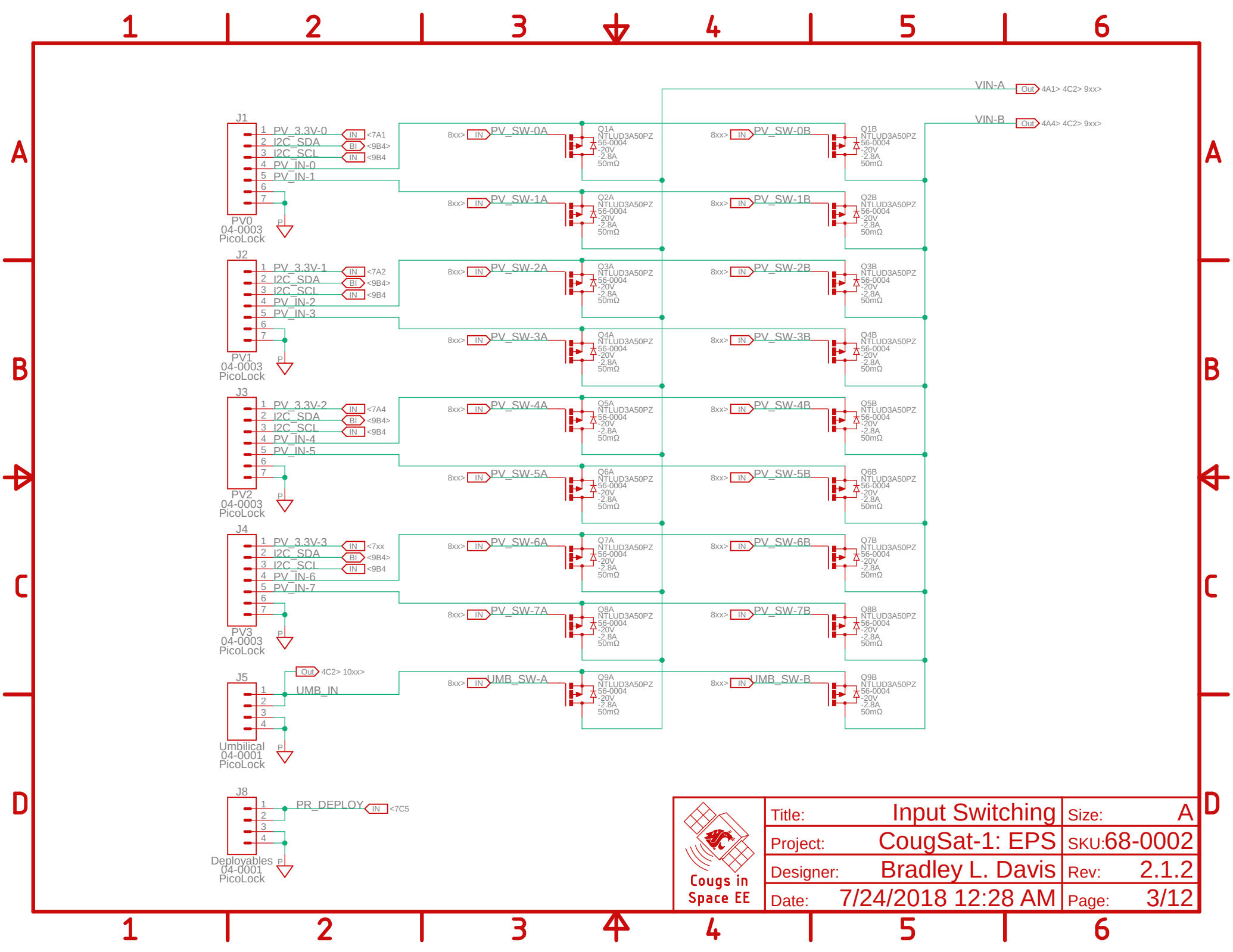


Page 1: Block Diagram
Page 2: Power Rails
Page 3: Input Switching Matrix
Page 4: Batteries
Page 5: 3.3V Regulation
Page 6: Output Switching Matrix
Page 7: Output Switching Matrix
Page 8: Switching Default States
Page 9: PMIC

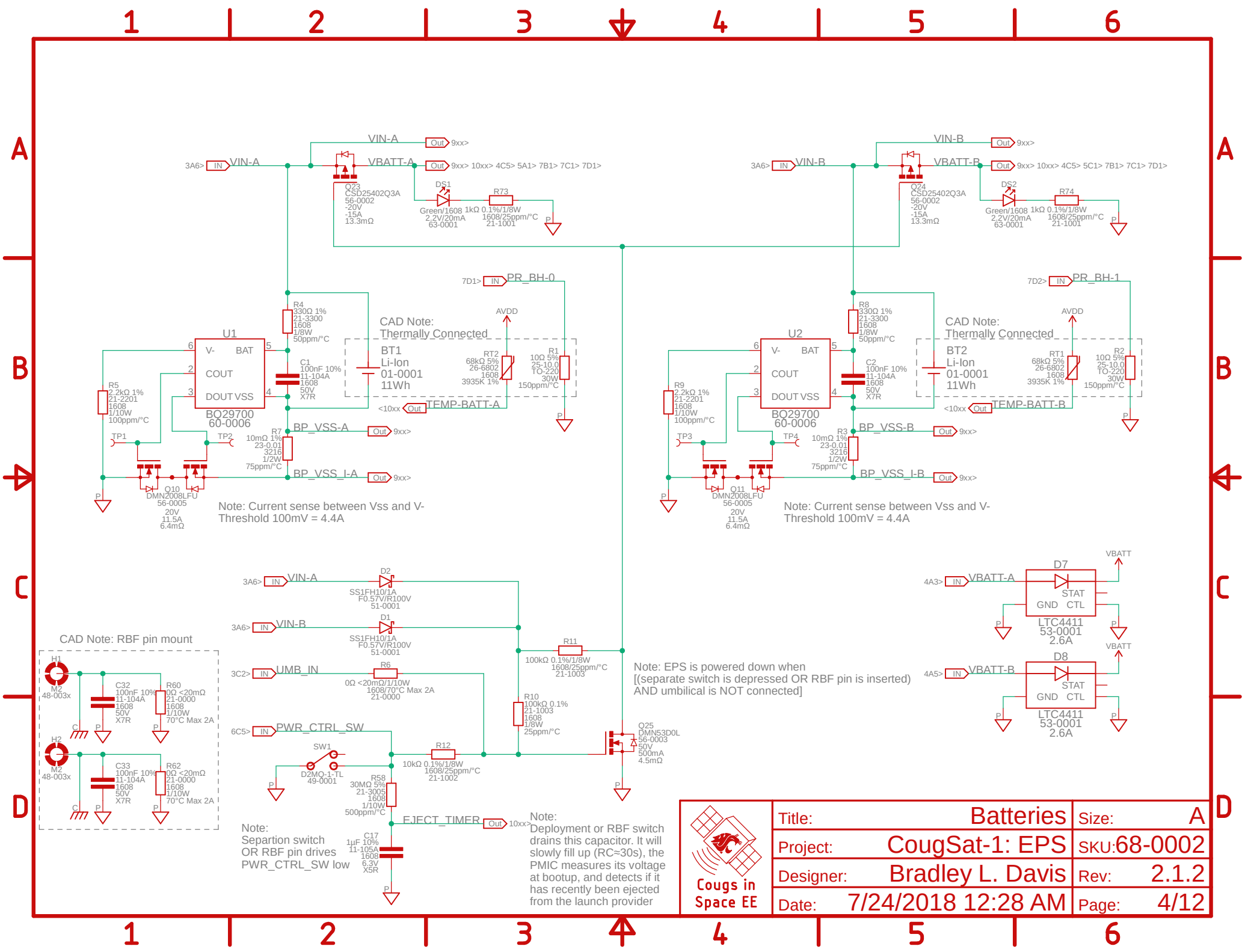
Page 10: Backplane Digital & ADCs
Page 11: ADCs
Page 12: Mechanical Layout



