

|           |                      |       |         |
|-----------|----------------------|-------|---------|
| Title:    | Block Diagram        | Size: | A       |
| Project:  | CougSat-1: Backplane | SKU:  | 68-0005 |
| Designer: | Hendrik Melse        | Rev:  | 3.1.0   |
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A

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## J10DATA

BUS\_I2C0\_SDA  
BUS\_I2C0\_SCL  
BUS\_I2C0\_IRQ  
BUS\_I2C1\_SDA  
BUS\_I2C1\_SCL  
BUS\_I2C1\_IRQ  
BUS\_I2C1\_SCL  
BUS\_SPI\_SCK  
BUS\_SPI\_MISO  
BUS\_SPI\_MOSI

BUS\_I2C0\_SDA  
BUS\_I2C0\_SCL  
BUS\_I2C0\_IRQ  
BUS\_I2C1\_SDA  
BUS\_I2C1\_SCL  
BUS\_I2C1\_IRQ  
BUS\_I2C1\_SCL  
BUS\_SPI\_SCK  
BUS\_SPI\_MISO  
BUS\_SPI\_MOSI

CTRL\_SYNC

CTRL\_SYNC

COM\_SPI\_SCK  
COM\_SPI\_MISO  
COM\_SPI\_MOSI  
COM\_SPI\_CS

COM\_SPI\_SCK  
COM\_SPI\_MISO  
COM\_SPI\_MOSI  
COM\_SPI\_CS

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## J9DATA

BUS\_I2C0\_SDA  
BUS\_I2C0\_SCL  
BUS\_I2C0\_IRQ  
BUS\_I2C1\_SDA  
BUS\_I2C1\_SCL  
BUS\_I2C1\_IRQ  
BUS\_I2C1\_SCL  
BUS\_SPI\_SCK  
BUS\_SPI\_MISO  
BUS\_SPI\_MOSI

BUS\_I2C0\_SDA  
BUS\_I2C0\_SCL  
BUS\_I2C0\_IRQ  
BUS\_I2C1\_SDA  
BUS\_I2C1\_SCL  
BUS\_I2C1\_IRQ  
BUS\_I2C1\_SCL  
BUS\_SPI\_SCK  
BUS\_SPI\_MISO  
BUS\_SPI\_MOSI

CTRL\_SYNC

CTRL\_SYNC

COM\_SPI\_SCK  
COM\_SPI\_MISO  
COM\_SPI\_MOSI  
COM\_SPI\_CS

COM\_SPI\_SCK  
COM\_SPI\_MISO  
COM\_SPI\_MOSI  
COM\_SPI\_CS

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## J8DATA

BUS\_I2C0\_SDA  
BUS\_I2C0\_SCL  
BUS\_I2C0\_IRQ  
BUS\_I2C1\_SDA  
BUS\_I2C1\_SCL  
BUS\_I2C1\_IRQ  
BUS\_I2C1\_SCL  
BUS\_SPI\_SCK  
BUS\_SPI\_MISO  
BUS\_SPI\_MOSI

BUS\_I2C0\_SDA  
BUS\_I2C0\_SCL  
BUS\_I2C0\_IRQ  
BUS\_I2C1\_SDA  
BUS\_I2C1\_SCL  
BUS\_I2C1\_IRQ  
BUS\_I2C1\_SCL  
BUS\_SPI\_SCK  
BUS\_SPI\_MISO  
BUS\_SPI\_MOSI

CTRL\_SYNC

CTRL\_SYNC

COM\_SPI\_SCK  
COM\_SPI\_MISO  
COM\_SPI\_MOSI  
COM\_SPI\_CS

COM\_SPI\_SCK  
COM\_SPI\_MISO  
COM\_SPI\_MOSI  
COM\_SPI\_CS

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## J7DATA

BUS\_I2C0\_SDA  
BUS\_I2C0\_SCL  
BUS\_I2C0\_IRQ  
BUS\_I2C1\_SDA  
BUS\_I2C1\_SCL  
BUS\_I2C1\_IRQ  
BUS\_I2C1\_SCL  
BUS\_SPI\_SCK  
BUS\_SPI\_MISO  
BUS\_SPI\_MOSI

