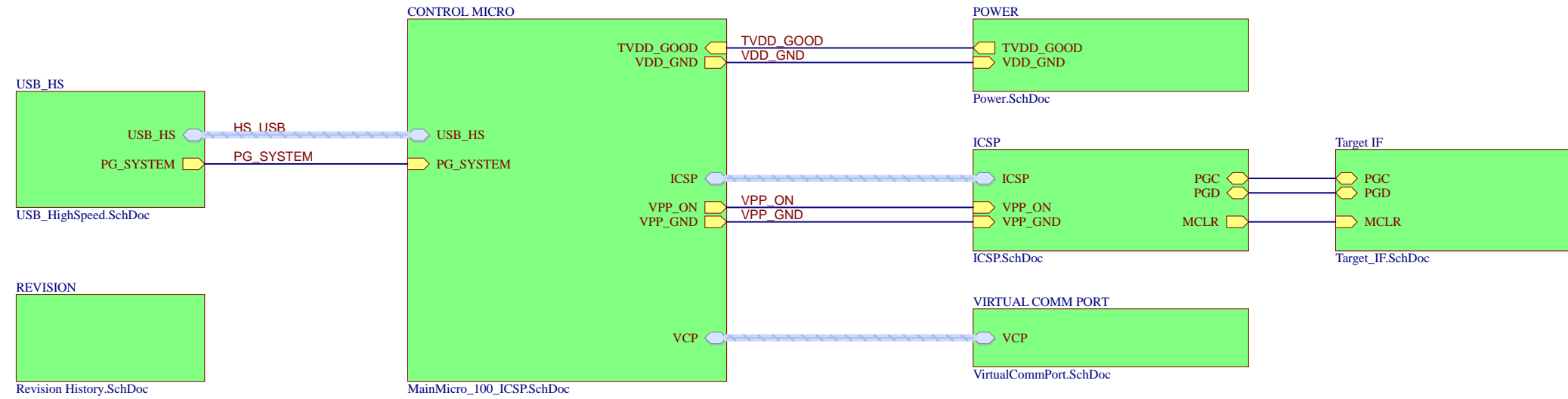


# Main System Interconnect

## Curiosity LPC

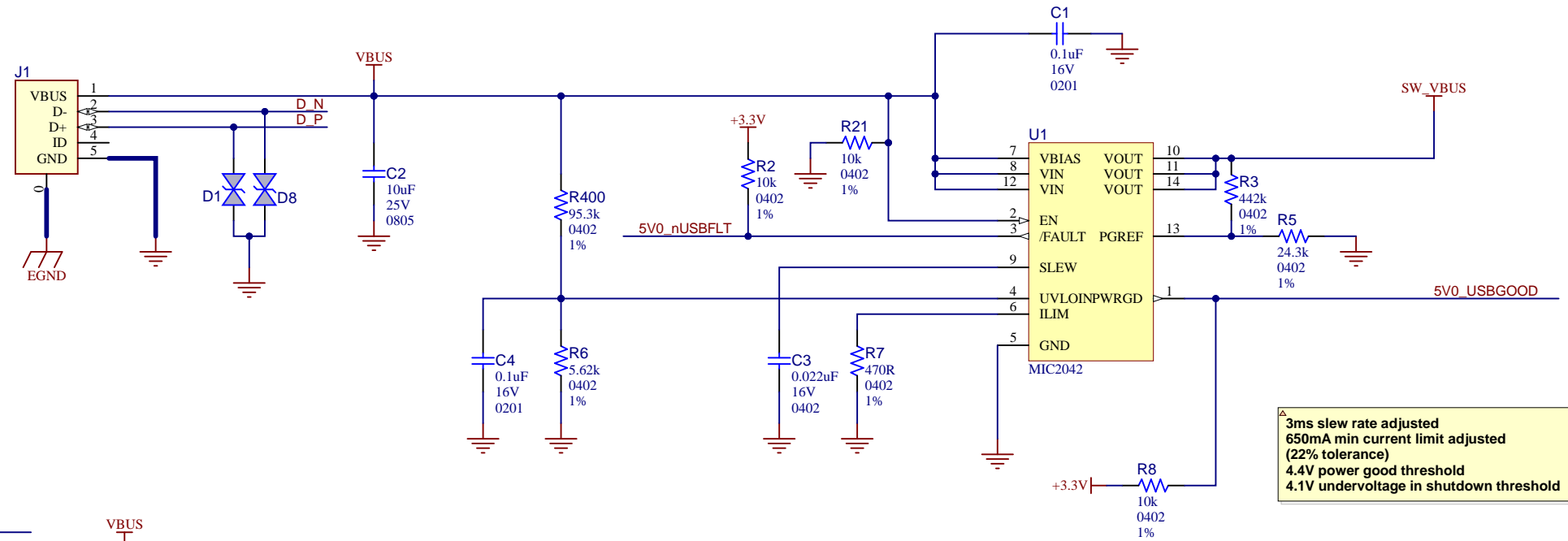


Drawn By: J.Griego/M.Ragsdale		
Engineer: J.Mouton/A.Rodriguez		
PartNumber: DM164137	Project Title <b>Curiosity LPC</b>	Variant: Production
Sheet Title <b>PKoB4 Main Block</b>		
Size B	Sch #:03-10327	Date: 10/29/2020 7:16:18 PM
Revision:4		Sheet 1 of 8
File: 03-10327.SchDoc		

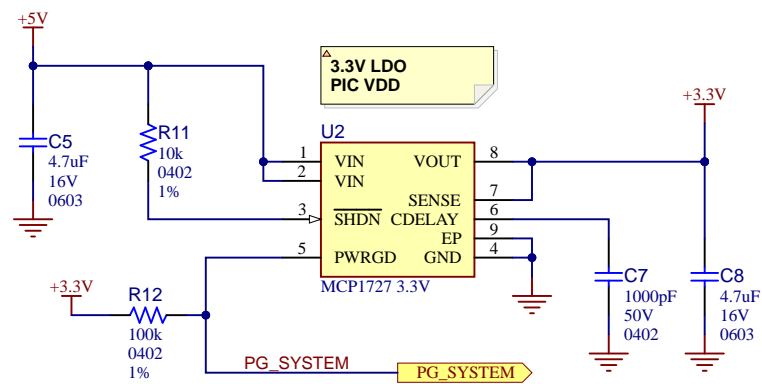
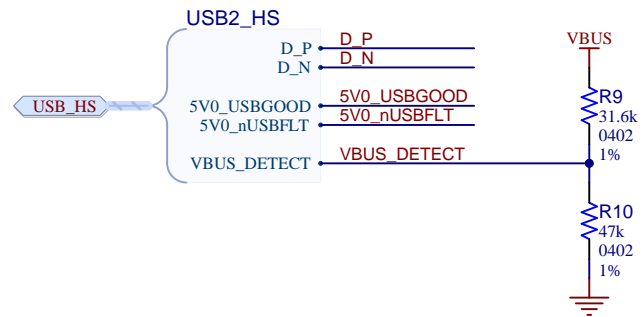


# USB High Speed

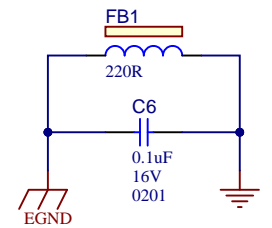
Micro B USB connector.  
5V@0.5A max (2.5W)



3ms slew rate adjusted  
650mA min current limit adjusted  
(22% tolerance)  
4.4V power good threshold  
4.1V undervoltage in shutdown threshold