Title:	Block Diagram	Size:	A
Project:	CougSat-1: EPS	SKU:	68-0002
Designer:	Bradley L. Davis	Rev:	2.1.2
Date:	7/24/2018 12:28 AM	Page:	1/12



Title:	Input Switching	Size:	A
Project:	CougSat-1: EPS	SKU:	68-0002
Designer:	Bradley L. Davis	Rev:	2.1.2
Date:	7/24/2018 12:28 AM	Page:	3/12



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A

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C

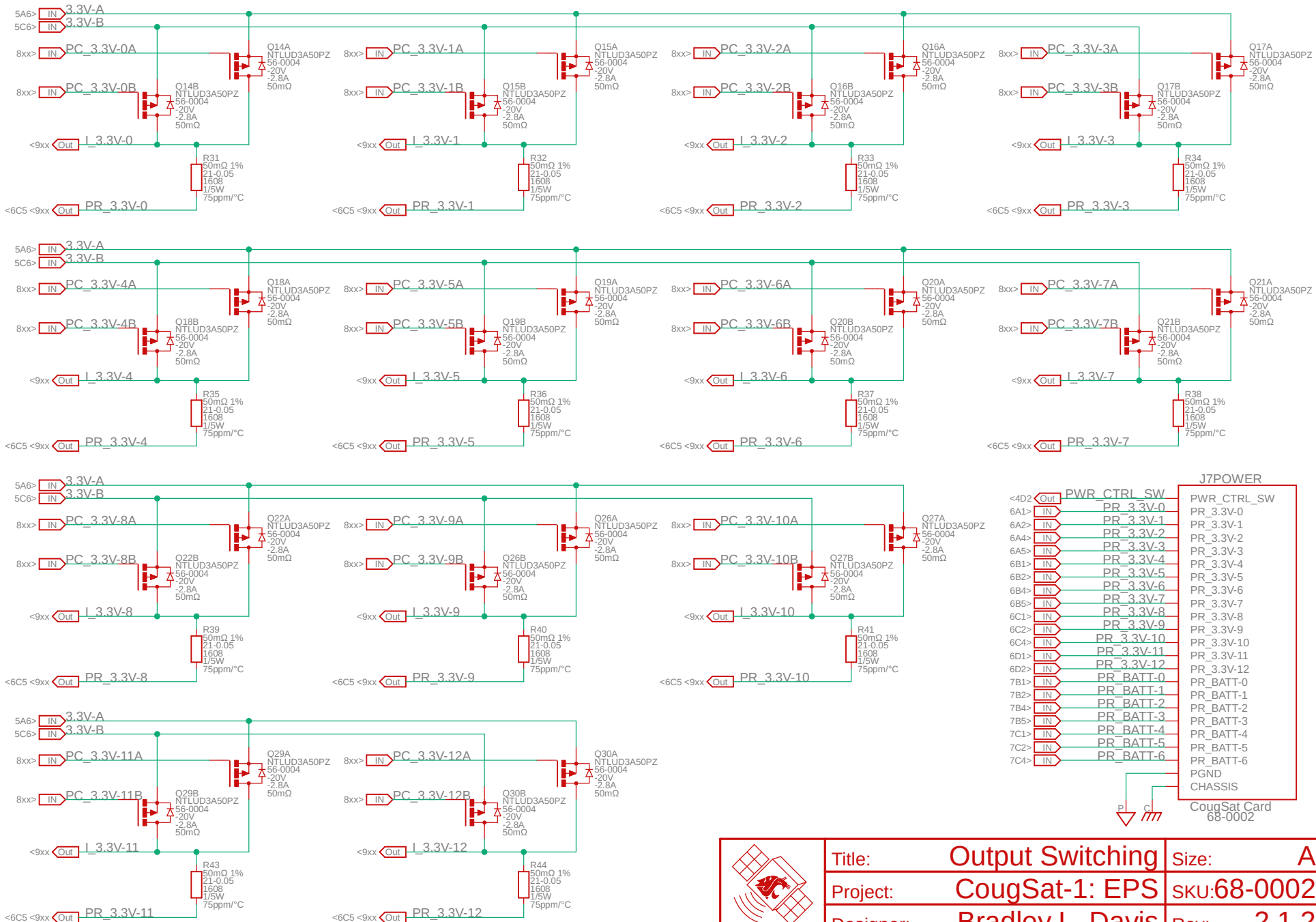
D

A

B

C

D



J7POWER	
<4D2> Out	PWR_CTRL_SW
6A1> IN	PR_3.3V-0
6A2> IN	PR_3.3V-1
6A4> IN	PR_3.3V-2
6A5> IN	PR_3.3V-3
6B1> IN	PR_3.3V-4
6B2> IN	PR_3.3V-5
6B4> IN	PR_3.3V-6
6B5> IN	PR_3.3V-7
6C1> IN	PR_3.3V-8
6C2> IN	PR_3.3V-9
6C4> IN	PR_3.3V-10
6D1> IN	PR_3.3V-11
6D2> IN	PR_3.3V-12
7B1> IN	PR_BATT-0
7B2> IN	PR_BATT-1
7B4> IN	PR_BATT-2
7B5> IN	PR_BATT-3
7C1> IN	PR_BATT-4
7C2> IN	PR_BATT-5
7C4> IN	PR_BATT-6
PGND	
CHASSIS	
CougSat Card 68-0002	



