB-C, also remove the jumper on JP1-GND.

Wide Vin, 7V-12V



12V @ 250mA
11V @ 400mA
10V @ 490mA
9V @ 600mA
8V @ 800mA
7V @ 1000mA

USB Isolation



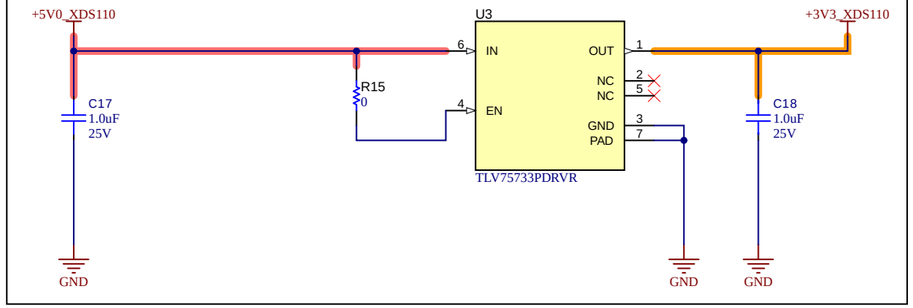
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Number: MCU178 Rev: A	Sheet Title:	
SVN Rev: Version control disabled	Assembly Variant: 001	Sheet: 3 of 10
Drawn By: Brennan Hartigan	File: MCU178A_03_USB-C.SchDoc	Size: B
Engineer: Peter Luong	Contact: http://www.ti.com/support	

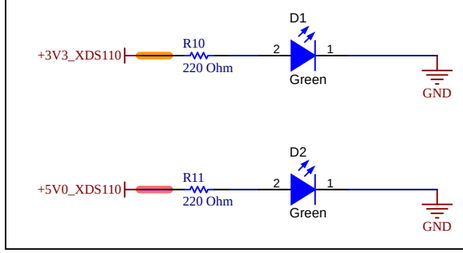
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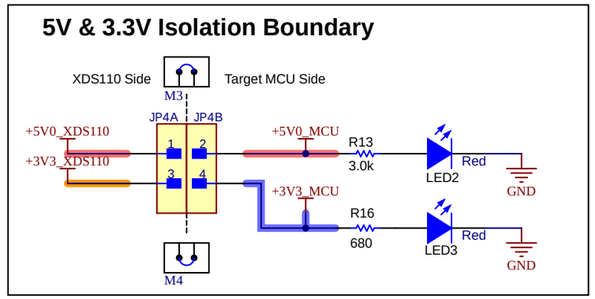
5V to 3.3V/1A