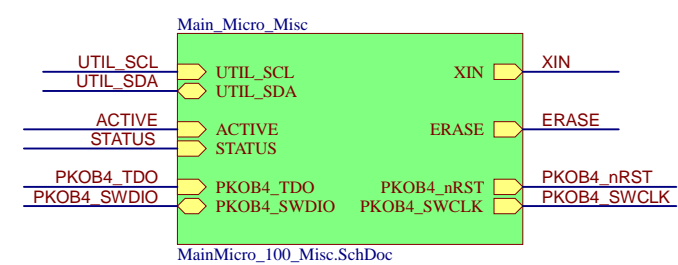
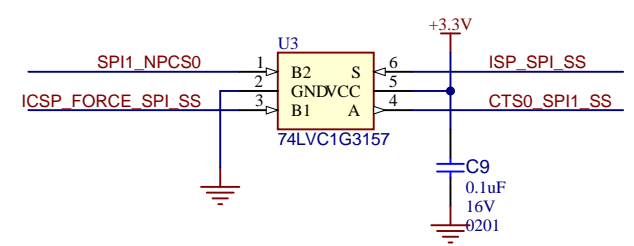
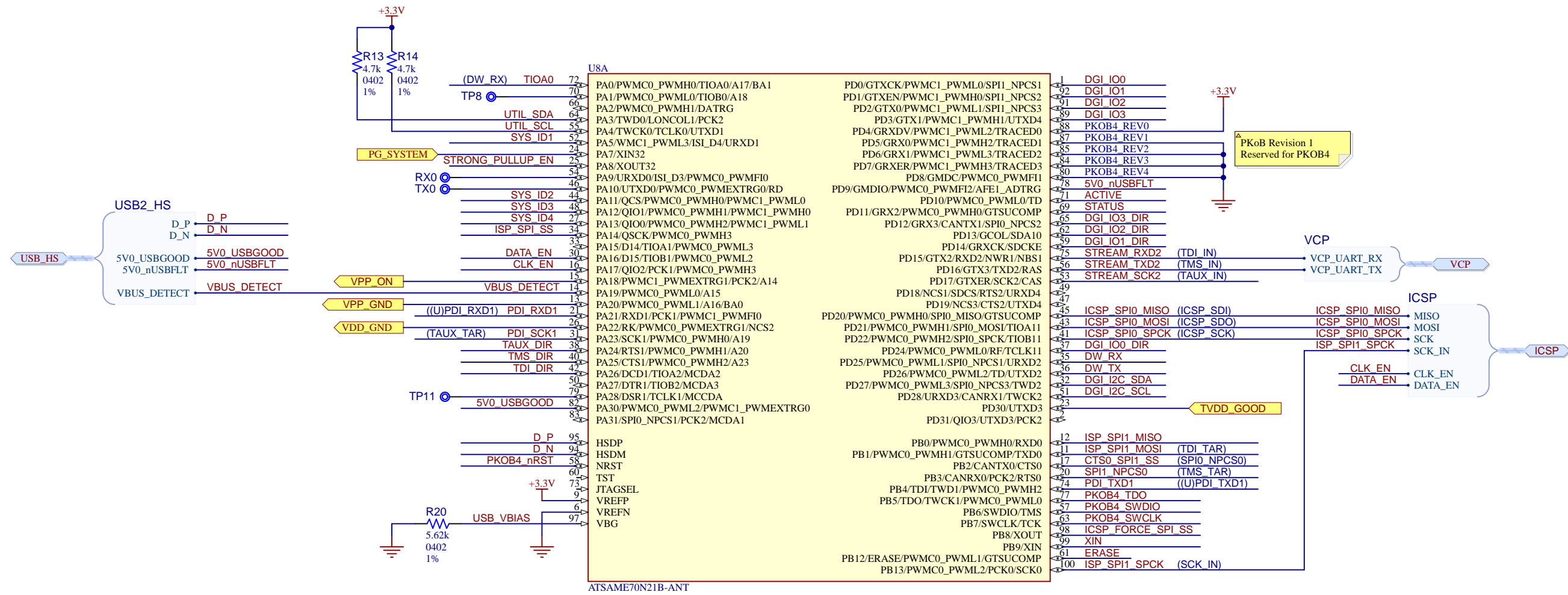


CDELAY  
C = (140na/.42v) \* t or  
t = (C\*0.42)/140na = 3ms



Drawn By: J.Griego/M.Ragsdale			
Engineer: J.Mouton/A.Rodriguez			
PartNumber: DM164137	Project Title <b>Curiosity LPC</b>	Variant: Production	
Sheet Title <b>PKoB4 USB High Speed</b>			
Size B	Sch #:03-10327	Date: 10/29/2020 7:16:18 PM	 Altium.com
Revision:4		Sheet 2 of 9	
File: USB_HighSpeed.SchDoc			

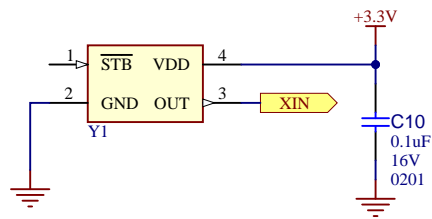
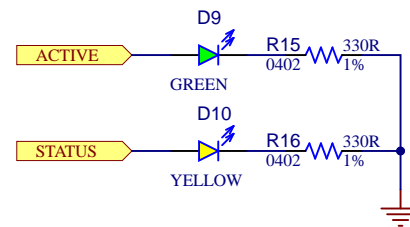
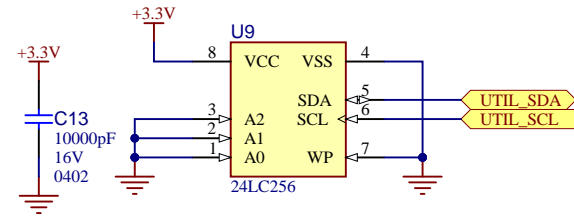
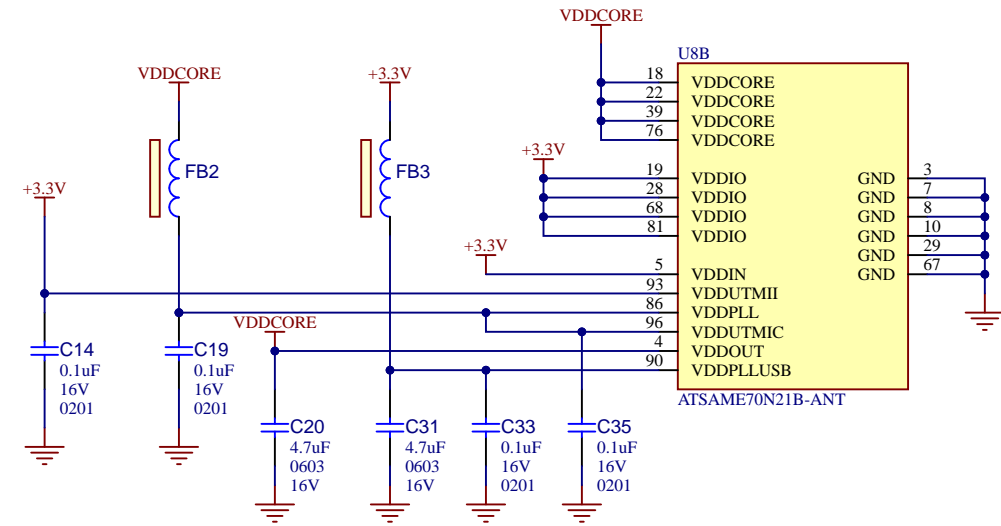
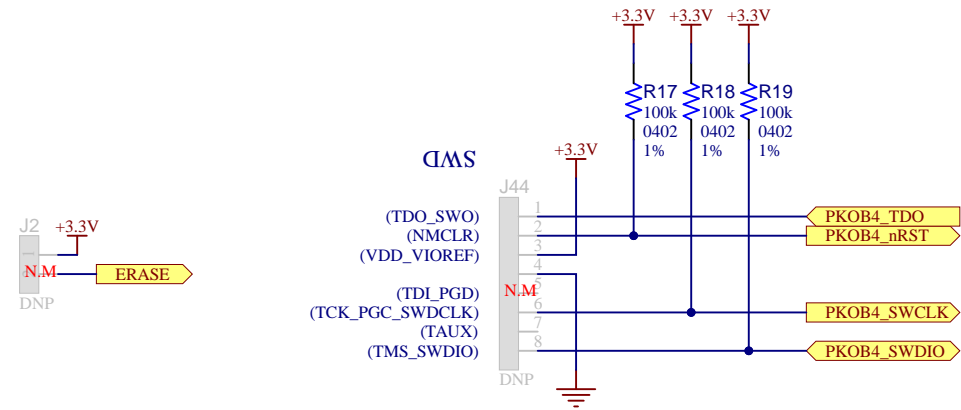
# Main Micro



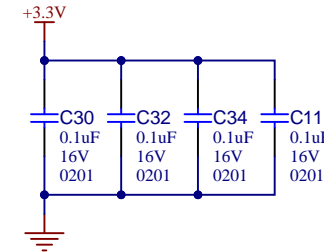
Drawn By: J.Griego/M.Ragsdale		
Engineer: J.Mouton/A.Rodriguez		
PartNumber: DM164137	Project Title <b>Curiosity LPC</b>	Variant: Production
Sheet Title <b>PKoB4 Main Micro</b>		
Size B	Sch #03-10327	Date: 10/29/2020 7:16:18 PM
Revision: 4		Sheet 3 of 9
File: MainMicro_100_ICSP.SchDoc		

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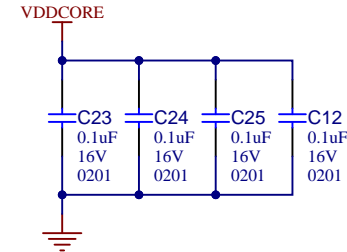
# Main Micro Misc.