Title:	Output Switching	Size:	A
Project:	CougSat-1: EPS	SKU:	68-0002
Designer:	Bradley L. Davis	Rev:	2.1.2
Date:	7/24/2018 12:28 AM	Page:	6/12

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A

A

B

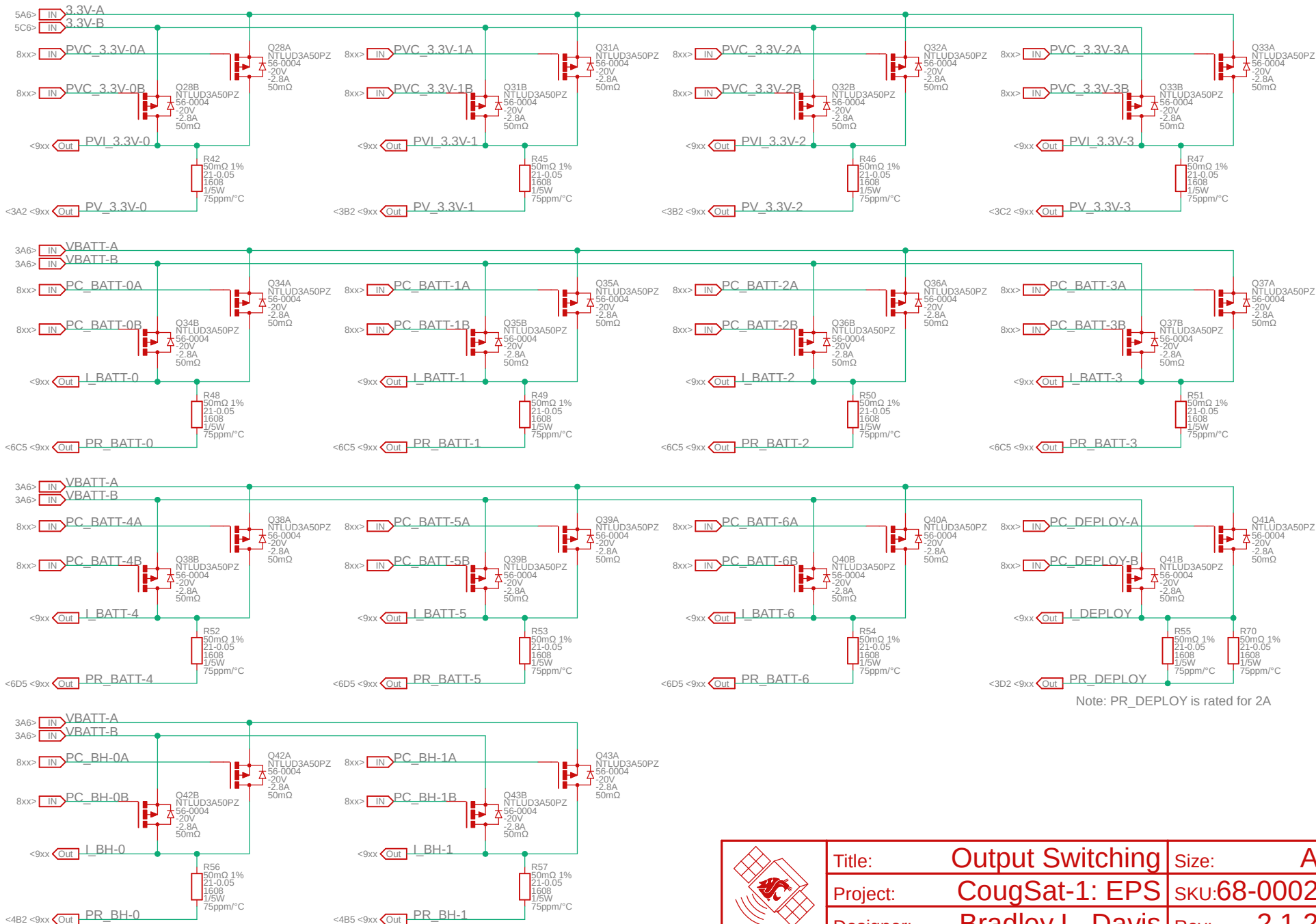
B

C

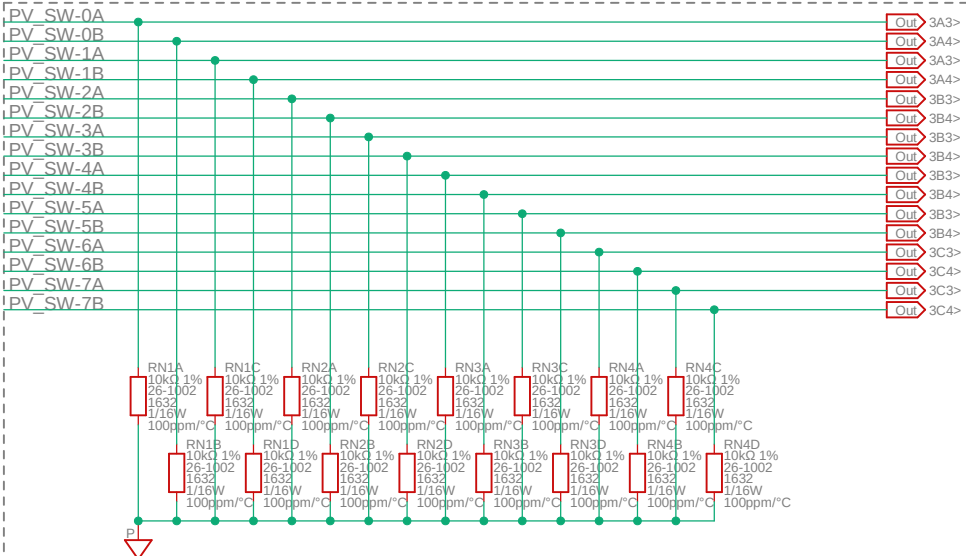