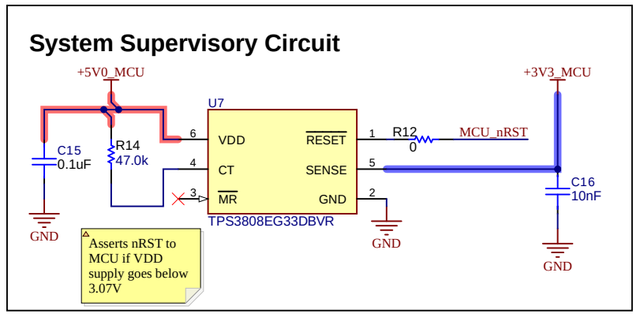
Power LEDs



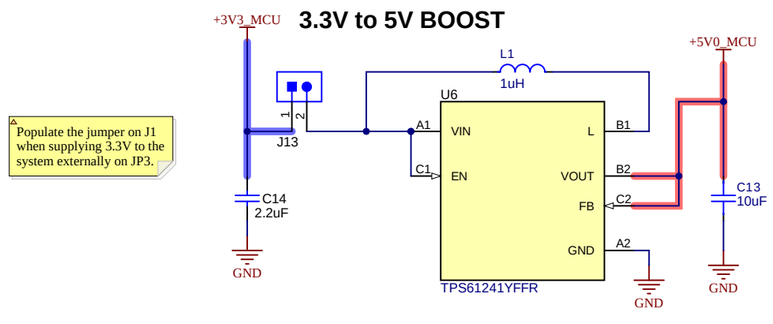
5V & 3.3V Isolation Boundary



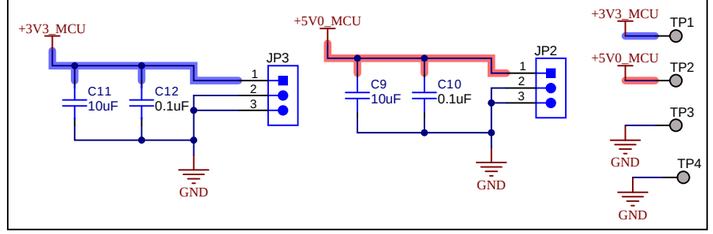
System Supervisory Circuit



3.3V to 5V BOOST



Power Headers and Test Points



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Number: MCU178	Rev: A	Sheet Title:	
SVN Rev: Version control disabled		Assembly Variant: 001	Sheet: 4 of 10
Drawn By: Brennan Hartigan		File: MCU178A_04_Power.SchDoc	Size: B
Engineer: Peter Luong		Contact: http://www.ti.com/support	

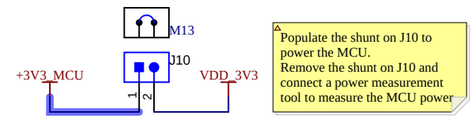
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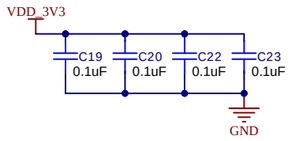
AM13E230 MCU

Power Isolation / Measurement Jumper

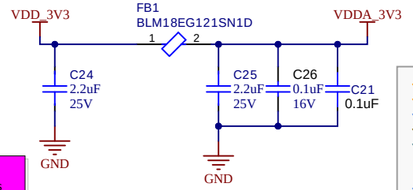


Populate the shunt on J10 to power the MCU.
Remove the shunt on J10 and connect a power measurement tool to measure the MCU power