BUS\_I2C0\_SDA  
BUS\_I2C0\_SCL  
BUS\_I2C0\_IRQ  
BUS\_I2C1\_SDA  
BUS\_I2C1\_SCL  
BUS\_I2C1\_IRQ  
BUS\_I2C1\_SCL  
BUS\_SPI\_SCK  
BUS\_SPI\_MISO  
BUS\_SPI\_MOSI

CTRL\_SYNC

CTRL\_SYNC

COM\_SPI\_SCK  
COM\_SPI\_MISO  
COM\_SPI\_MOSI  
COM\_SPI\_CS

COM\_SPI\_SCK  
COM\_SPI\_MISO  
COM\_SPI\_MOSI  
COM\_SPI\_CS

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BI &lt;3A6&gt;

B

B

## J10GPIO

GPIO-0  
GPIO-1  
GPIO-2  
GPIO-3  
GPIO-4  
GPIO-5  
GPIO-6  
GPIO-7

GPIO-0  
GPIO-1  
GPIO-2  
GPIO-3  
GPIO-4  
GPIO-5  
GPIO-6  
GPIO-7

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## J9GPIO

GPIO-0  
GPIO-1  
GPIO-2  
GPIO-3  
GPIO-4  
GPIO-5  
GPIO-6  
GPIO-7

GPIO-0  
GPIO-1  
GPIO-2  
GPIO-3  
GPIO-4  
GPIO-5  
GPIO-6  
GPIO-7

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## J8GPIO

GPIO-0  
GPIO-1  
GPIO-2  
GPIO-3  
GPIO-4  
GPIO-5  
GPIO-6  
GPIO-7

GPIO-0  
GPIO-1  
GPIO-2  
GPIO-3  
GPIO-4  
GPIO-5  
GPIO-6  
GPIO-7

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## J7GPIO

GPIO-0  
GPIO-1  
GPIO-2  
GPIO-3  
GPIO-4  
GPIO-5  
GPIO-6  
GPIO-7

GPIO-0  
GPIO-1  
GPIO-2  
GPIO-3  
GPIO-4  
GPIO-5  
GPIO-6  
GPIO-7

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BI &lt;3B6&gt;

C

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## J10JTAG

BUS\_JTAG\_TCK  
BUS\_JTAG\_TDI  
BUS\_JTAG\_TDO  
BUS\_JTAG\_TMS  
BUS\_JTAG\_EN-0  
BUS\_JTAG\_EN-1  
BUS\_JTAG\_EN-2  
BUS\_JTAG\_EN-3

BUS\_JTAG\_TCK  
BUS\_JTAG\_TDI  
BUS\_JTAG\_TDO  
BUS\_JTAG\_TMS  
BUS\_JTAG\_EN-0  
BUS\_JTAG\_EN-1  
BUS\_JTAG\_EN-2  
BUS\_JTAG\_EN-3

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## J9JTAG

BUS\_JTAG\_TCK  
BUS\_JTAG\_TDI  
BUS\_JTAG\_TDO  
BUS\_JTAG\_TMS  
BUS\_JTAG\_EN-0  
BUS\_JTAG\_EN-1  
BUS\_JTAG\_EN-2  
BUS\_JTAG\_EN-3

BUS\_JTAG\_TCK  
BUS\_JTAG\_TDI  
BUS\_JTAG\_TDO  
BUS\_JTAG\_TMS  
BUS\_JTAG\_EN-0  
BUS\_JTAG\_EN-1  
BUS\_JTAG\_EN-2  
BUS\_JTAG\_EN-3

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## J8JTAG

BUS\_JTAG\_TCK  
BUS\_JTAG\_TDI  
BUS\_JTAG\_TDO  
BUS\_JTAG\_TMS  
BUS\_JTAG\_EN-0  
BUS\_JTAG\_EN-1  
BUS\_JTAG\_EN-2  
BUS\_JTAG\_EN-3