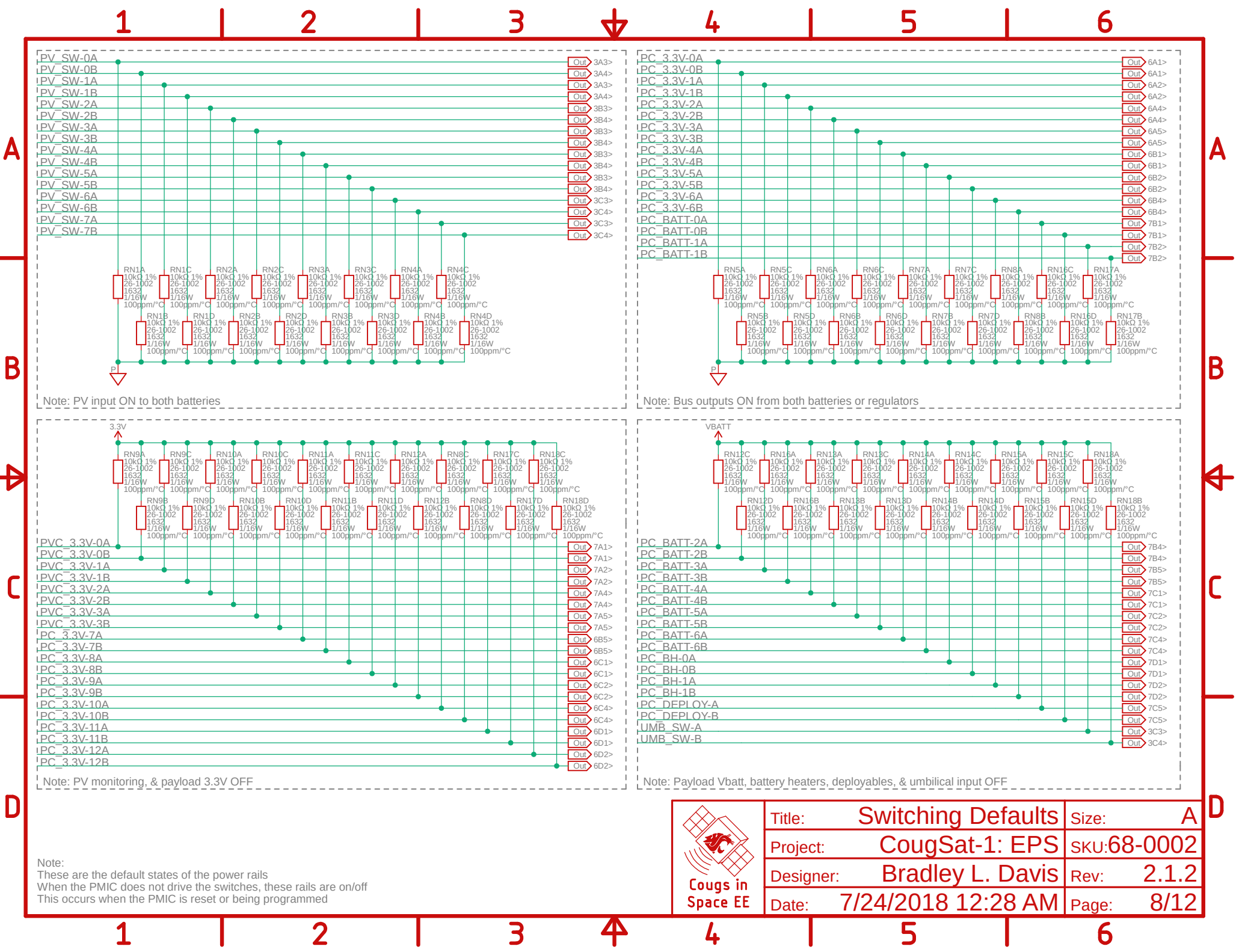
C

D

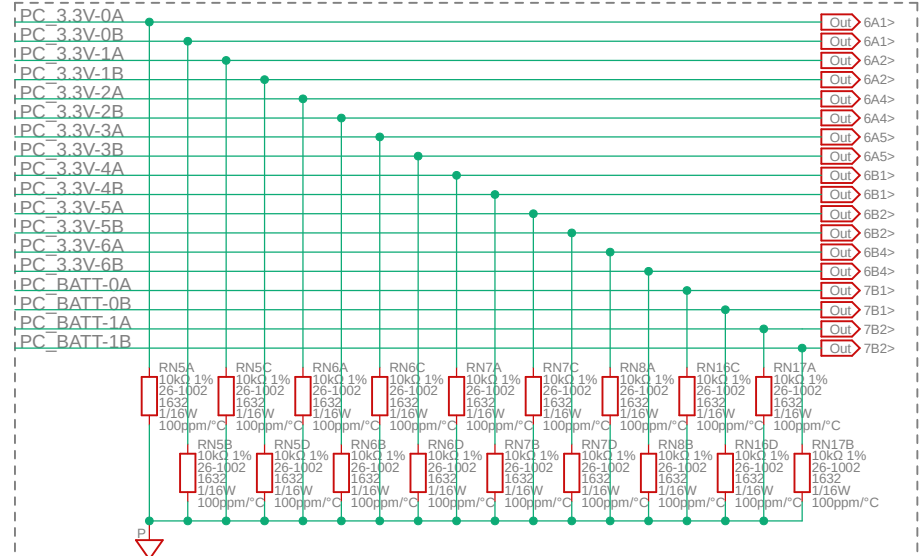
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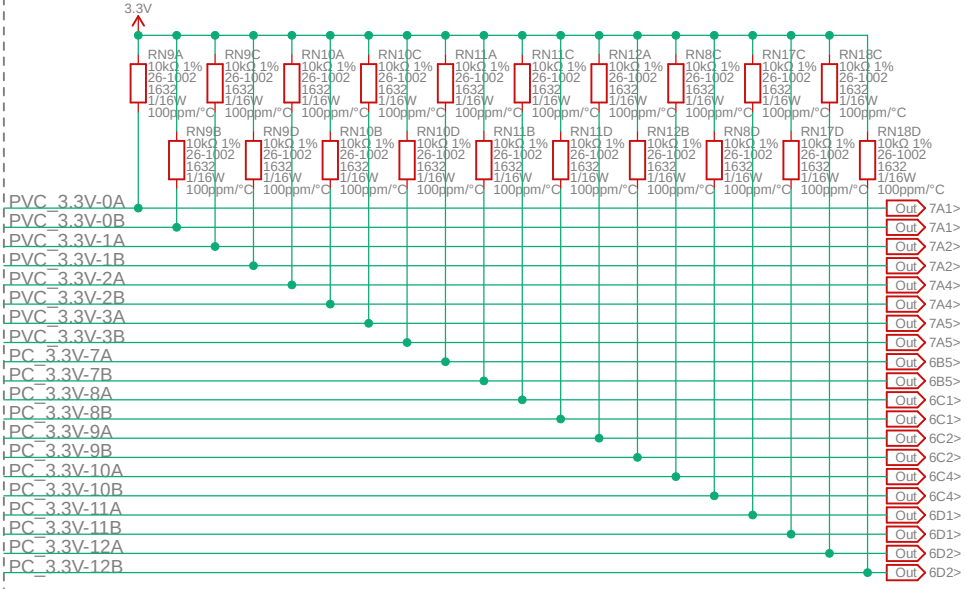
Title:	Output Switching	Size:	A
Project:	CougSat-1: EPS	SKU:	68-0002
Designer:	Bradley L. Davis	Rev:	2.1.2
Date:	7/24/2018 12:28 AM	Page:	7/12