VDD 3V3 Digital



VDDA 3V3 Analog

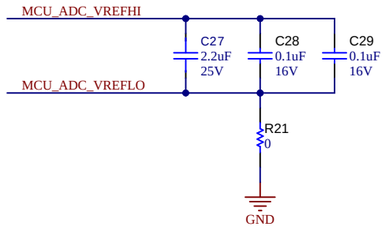


Place decoupling as close as possible to MCU

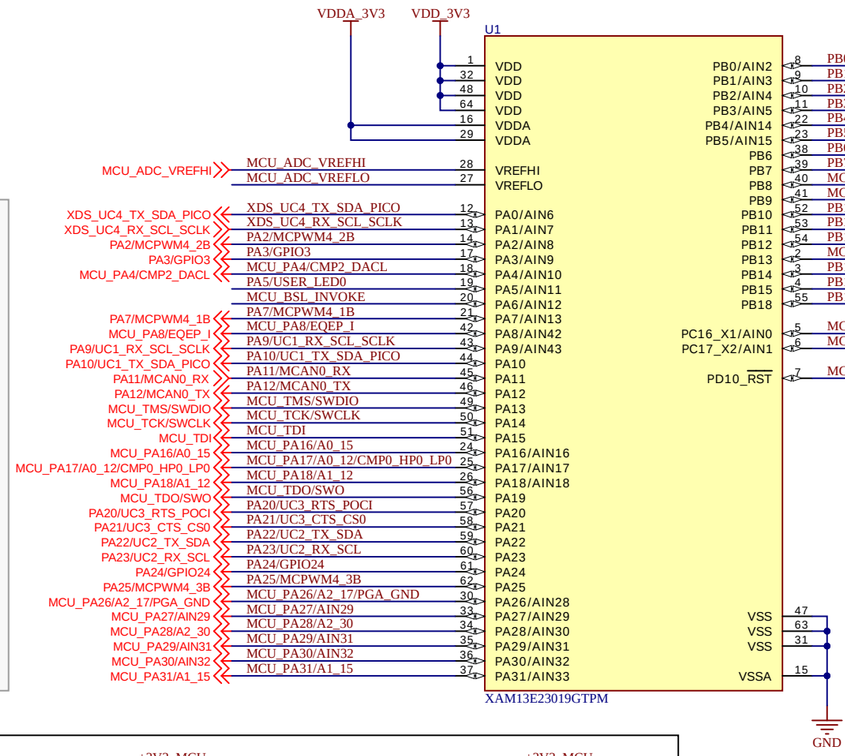
MCU Supply TPs



ADC VREF



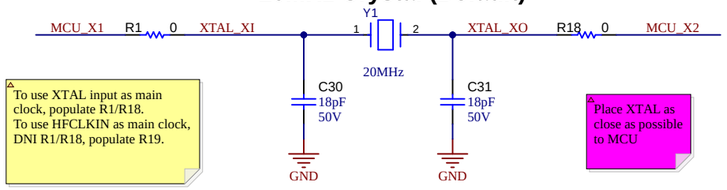
J12	XDS110 UART RX
J12	XDS110 UART TX
J4_37	MCPWM
J1_5	GPIO
J3_30	DAC
J4_39	MCPWM
J5_3	EQEP
J1_3	UART RX
J1_4	UART TX
J4_31	CAN RX
J4_32	CAN TX
J3_23	ADC
J3_26	ADC/CMP
J3_24	ADC
J2_14	SPI POCI
J2_19	SPI CS
J1_10	I2C SDA
J1_9	I2C SCL
J2_17	GPIO
J4_35	MCPWM
J1_2	ADC/PGA GND
J3_27	ADC/PGA IN
J3_25	ADC
J3_29	ADC/PGA IN
J3_28	ADC/PGA IN
J1_6	ADC



MCPWM	J4_38
MCPWM	J4_36
MCPWM	J4_40
GPIO	J1_8
SPI CLK	J1_7
LIN RX	J4_33
LIN TX	J4_34
EQEP	J5_1
EQEP	J5_2
SPI PICO	J2_15
GPIO	J2_11
GPIO	J2_12
GPIO	J2_18
GPIO	J2_13
nRST	J2_16

Clocks

20MHz Crystal (Default)



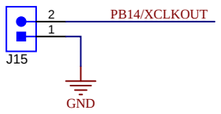
To use XTAL input as main clock, populate R1/R18.
To use HFCLKIN as main clock, DNI R1/R18, populate R19.