VDDIO Bypass Caps

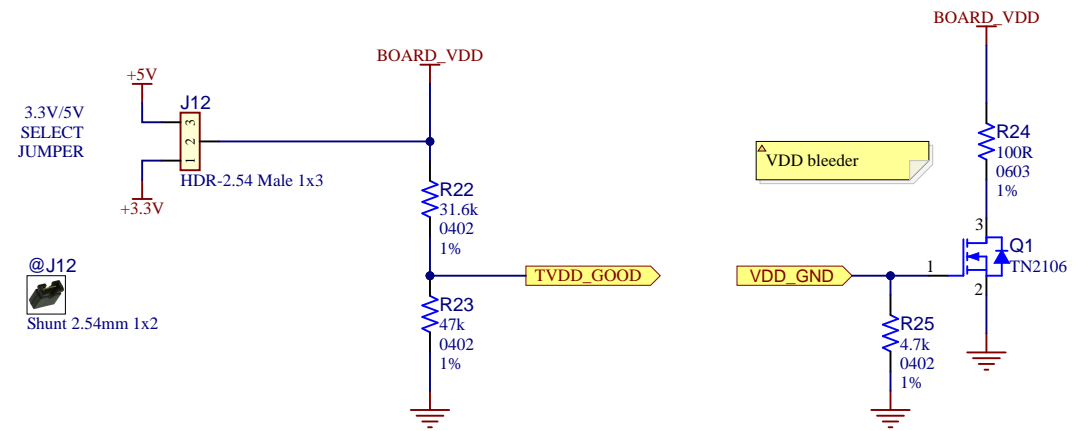




VDDCORE Bypass Caps



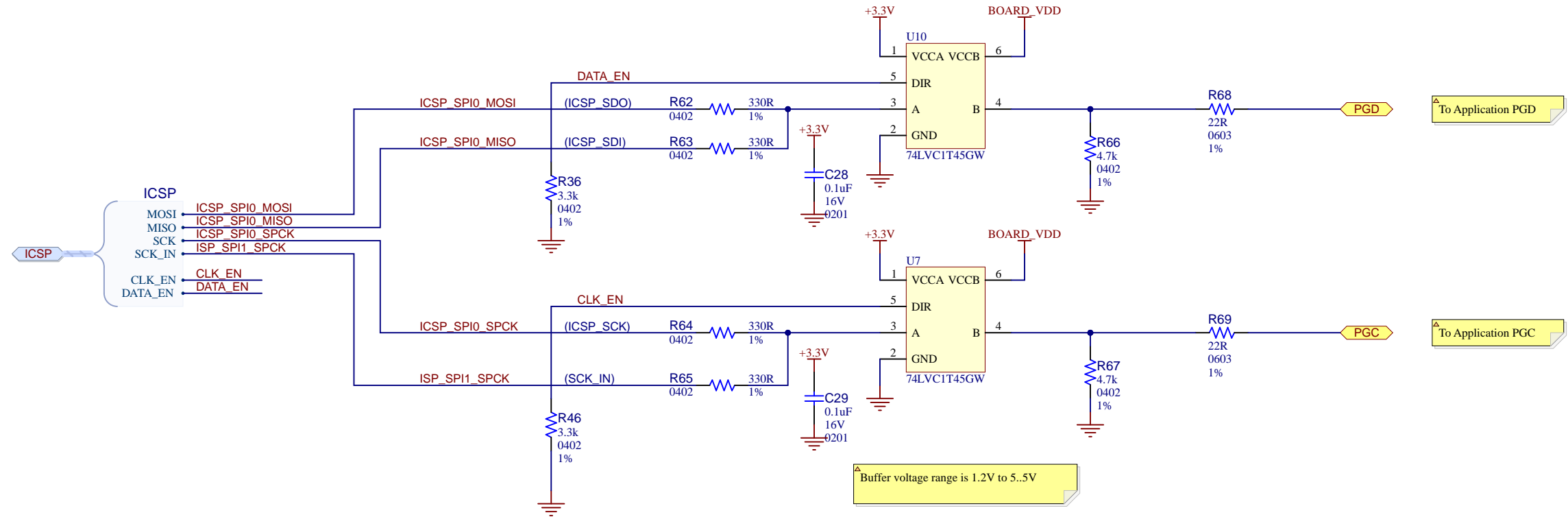
Drawn By: J.Griego/M.Ragsdale			
Engineer: J.Mouton/A.Rodriguez			
PartNumber: DM164137	Project Title <b>Curiosity LPC</b>	Variant: Production	
Sheet Title <b>PKoB4 Main Micro Misc.</b>			
Size B	Sch #:03-10327	Date: 10/29/2020 7:16:19 PM	 Altium.com
Revision:4		Sheet 4 of 9	
File: MainMicro_100_Misc.SchDoc			

# Power

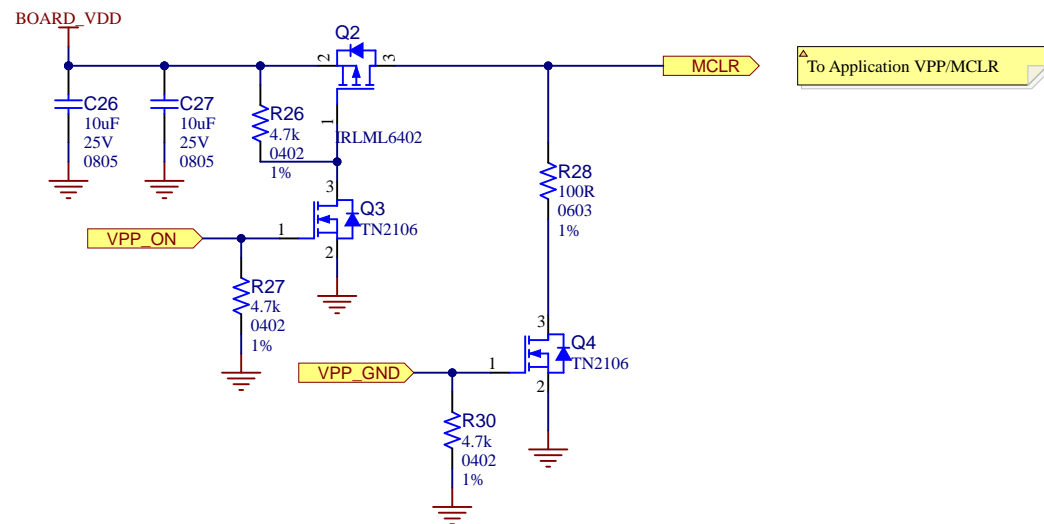


Drawn By: J.Griego/M.Ragsdale		
Engineer: J.Mouton/A.Rodriguez		
PartNumber: DM164137	Project Title <b>Curiosity LPC</b>	Variant: Production
Sheet Title <b>Power</b>		Designed with 
Size B	Sch #:03-10327	Date: 10/29/2020 7:16:19 PM
Revision:4		Sheet 5 of 9
File: Power.SchDoc		