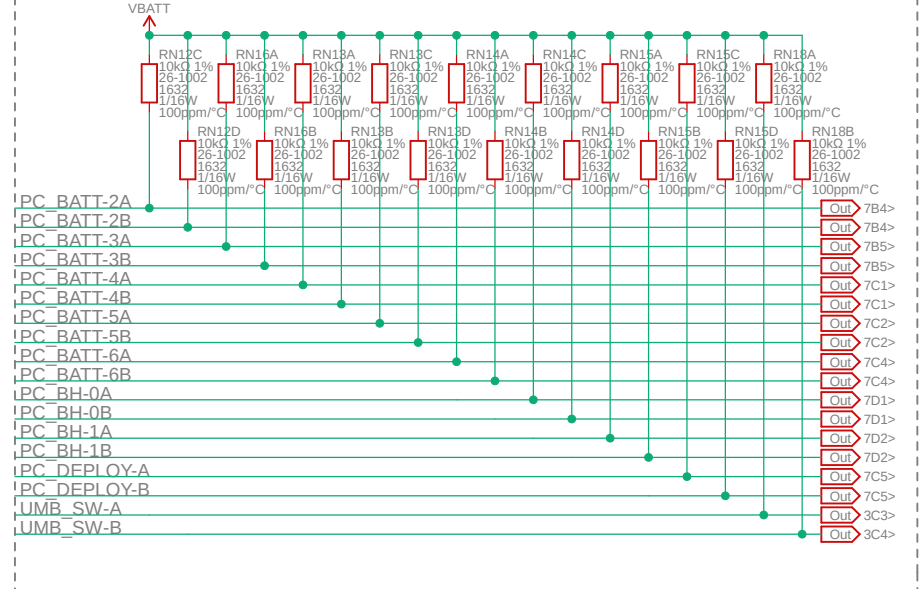
Note: PV input ON to both batteries



Note: Bus outputs ON from both batteries or regulators



Note: PV monitoring, & payload 3.3V OFF



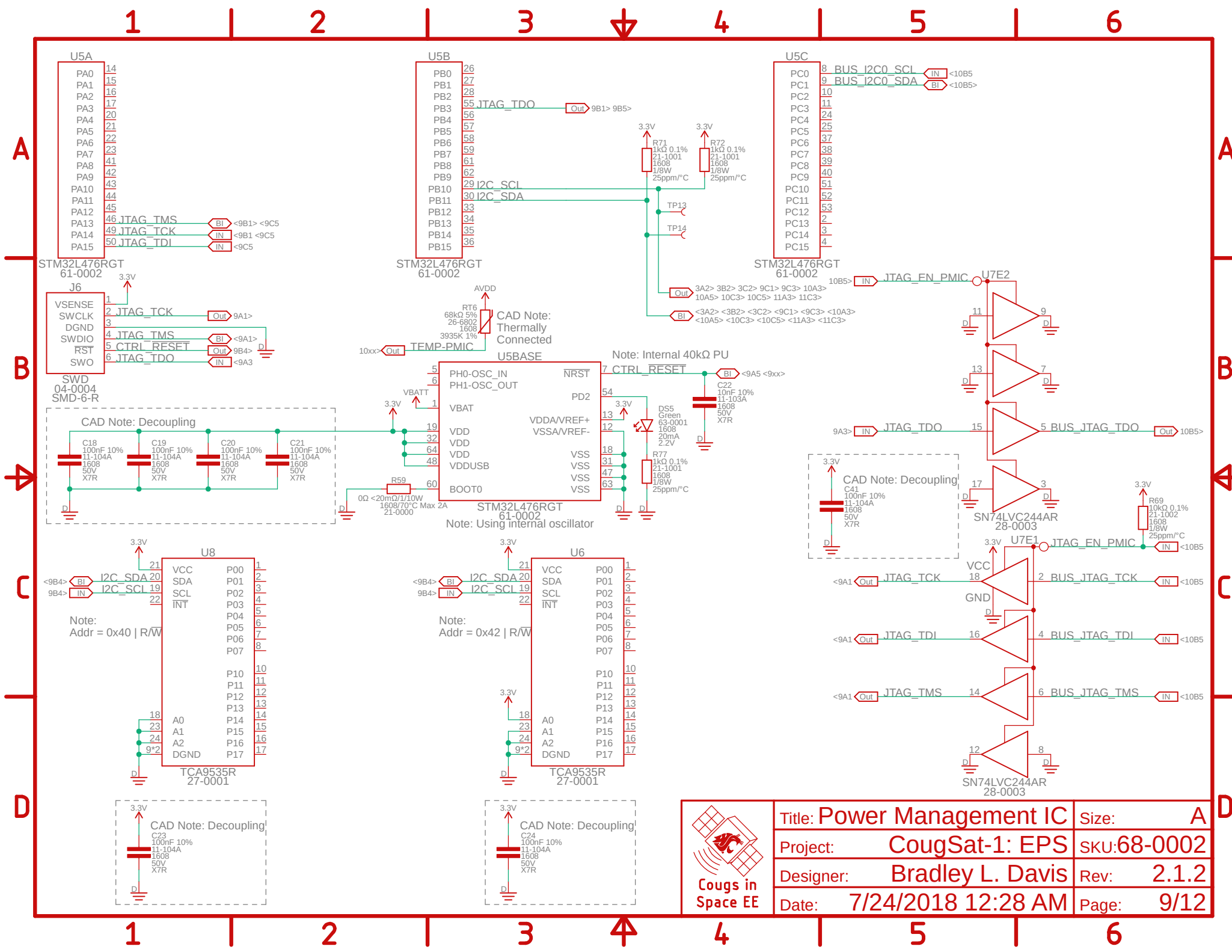
Note: Payload Vbatt, battery heaters, deployables, & umbilical input OFF