Place XTAL as close as possible to MCU

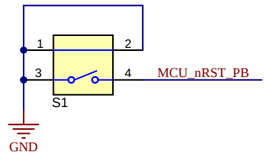
High-Frequency Oscillator Input



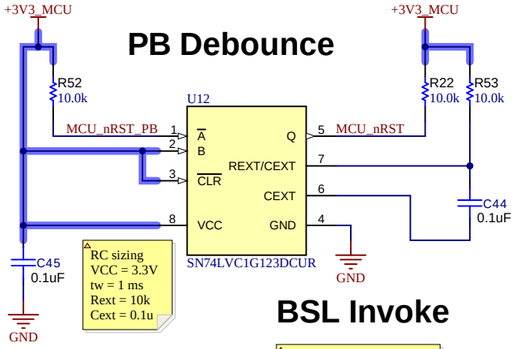
External Clock Output



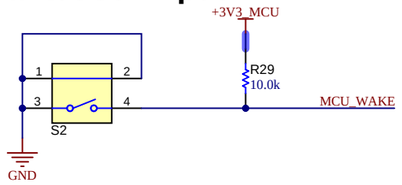
MCU Reset



PB Debounce

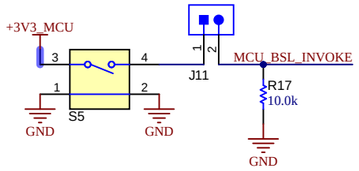


Wake/User Input

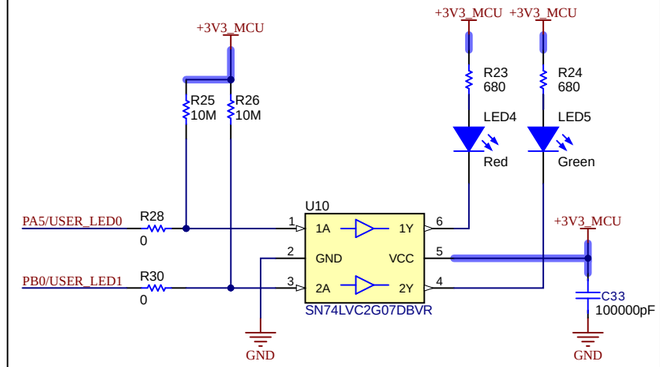


BSL Invoke

Populate J11 to invoke BSL through hardware.



User LEDs

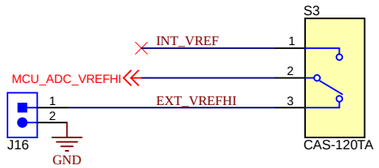


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Orderable: LP-AM13E230		Designed for: Public Release	Mod. Date: 10/20/2026
TID #: N/A		Project Title: LP-AM13E230	
Number: MCU178	Rev: A	Sheet Title:	
SVN Rev: Version control disabled		Assembly Variant: 001	Sheet: 5 of 10
Drawn By: Brennan Hartigan		File: MCU178A_05_AM13E230_MCU.SchDoc	Size: B
Engineer: Peter Luong		Contact: http://www.ti.com/support	http://www.ti.com

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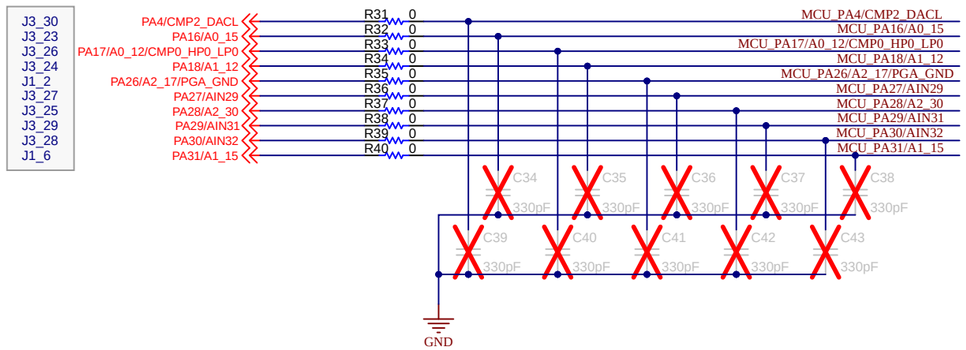
ADC VREF DIP SWITCH



ADC VREF VOLTAGE SELECTION (S3)

SW POSITION	SUPPLY SELECTION
PIN 1-2 DEFAULT	Select internal reference voltage
PIN 2-3	Selects external reference voltage