# ICSP



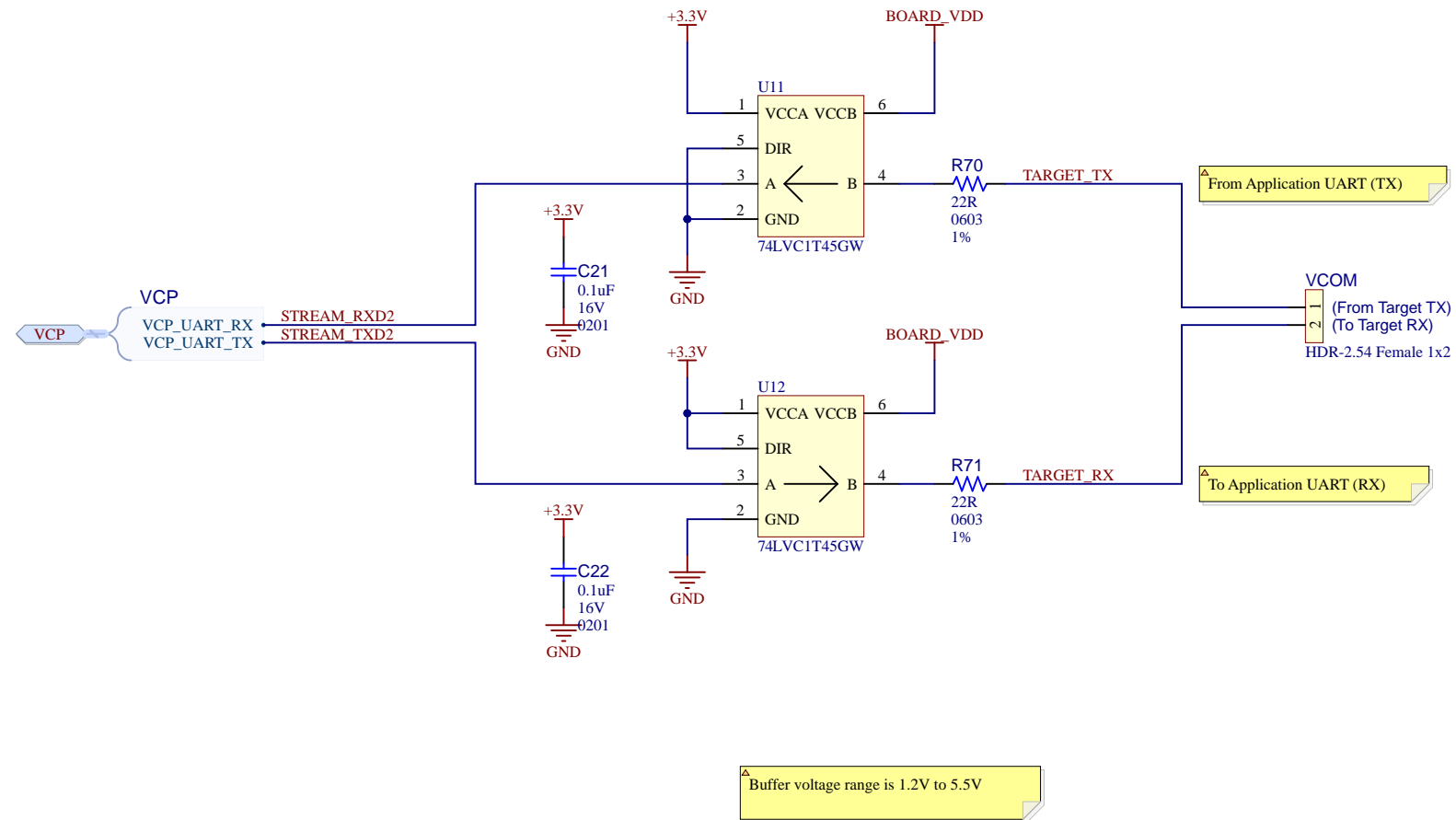
# VPP Switch



LABEL1  
02- -R1  
JIT  
LABEL Need Help Small

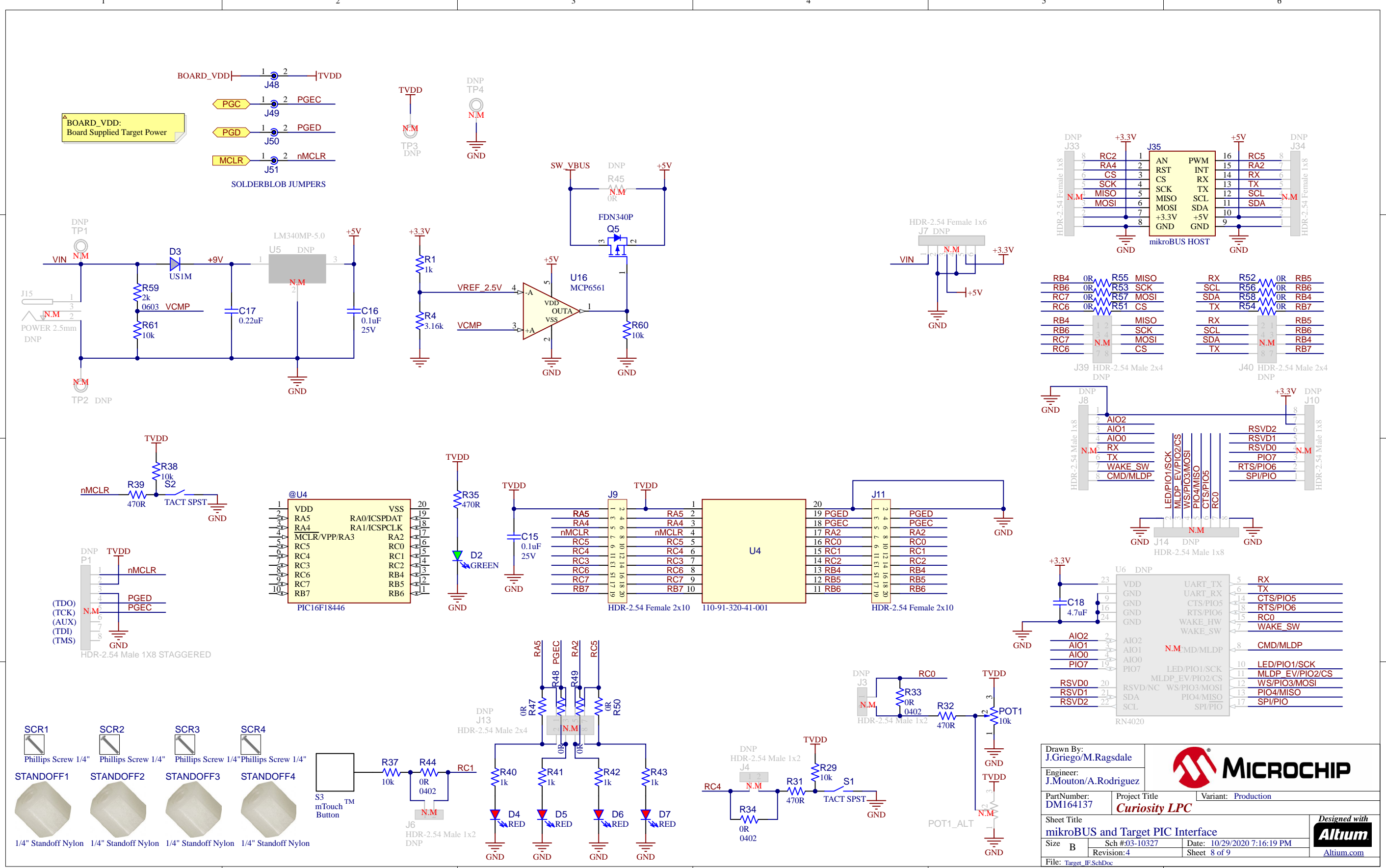
Drawn By: J.Griego/M.Ragsdale			
Engineer: J.Mouton/A.Rodriguez			
PartNumber: DM164137	Project Title <b>Curiosity LPC</b>	Variant: Production	
Sheet Title <b>ICSP</b>			
Size B	Sch #:03-10327	Date: 10/29/2020 7:16:19 PM	 Altium.com
Revision:4		Sheet 6 of 8	
File: ICSP.SchDoc			

# Virtual Comm Port



Drawn By: J.Griego/M.Ragsdale		
Engineer: J.Mouton/A.Rodriguez		
PartNumber: DM164137	Project Title <b>Curiosity LPC</b>	Variant: Production
Sheet Title <b>Virtual Comm Port</b>		
Size B	Sch #:03-10327	Date: 10/29/2020 7:16:19 PM
Revision:4		Sheet 7 of 9
File: VirtualCommPort.SchDoc		





Drawn By: J.Griego/M.Ragsdale  
 Engineer: J.Mouton/A.Rodriguez  
 PartNumber: DM164137  
 Project Title: Curiosity LPC  
 Variant: Production  
 Sheet Title: mikroBUS and Target PIC Interface  
 Size: B  
 Sch #: 03-10327  
 Date: 10/29/2020 7:16:19 PM  
 Revision: 4  
 Sheet: 8 of 9  
 File: Target\_IF.SchDoc

**MICROCHIP**

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# Revision History

**Rev. 2:** **2015-03-31**

△ Move Silkscreen of R14 so it can be read. Swap RB4 and RC7 connections. Change @U4 to PIC16F1619-I/P.

**Rev. 2.2:** **2018-08-02**



△ Change @U4 to PIC16F18346-I/P.