Note:
These are the default states of the power rails
When the PMIC does not drive the switches, these rails are on/off
This occurs when the PMIC is reset or being programmed

	Title:	Switching Defaults	Size:	A
	Project:	CougSat-1: EPS	SKU:	68-0002
	Designer:	Bradley L. Davis	Rev:	2.1.2
	Date:	7/24/2018 12:28 AM	Page:	8/12

Note: Fix all off sheet designators linked to this sheet

Note: Resistors can be rearranged or replaced with single resistors, whichever is best for routing



Title: Power Management IC	Size: A
Project: CougarSat-1: EPS	SKU:68-0002
Designer: Bradley L. Davis	Rev: 2.1.2
Date: 7/24/2018 12:28 AM	Page: 9/12

PV_SW-0A	Out	3A3>
PV_SW-1A	Out	3A3>
PV_SW-2A	Out	3B3>
PV_SW-3A	Out	3B3>
PV_SW-4A	Out	3B3>
PV_SW-5A	Out	3B3>
PV_SW-6A	Out	3C3>
PV_SW-7A	Out	3C3>
PV_SW-0B	Out	3A4>
PV_SW-1B	Out	3A4>
PV_SW-2B	Out	3B4>
PV_SW-3B	Out	3B4>
PV_SW-4B	Out	3B4>
PV_SW-5B	Out	3B4>
PV_SW-6B	Out	3C4>
PV_SW-7B	Out	3C4>
UMB_SW-A	Out	3C3>
UMB_SW-B	Out	3C4>

PC_3.3V-0A	Out	6A1>
PC_3.3V-1A	Out	6A2>
PC_3.3V-2A	Out	6A4>
PC_3.3V-3A	Out	6A5>
PC_3.3V-4A	Out	6B1>
PC_3.3V-5A	Out	6B2>
PC_3.3V-6A	Out	6B4>
PC_3.3V-7A	Out	6B5>
PC_3.3V-8A	Out	6C1>
PC_3.3V-9A	Out	6C2>
PC_3.3V-10A	Out	6C4>
PC_3.3V-11A	Out	6D1>
PC_3.3V-12A	Out	6D2>
PC_3.3V-0B	Out	6A1>
PC_3.3V-1B	Out	6A2>
PC_3.3V-2B	Out	6A4>
PC_3.3V-3B	Out	6A5>
PC_3.3V-4B	Out	6B1>
PC_3.3V-5B	Out	6B2>
PC_3.3V-6B	Out	6B4>
PC_3.3V-7B	Out	6B5>
PC_3.3V-8B	Out	6C1>
PC_3.3V-9B	Out	6C2>
PC_3.3V-10B	Out	6C4>
PC_3.3V-11B	Out	6D1>
PC_3.3V-12B	Out	6D2>

PVC_3.3V-0A	Out	7A1>
PVC_3.3V-1A	Out	7A2>
PVC_3.3V-2A	Out	7A4>
PVC_3.3V-3A	Out	7A5>
PVC_3.3V-0B	Out	7A1>
PVC_3.3V-1B	Out	7A2>
PVC_3.3V-2B	Out	7A4>
PVC_3.3V-3B	Out	7A5>

PC_BATT-0A	Out	7B1>
PC_BATT-1A	Out	7B2>
PC_BATT-2A	Out	7B4>
PC_BATT-3A	Out	7B5>
PC_BATT-4A	Out	7C1>
PC_BATT-5A	Out	7C2>
PC_BATT-6A	Out	7C4>
PC_BATT-0B	Out	7B1>
PC_BATT-1B	Out	7B2>
PC_BATT-2B	Out	7B4>
PC_BATT-3B	Out	7B5>
PC_BATT-4B	Out	7C1>
PC_BATT-5B	Out	7C2>
PC_BATT-6B	Out	7C4>

PC_BH-0A	Out	7D1>
PC_BH-1A	Out	7D2>
PC_BH-0B	Out	7D1>
PC_BH-1B	Out	7D2>

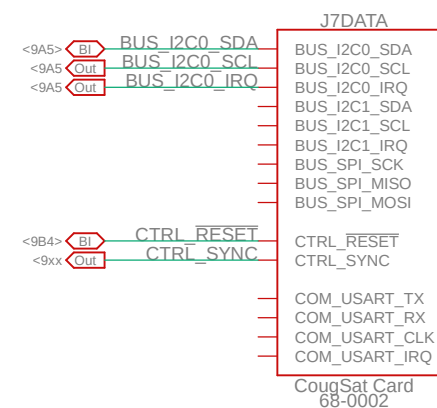
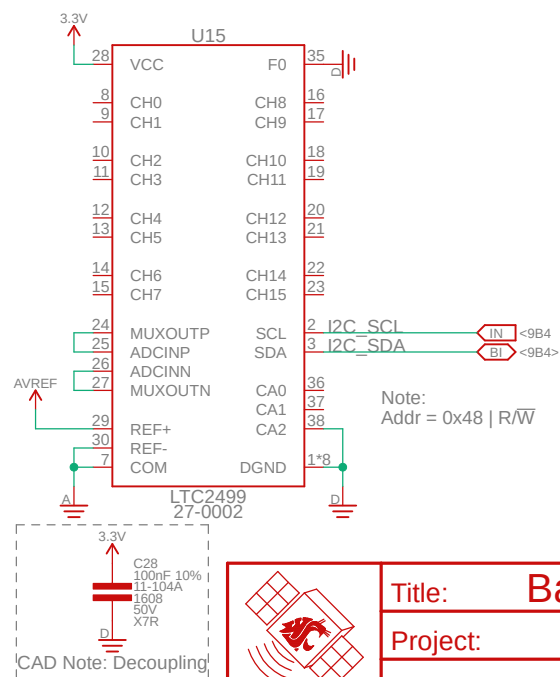
PC_DEPLOY-A	Out	7C5>
PC_DEPLOY-B	Out	7C5>