Analog RC Filters



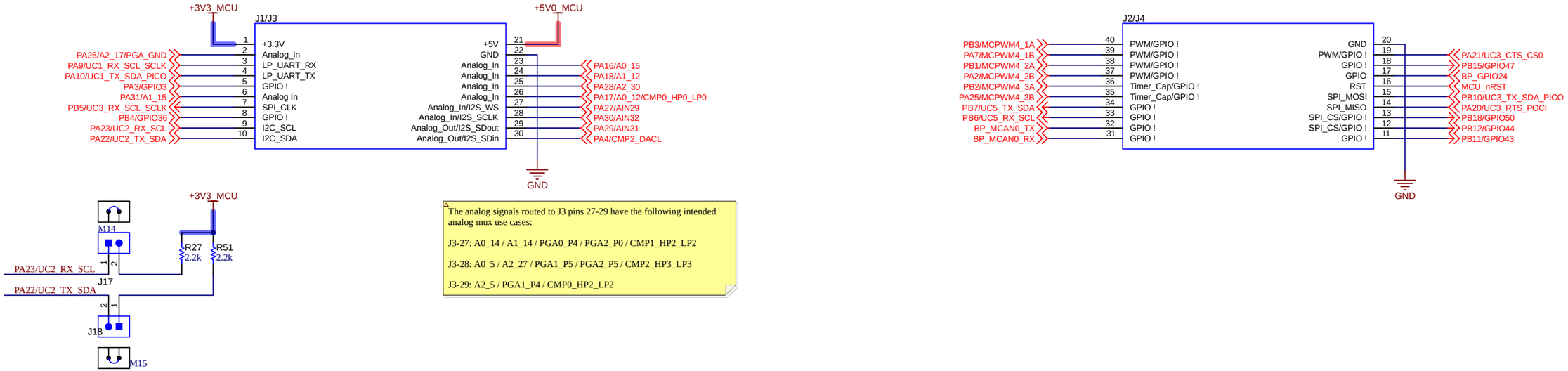
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Engineer: Peter Luong		Contact: http://www.ti.com/support	

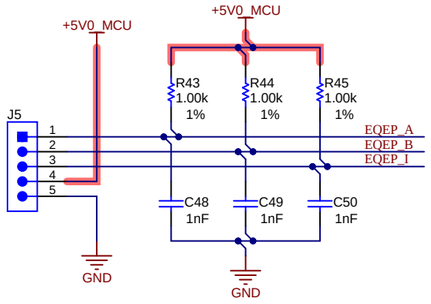
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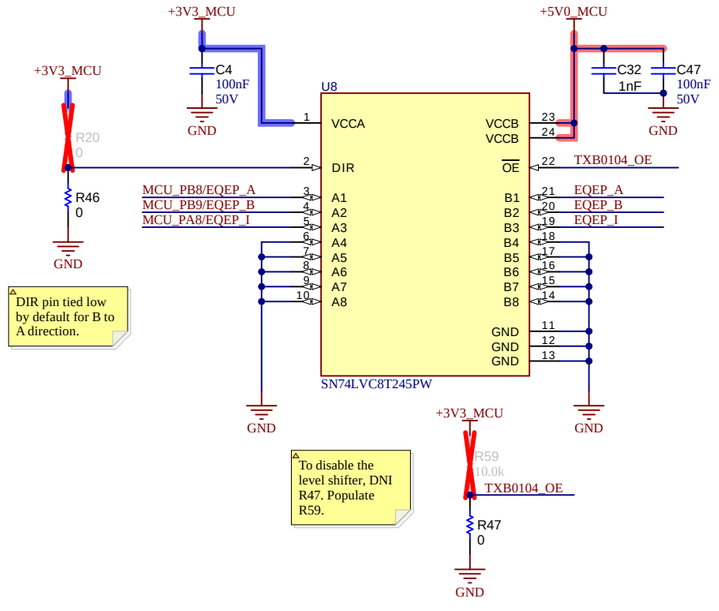
BoosterPack Headers



EQEP Connectors



EQEP Level Translator (B->A)



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TID #: N/A		Project Title: LP-AM13E230	
Number: MCU178	Rev: A	Sheet Title:	
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Engineer: Peter Luong		Contact: http://www.ti.com/support	http://www.ti.com

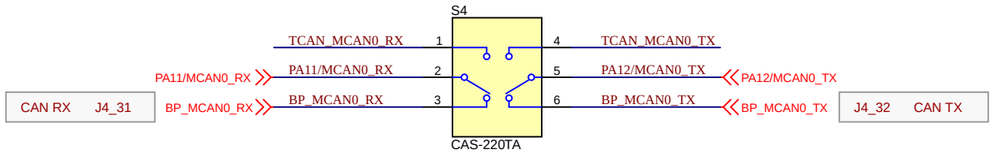
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MCAN Routing