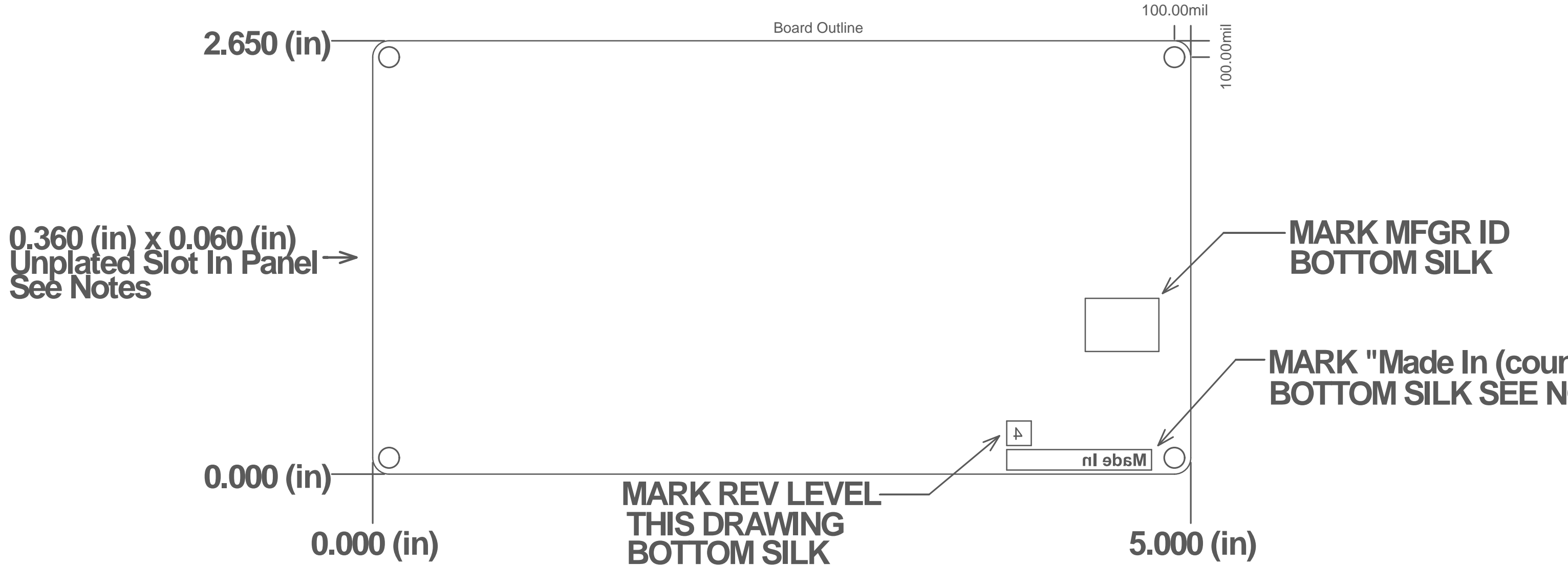
**Rev. 3:** **2019-10-29**

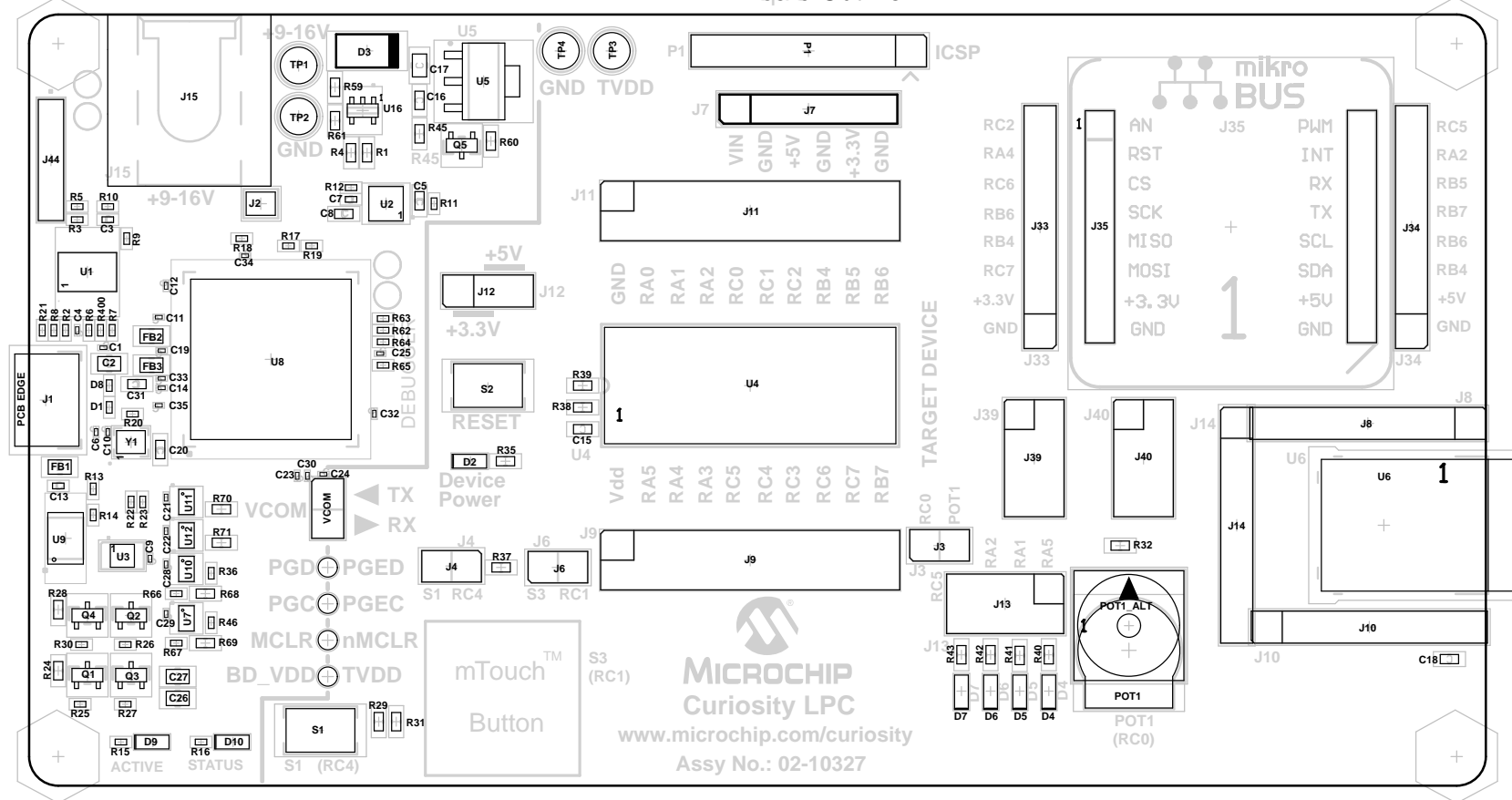
△ Updated to use PkoB 4 debugger design. All components updated to MCL standards.

**Rev. 4:** **2019-12-11**

△ Added missing silkscreen text.

Drawn By: J.Griego/M.Ragsdale		
Engineer: J.Mouton/A.Rodriguez		
PartNumber: DM164137	Project Title <b>Curiosity LPC</b>	Variant: Production
Sheet Title <b>Revision History</b>		<i>Designed with</i>  <small>Altium.com</small>
Size B	Sch #:03-10327	Date: 10/29/2020 7:16:19 PM
File: Revision History.SchDoc		Revision:4 Sheet 9 of 9