Note: Fix all off sheet designators linked to this sheet

Note: All signals above are GPIO, connect to any GPIO bank, whichever is best for routing

BLUS_I2C0_IRQ	In	<9B5
CTRL_SYNC	In	<9xx

Note: Interrupt pins, place on different pin numbers (same port okay), ease for routing



Title:	Backplane & ADCs	Size:	A
Project:	CougSat-1: EPS	SKU:	68-0002
Designer:	Bradley L. Davis	Rev:	2.1.2
Date:	7/24/2018 12:28 AM	Page:	10/12

VIN-A <4A3
VBATT-A <4A3

BP_VSS-A <4B2
BP_VSS_I-A <4B2

VIN-B <4A5
VBATT-B <4A5

BP_VSS-B <4B5
BP_VSS_I-B <4B5

VBATT-A <5A4
3.3V_ISENS-A <5A4

3.3V_I-A <5A6
3.3V-A <5A6

VBATT-B <5C4
3.3V_ISENS-B <5C4

3.3V_I-B <5C6
3.3V-B <5C6

I_3.3V-0 <6A1
PR_3.3V-0 <6A1

I_3.3V-1 <6A2
PR_3.3V-1 <6A2

I_3.3V-2 <6A4
PR_3.3V-2 <6A4

I_3.3V-3 <6A5
PR_3.3V-3 <6A5

I_3.3V-4 <6B1
PR_3.3V-4 <6B1

I_3.3V-5 <6B2
PR_3.3V-5 <6B2

I_3.3V-6 <6B4
PR_3.3V-6 <6B4

I_3.3V-7 <6B5
PR_3.3V-7 <6B5

I_3.3V-8 <6C1
PR_3.3V-8 <6C1

I_3.3V-9 <6C2
PR_3.3V-9 <6C2

I_3.3V-10 <6C4
PR_3.3V-10 <6C4

I_3.3V-11 <6D1
PR_3.3V-11 <6D1

I_3.3V-12 <6D2
PR_3.3V-12 <6D2

PVI_3.3V-0 <7A1
PV_3.3V-0 <7A1

PVI_3.3V-1 <7A2
PV_3.3V-1 <7A2

PVI_3.3V-2 <7A4
PV_3.3V-2 <7A4

PVI_3.3V-3 <7A5
PV_3.3V-3 <7A5

I_BATT-0 <7B1
PR_BATT-0 <7B1

I_BATT-1 <7B2
PR_BATT-1 <7B2

I_BATT-2 <7B4
PR_BATT-2 <7B4

I_BATT-3 <7B5
PR_BATT-3 <7B5

I_BATT-4 <7C1
PR_BATT-4 <7C1

I_BATT-5 <7C2
PR_BATT-5 <7C2

I_BATT-6 <7C4
PR_BATT-6 <7C4

I_DEPLOY <7C5
PR_DEPLOY <7C5

I_BH-0 <7D1
PR_BH-0 <7D1

I_BH-1 <7D2
PR_BH-1 <7D2

Note: Fix all off sheet designators linked to this sheet

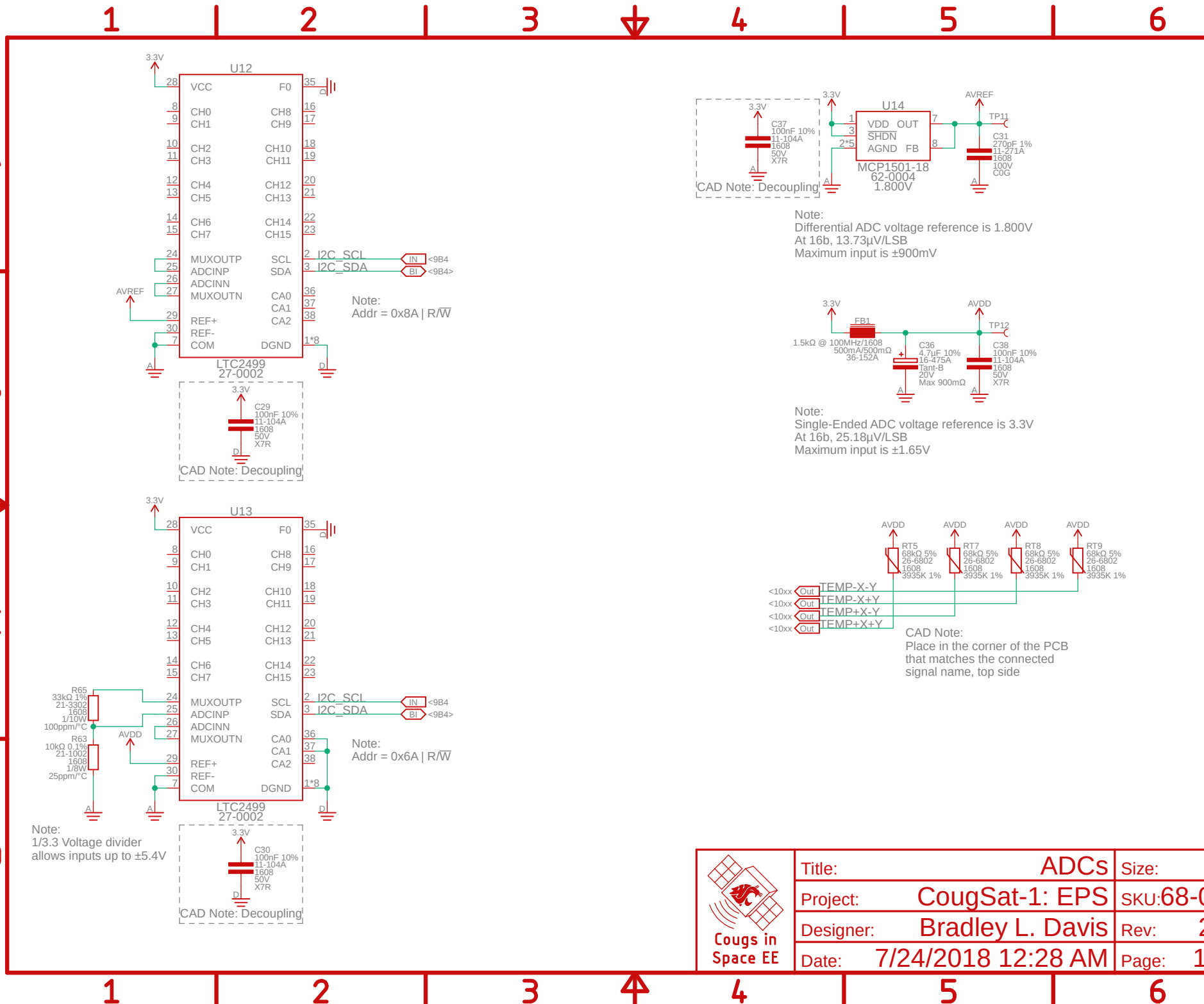
Note: All signals above are DS, connect to any DS input, whichever is best for routing, including the DS adc on page 10