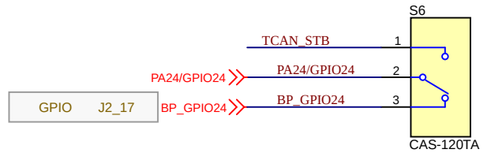
MCAN RX/TX ROUTING SELECTION (S4)

SW POSITION	SUPPLY SELECTION
PIN 1-2/4-5 DEFAULT	MCAN RX/TX routed to BoosterPack
PIN 2-3/5-6	MCAN RX/TX routed to CAN Transceiver

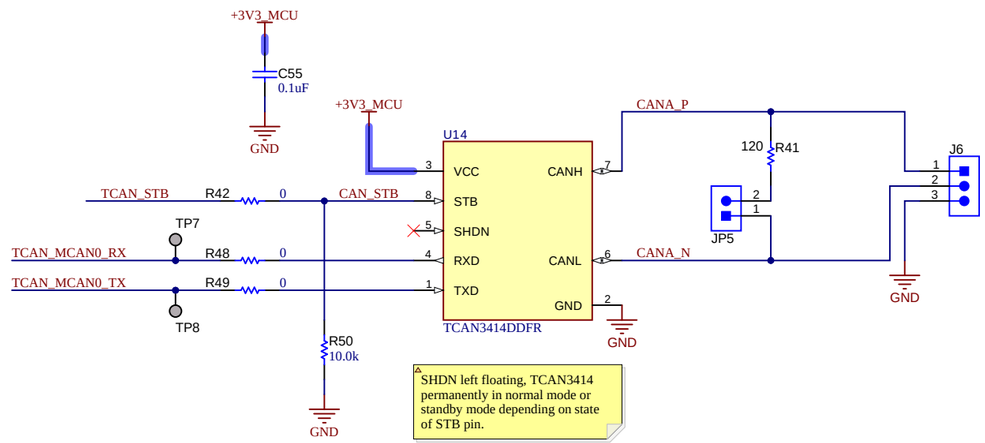


CAN STB Routing Selection (S6)

SW POSITION	SUPPLY SELECTION
PIN 1-2	PB0 routed to CAN Transceiver for STB signal
PIN 2-3 DEFAULT	PA24 routed to BoosterPack header