STANDOFF4

STANDOFF1



PWM	AN
INT	RST
RX	CS
TX	SCK
SCL	MISO
SDA	MOSI
+5V	+3.3V
GND	GND

LABEL1

R52		R55	
R56		R53	
R58		R57	
R54		R51	

R33

R44

R34

R47		R48		R49		R50	
R47		R48		R49		R50	

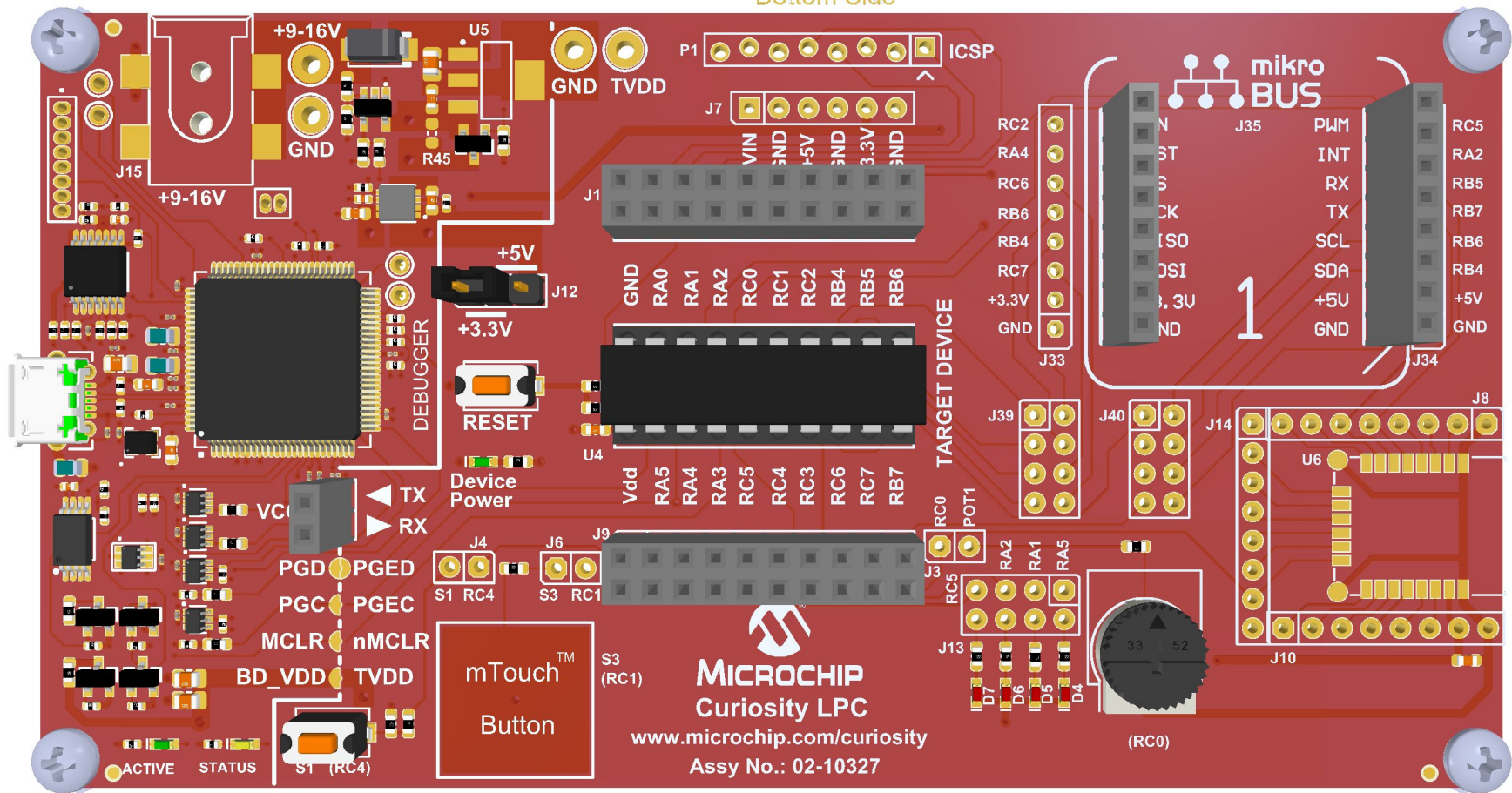


04-10327 Rev

STANDOFF3

STANDOFF2

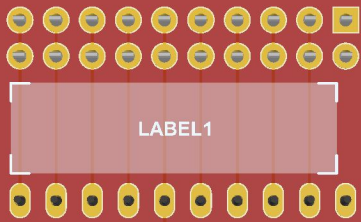
### Bottom Side



04-10327 Rev

mikro  
BUS

- |     |       |
|-----|-------|
| PWM | AN    |
| INT | RST   |
| RX  | CS    |
| TX  | SCK   |
| SCL | MISO  |
| SDA | MOSI  |
| +5V | +3.3V |
| GND | GND   |



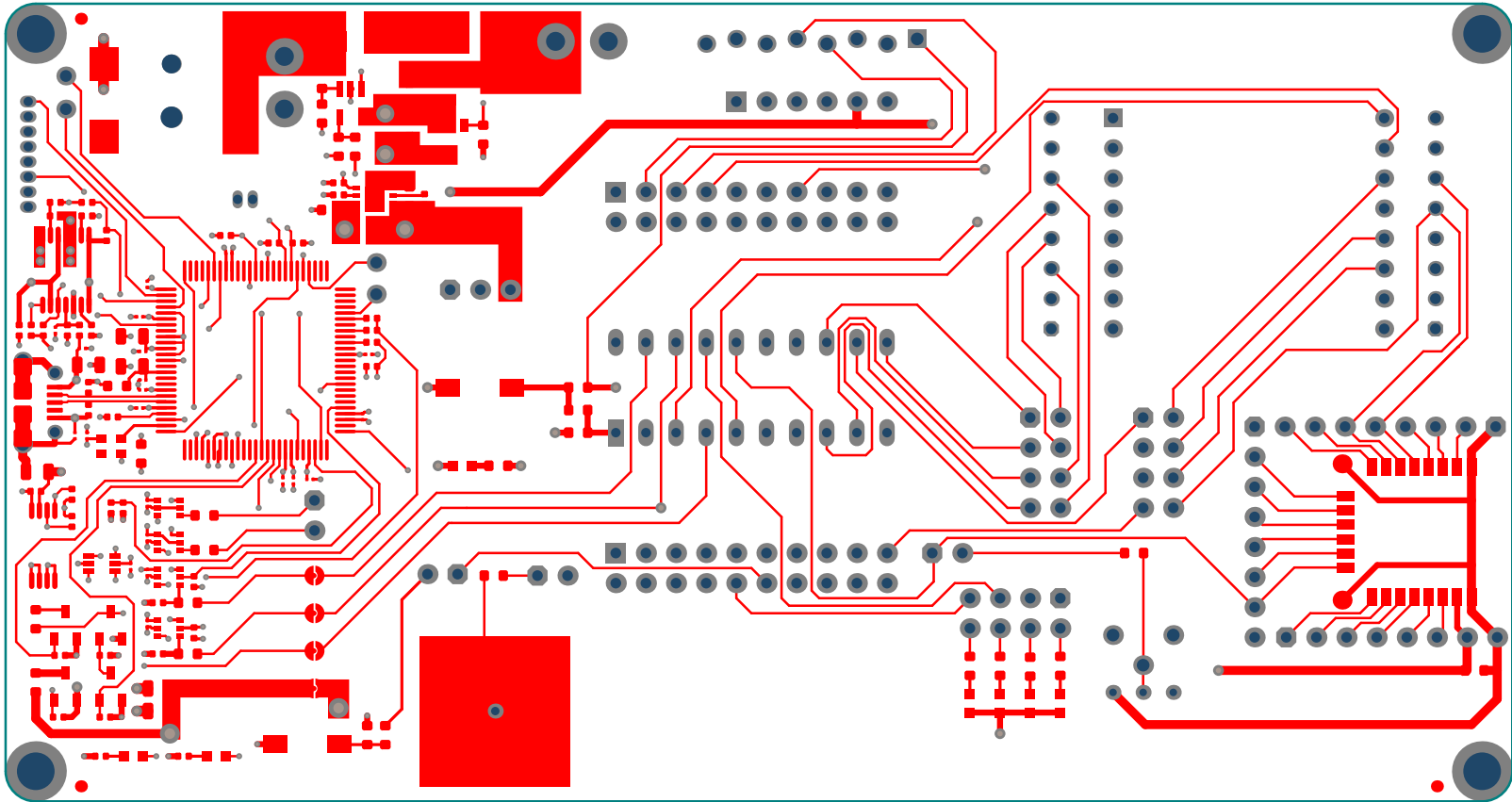
- |     |     |
|-----|-----|
| R52 | R55 |
| R56 | R53 |
| R58 | R57 |
| R54 | R51 |

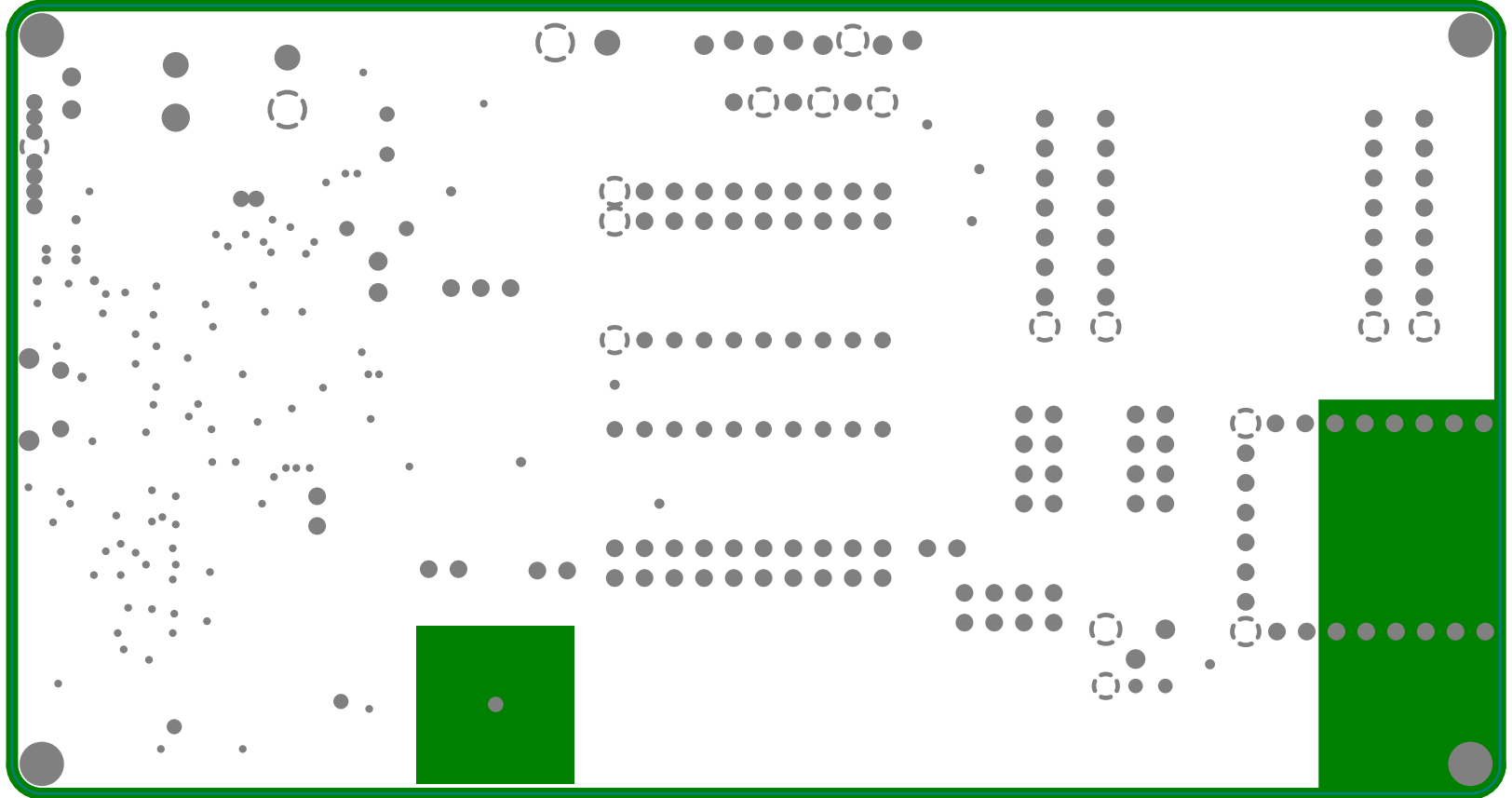
- |     |     |     |     |
|-----|-----|-----|-----|
| R47 | R48 | R49 | R50 |
|-----|-----|-----|-----|