A

B

C

D



A

B

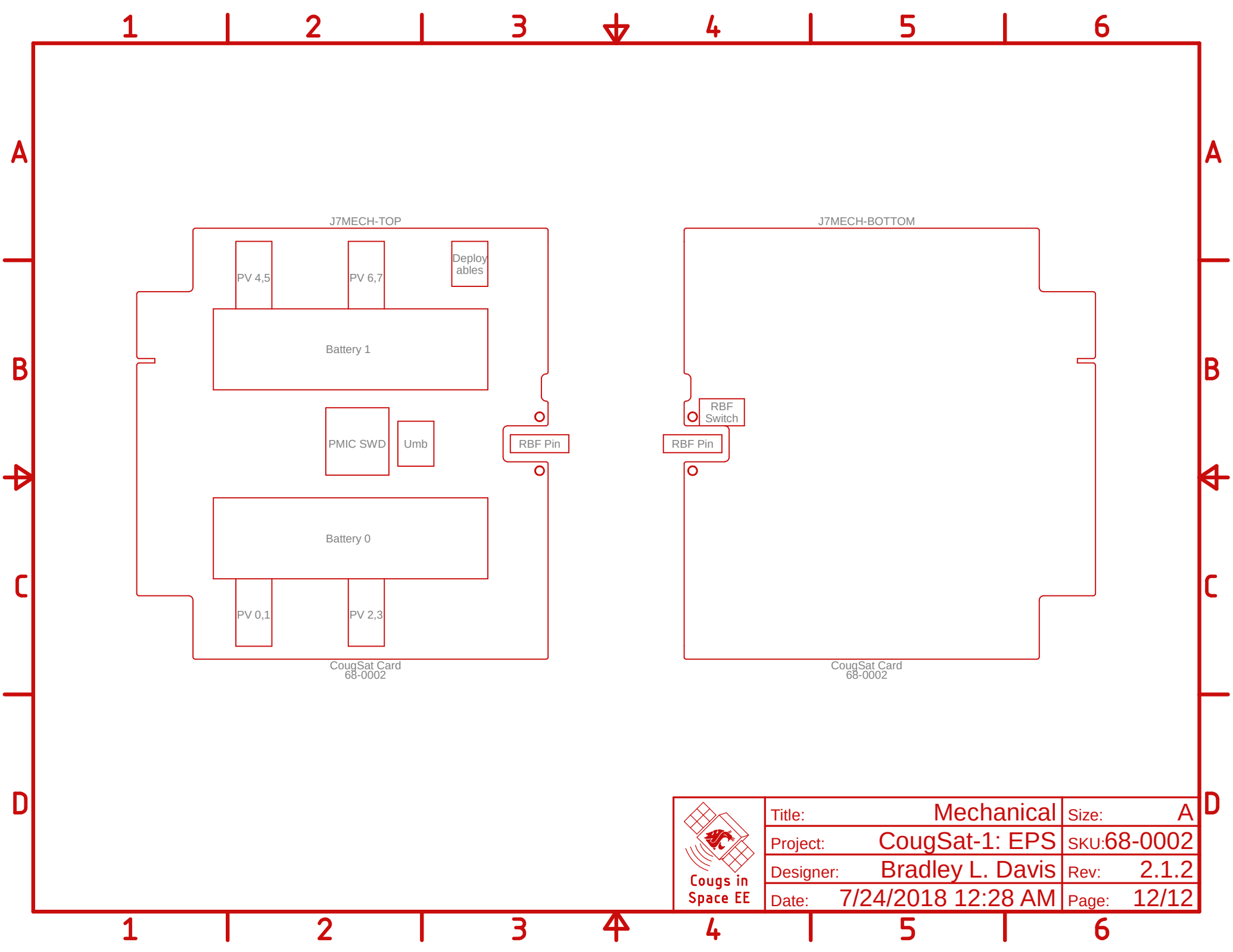
C

TEMP-BATT-A	IN	<4B2
TEMP-BATT-B	IN	<4B5
EJECT_TIMER	IN	<4D3
VBATT-A	IN	<4A3
VBATT-B	IN	<4A5
3.3V-A	IN	<5A6
3.3V-B	IN	<5C6
TEMP-REG-A	IN	<1xx
TEMP-REG-B	IN	<1xx
TEMP-PMIC	IN	<1xx
TEMP-X-Y	IN	<1xx
TEMP-X+Y	IN	<1xx
TEMP-X-Y	IN	<1xx
TEMP+X+Y	IN	<1xx
UMB_IN	IN	<1xx
AVREF	IN	<1xx

Note: Fix all off sheet designators linked to this sheet

D

Note: All signals above are SE, connect to any SE input, whichever is best for routing



Title:	Mechanical	Size:	A
Project:	CougSat-1: EPS	SKU:	68-0002
Designer:	Bradley L. Davis	Rev:	2.1.2
Date:	7/24/2018 12:28 AM	Page:	12/12