MCAN Transceiver and Header



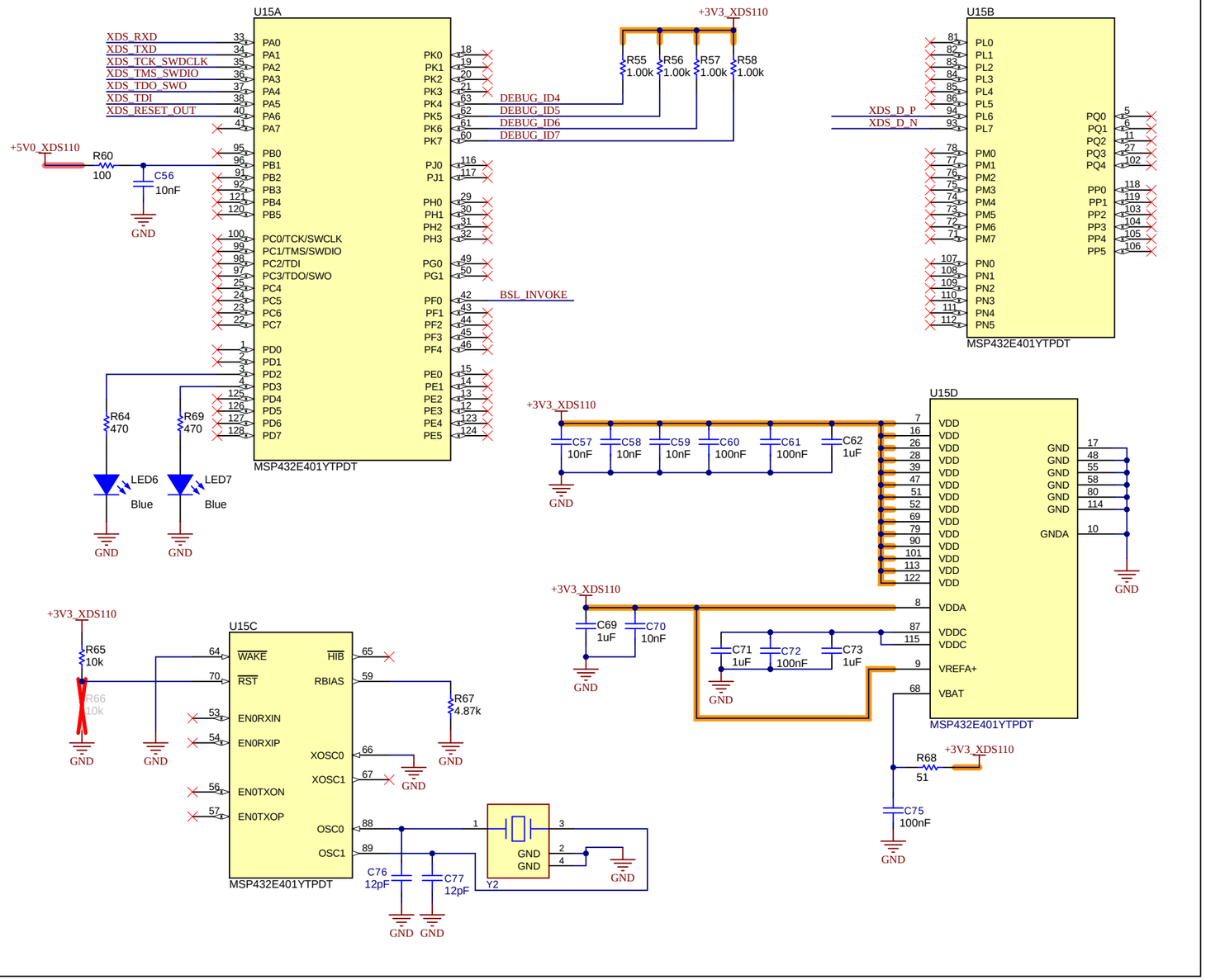
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Drawn By: Brennan Hartigan		File: MCU178A_08_MCAN.SchDoc	Size: B
Engineer: Peter Luong		Contact: http://www.ti.com/support	