- |     |     |
|-----|-----|
| R33 | R44 |
|-----|-----|

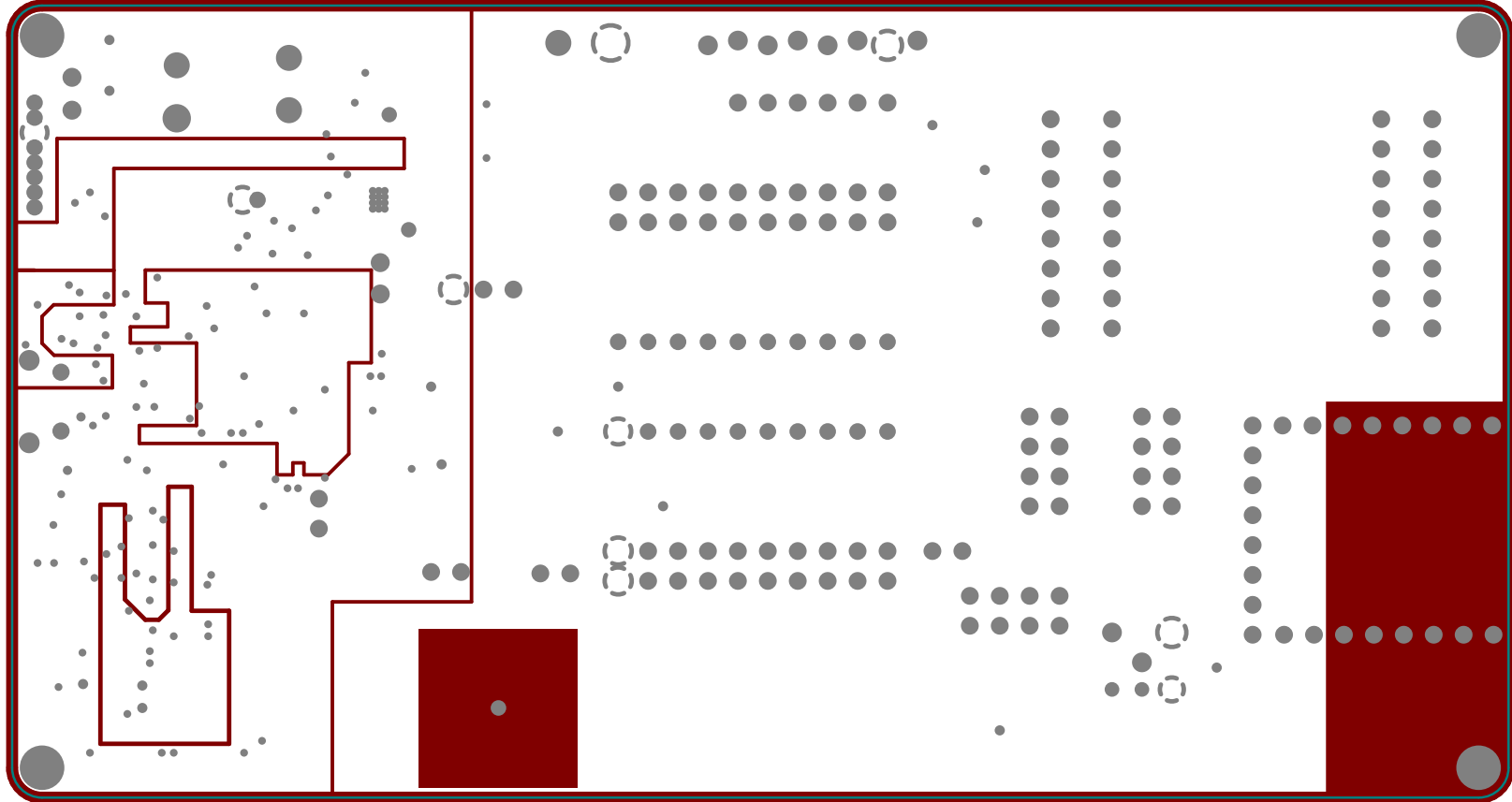
04-10327 Rev

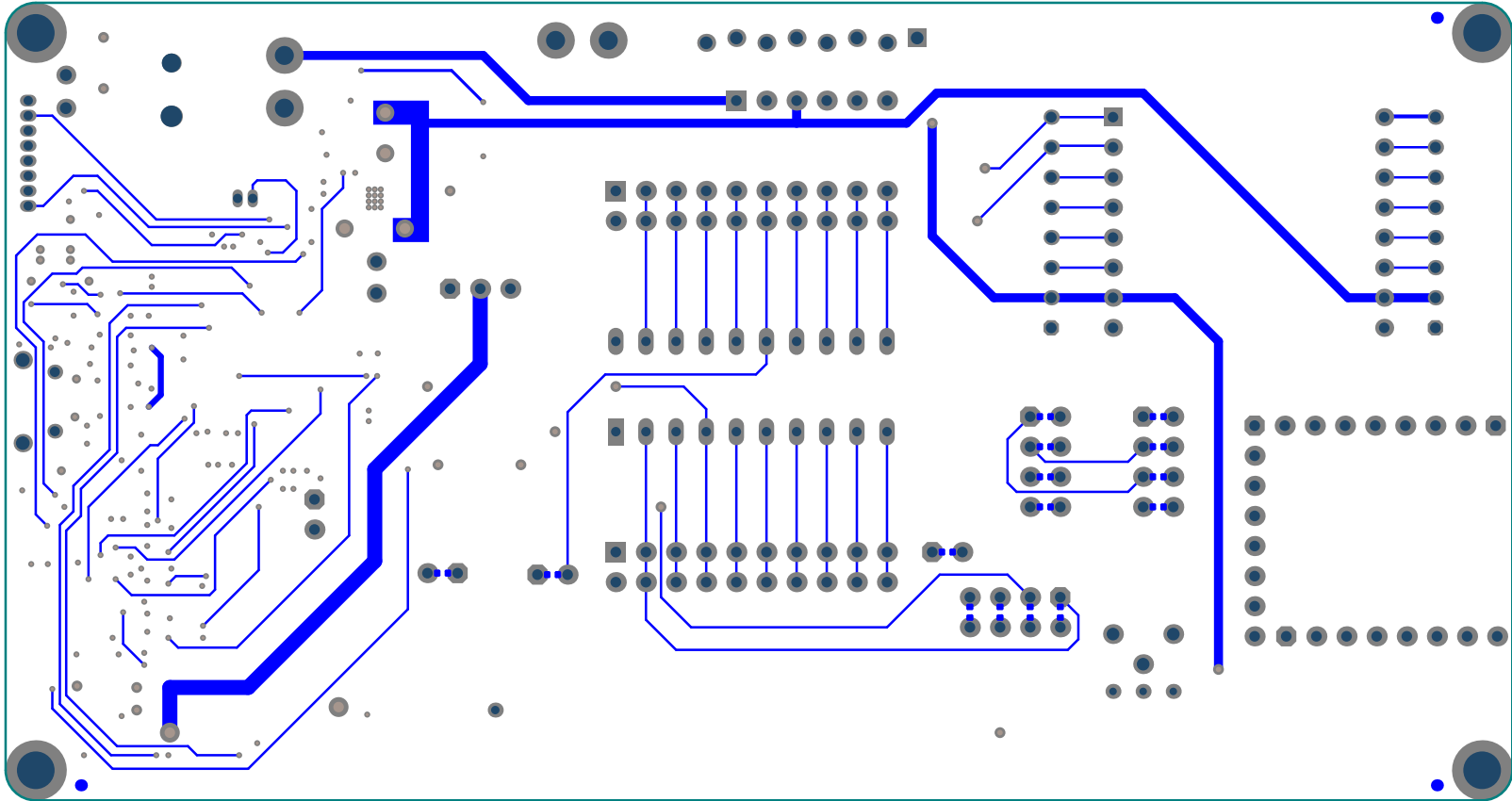












# Component list

Bill of Materials Fitted for Variant [Production] of Project [Low Pin Count Curiosity.PrjPcb] (No PCB Document Selected)

Source Data From: Low Pin Count Curiosity.PrjPcb  
 Project: Low Pin Count Curiosity.PrjPcb  
 Variant: Production



Report Date: 10/29/2020 7:16 PM  
 Print Date: 10/29/2020 7:14:50 PM

Fitted	Designator	Quantity	Value	Manufacturer 1	Manufacturer Part Number 1	Description
Fitted	@J12	1	Shunt 2.54mm 1x2	Würth Electronics Inc.	60900213421	
Fitted	@U4	1	PC16F18446	Microchip Technology	PC16F18446-IP	
Fitted	C1, C4, C6, C9, C10, C11, C12, C14, C19, C21, C22, C23, C24, C25, C28, C29, C30, C32, C33, C34, C35	21	0.1uF	Murata Electronics North America	GRM033R61C104KE84D	Capacitor
Fitted	C2, C26, C27	3	10uF	TDK Corporation	C2012X5R1E106K125AB	Capacitor
Fitted	C3	1	0.022uF	Samsung Electro-Mechanics America, Inc	CL05B223K05NNNC	Capacitor
Fitted	C5, C8, C18, C20, C31	5	4.7uF	TDK Corporation, KEMET	C1608X5R1C475K080AC, C0603C475K8PACTU	Capacitor
Fitted	C7	1	1000pF	Murata	GRM155R71H102KA01D	Capacitor
Fitted	C13	1	10000pF	KEMET	C0402C103K4RACTU	Capacitor
Fitted	C15, C16	2	0.1uF	KEMET	C0603C104MBRACTU	Capacitor
Fitted	C17	1	0.22uF	Murata	GCM21BR71H224KA37L	Capacitor
Fitted	D1, D8	2	PGB101	Littlefuse	PGB1010402KR	
Fitted	D2, D9	2	GREEN	Lite-On, Lite-On Inc	LTST-C190GKT, LTST-C191KGKT	LED
Fitted	D3	1	US1M	Vishay	US1M-E3/61T	
Fitted	D4, D5, D6, D7	4	RED	Lite-On	LTST-C190KRKT	LED
Fitted	D10	1	YELLOW	Lite-On	LTST-C190YKT	LED
Fitted	FB1	1	220R	Murata Electronics North America	BLM21PG221SN1D	FERRITE 180R 1.5A SMD 0603
Fitted	FB2, FB3	2	600R	TDK Corporation	MPZ2012S601A T000	FERRITE 180R 1.5A SMD 0603
Fitted	J1	1	USB2.0 MICRO-B FEMALE	FCI	10118194-0001LF	
Fitted	J9, J11	2	HDR-2.54 Female 2x10	SHENZHEN JUNHAO ENGINEERING	214-2010-0021-000	
Fitted	J12	1	HDR-2.54 Male 1x3	JAMECO VALUEPRO	7000-1X3SG-R	
Fitted	J35	1	microBUS HOST	Sullins Connector Solutions	PPTC081LFBN-RC	
Fitted	LABEL1	1	LABEL Need Help Small			
Fitted	POT1	1	10k	Bourns	3352T-1-103	Resistor Var
Fitted	Q1, Q3, Q4	3	TN2106	Microchip Technology	TN2106K1-G	Transistor MOS
Fitted	Q2	1	IRLML6402	International Rectifier	IRLML6402TRPBF	Transistor MOS
Fitted	Q5	1	FDN340P	Fairchild Semiconductor	FDN340P	Transistor MOS
Fitted	R1, R40, R41, R42, R43	5	1k	Panasonic	ERJ-3EKF1001V	Resistor
Fitted	R2, R8, R11, R21	4	10k	Panasonic	ERJ-2RKF1002X	Resistor
Fitted	R3	1	442k	Samsung Electro-Mechanics America, Inc	RC1005F4423CS	Resistor
Fitted	R4	1	3.16k	Panasonic	ERJ-3EKF3161V	Resistor
Fitted	R5	1	24.3k	Samsung	RC1005F2432CS	Resistor
Fitted	R6, R20	2	5.62k	Vishay Dale	CRCW04025K62FKED	Resistor
Fitted	R7	1	470R	Yageo	RC0402FR-07470RL	Resistor
Fitted	R9, R22	2	31.6k	Panasonic	ERJ-2RKF3162X	Resistor
Fitted	R10, R23	2	47k	Panasonic - ECG	ERJ-2RKF4702X	Resistor
Fitted	R12, R17, R18, R19	4	100k	Panasonic	ERJ-2RKF1003X	Resistor
Fitted	R13, R14, R25, R26, R27, R30, R66, R67	8	4.7k	Yageo	RC0402FR-074K7L	Resistor
Fitted	R15, R16, R62, R63, R64, R65	6	330R	Yageo	RC0402FR-07330RL	Resistor
Fitted	R24, R28	2	100R	ROHM	MCR03EZPFX1000	Resistor
Fitted	R29, R37, R38, R60, R61	5	10k	Panasonic	ERJ-3EKF1002V	Resistor
Fitted	R31, R32, R35, R39	4	470R	Panasonic	ERJ-3EKF4700V	Resistor
Fitted	R33, R34, R44, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58	15	0R	Panasonic	ERJ-2GEOR00X	Resistor
Fitted	R36, R46	2	3.3k	Panasonic - ECG	ERJ-2RKF3301X	Resistor
Fitted	R59	1	2k	Panasonic	ERJ-3EKF2001V	Resistor
Fitted	R68, R69, R70, R71	4	22R	Yageo	RC0603FR-0722RLL	Resistor
Fitted	R400	1	95.3k	Rohm Semiconductor	MCR01MRTF9532	Resistor
Fitted	S1, S2	2	TACT SPST	C&K Components	KSR231GLFS	Switch
Fitted	SCR1, SCR2, SCR3, SCR4	4	Phillips Screw 1/4"	Keystone Electronics	9900	
Fitted	STANDOFF1, STANDOFF2, STANDOFF3, STANDOFF4	4	1/4" Standoff Nylon	Keystone Electronics	1902A	
Fitted	U1	1	MIC2042	Microchip Technology	MIC2042-1YTS	IC SMT, MIC2042, DISTRIBUTION SW SGL 14-TSSOP
Fitted	U2	1	MCP1727 3.3V	Microchip Technology	MCP1727-3302EMF	LDO
Fitted	U3	1	74LVC1G3157	Texas Instruments	SN74LVC1G3157DCKR	
Fitted	U4	1	110-91-320-41-001	Mil-Max	110-99-320-41-001	Connector
Fitted	U7, U10, U11, U12	4	74LVC1T45GW	NXP USA Inc.	74LVC1T45GW,125	
Fitted	U8	1	ATSAME70N21B-ANT	Microchip Technology	ATSAME70N21B-ANT	
Fitted	U9	1	24LC256	Microchip Technology	24LC256T-E/ST	EEPROM 12C
Fitted	U16	1	MCP6561	Microchip	MCP6561T-E/OT	OPAMP
Fitted	VCOM	1	HDR-2.54 Female 1x2	Samtec Inc	SSW-102-01-T-S	
Fitted	Y1	1	12.00 MHz	Microchip Technology Inc	DSC6011J11A-012.0000	
Not Fitted	J2	0	HDR-1.27 Male 1x2	Digkey	952-3598-ND	
Not Fitted	J3, J4, J6	0	HDR-2.54 Male 1x2	Molex Inc	22284020	
Not Fitted	J7	0	HDR-2.54 Female 1x6	FCI	75915-306LF	
Not Fitted	J8, J10, J14	0	HDR-2.54 Male 1x8	FCI	68001-108HLF	CON HDR-2.54 Female 1x8 Gold TH
Not Fitted	J13, J39, J40	0	HDR-2.54 Male 2x4	Samtec	TSW-104-08-L-D	
Not Fitted	J15	0	POWER 2.5mm	CUI Inc	PJ-002BH-SMT-TR	
Not Fitted	J33, J34	0	HDR-2.54 Female 1x8	Sullins	PPTC081LFBN-RC	CON HDR-2.54 Female 1x8 Gold TH
Not Fitted	J44	0	HDR-1.27 Female 1x8	Greenconn	FSEA120-0802A002B1AB	CON HDR-2.54 Female 1x8 Gold TH
Not Fitted	P1	0	HDR-2.54 Male 1X8 STAGGERED			CON HDR-2.54 Female 1x8 Gold TH
Not Fitted	POT1_ALT	0	10k	Bourns Inc.	3386P-1-103TLF	Resistor Var
Not Fitted	R45	0	0R	Panasonic	ERJ-3GSY0R00V	Resistor
Not Fitted	TP1, TP3	0	TP LOOP Red	Keystone	5010	Test Point
Not Fitted	TP2, TP4	0	Duplicate, Use MISC0025	Keystone	5011	Test Point
Not Fitted	U5	0	LM340MP-5.0	National Semiconductor	LM340MP-5.0	LDO
Not Fitted	U6	0	RN4020	Microchip Technology	RN4020-V/RMBEC133	

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Approved

Notes