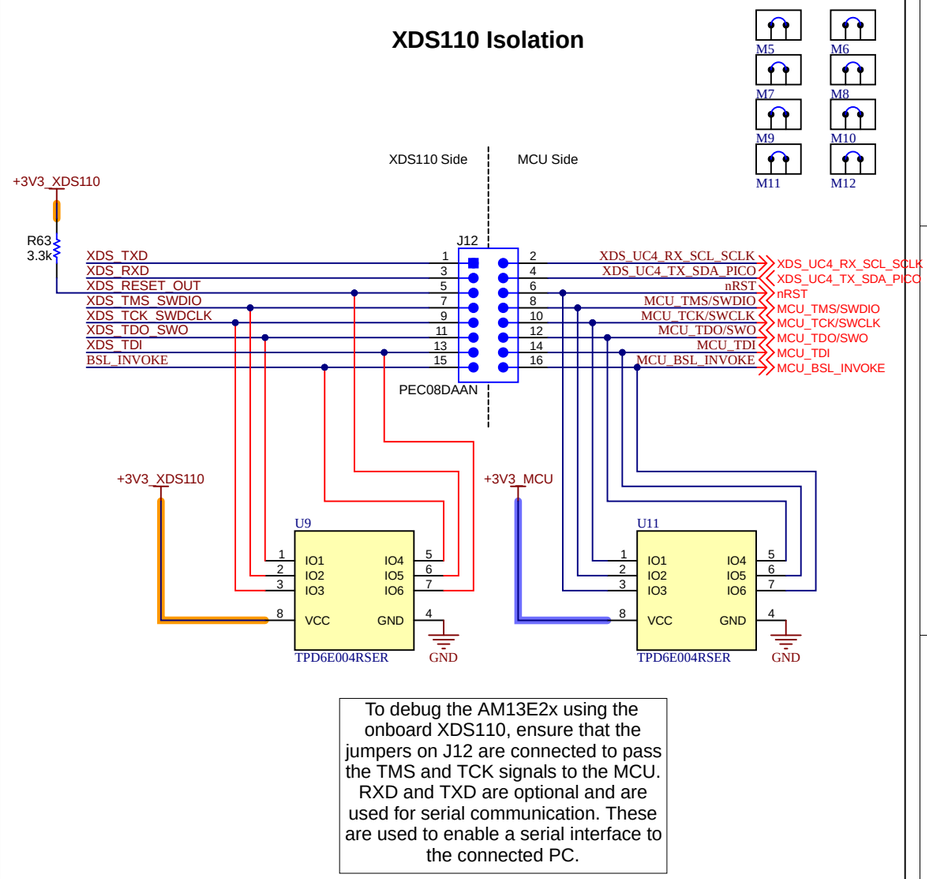
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XDS110 Device

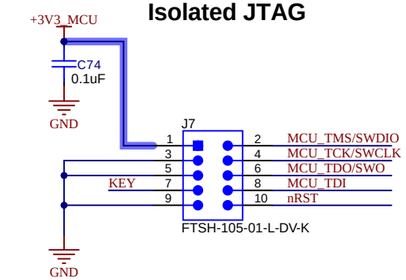


XDS110 Isolation



To debug the AM13E2x using the onboard XDS110, ensure that the jumpers on J12 are connected to pass the TMS and TCK signals to the MCU. RXD and TXD are optional and are used for serial communication. These are used to enable a serial interface to the connected PC.

Isolated JTAG



To debug the AM13E2x using an external emulator, ensure that the jumpers on J12 are disconnected to isolate the TMS and TCK signals from the on-board XDS110. RXD and TXD are optional and are used for serial communication. These are used to enable a serial interface to the connected PC.

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Orderable: LP-AM13E230		Designed for: Public Release	Mod. Date: 1/23/2026
TID #: N/A		Project Title: LP-AM13E230	
Number: MCU178	Rev: A	Sheet Title:	
SVN Rev: Version control disabled		Assembly Variant: 001	Sheet: 9 of 10
Drawn By: Brennan Hartigan		File: MCU178A_09_XDS110.SchDoc	Size: B
Engineer: Peter Luong		Contact: http://www.ti.com/support	

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FID1 FID2 FID3

FID4 FID5 FID6

MH1 MH2

MH3 MH4

H1 MAE-10

H2 MAE-10

PCB Number: MCU178
PCB Rev: A

Logo1
PCB
LOGO
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CE Logo1

Logo2
PCB
LOGO
FCC disclaimer

Logo3
PCB
LOGO
WEEE logo

Logo4
PCB
LOGO
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Variant/Label Table	
Variant	Label Text
001	Default variant
002	Alt ICs for low-stock

ZZ1
Assembly Note
These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ2
Assembly Note
These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

ZZ3
Assembly Note
These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

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Orderable: LP-AM13E230	Designed for: Public Release	Mod. Date: 10/12/2026
TID #: N/A	Project Title: LP-AM13E230	
Number: MCU178 Rev: A	Sheet Title:	
SVN Rev: Version control disabled	Assembly Variant: 001	Sheet: 10 of 10
Drawn By: Brennan Hartigan	File: MCU178A_10_Hardware.SchDoc	Size: B
Engineer: Peter Luong	Contact: http://www.ti.com/support	

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