BUS\_JTAG\_TCK  
BUS\_JTAG\_TDI  
BUS\_JTAG\_TDO  
BUS\_JTAG\_TMS  
BUS\_JTAG\_EN-0  
BUS\_JTAG\_EN-1  
BUS\_JTAG\_EN-2  
BUS\_JTAG\_EN-3

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## J7JTAG

BUS\_JTAG\_TCK  
BUS\_JTAG\_TDI  
BUS\_JTAG\_TDO  
BUS\_JTAG\_TMS  
BUS\_JTAG\_EN-0  
BUS\_JTAG\_EN-1  
BUS\_JTAG\_EN-2  
BUS\_JTAG\_EN-3

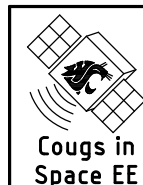
BUS\_JTAG\_TCK  
BUS\_JTAG\_TDI  
BUS\_JTAG\_TDO  
BUS\_JTAG\_TMS  
BUS\_JTAG\_EN-0  
BUS\_JTAG\_EN-1  
BUS\_JTAG\_EN-2  
BUS\_JTAG\_EN-3

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BI &lt;3C6&gt;

D

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Cougs in  
Space EE

|           |                      |       |         |
|-----------|----------------------|-------|---------|
| Title:    | Data Bus Slots 0 - 3 | Size: | A       |
| Project:  | CougSat-1: Backplane | SKU:  | 68-0005 |
| Designer: | Hendrik Melse        | Rev:  | 3.1.0   |
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C

C

D

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## J4DATA

|              |              |
|--------------|--------------|
| BUS_I2C0_SDA | BUS_I2C0_SDA |
| BUS_I2C0_SCL | BUS_I2C0_SCL |
| BUS_I2C0_IRQ | BUS_I2C0_IRQ |
| BUS_I2C1_SDA | BUS_I2C1_SDA |
| BUS_I2C1_SCL | BUS_I2C1_SCL |
| BUS_I2C1_IRQ | BUS_I2C1_IRQ |
| BUS_SPI_SCK  | BUS_SPI_SCK  |
| BUS_SPI_MISO | BUS_SPI_MISO |
| BUS_SPI_MOSI | BUS_SPI_MOSI |
| CTRL_SYNC    |              |
| CTRL_SYNC    |              |
| COM_SPI_SCK  | COM_SPI_SCK  |
| COM_SPI_MISO | COM_SPI_MISO |
| COM_SPI_MOSI | COM_SPI_MOSI |
| COM_SPI_CS   | COM_SPI_CS   |

CougSat Socket  
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## J3DATA

|              |              |
|--------------|--------------|
| BUS_I2C0_SDA | BUS_I2C0_SDA |
| BUS_I2C0_SCL | BUS_I2C0_SCL |
| BUS_I2C0_IRQ | BUS_I2C0_IRQ |
| BUS_I2C1_SDA | BUS_I2C1_SDA |
| BUS_I2C1_SCL | BUS_I2C1_SCL |
| BUS_I2C1_IRQ | BUS_I2C1_IRQ |
| BUS_SPI_SCK  | BUS_SPI_SCK  |
| BUS_SPI_MISO | BUS_SPI_MISO |
| BUS_SPI_MOSI | BUS_SPI_MOSI |
| CTRL_SYNC    |              |
| CTRL_SYNC    |              |
| COM_SPI_SCK  | COM_SPI_SCK  |
| COM_SPI_MISO | COM_SPI_MISO |
| COM_SPI_MOSI | COM_SPI_MOSI |
| COM_SPI_CS   | COM_SPI_CS   |

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## J2DATA

|              |              |
|--------------|--------------|
| BUS_I2C0_SDA | BUS_I2C0_SDA |
| BUS_I2C0_SCL | BUS_I2C0_SCL |
| BUS_I2C0_IRQ | BUS_I2C0_IRQ |
| BUS_I2C1_SDA | BUS_I2C1_SDA |
| BUS_I2C1_SCL | BUS_I2C1_SCL |
| BUS_I2C1_IRQ | BUS_I2C1_IRQ |
| BUS_SPI_SCK  | BUS_SPI_SCK  |
| BUS_SPI_MISO | BUS_SPI_MISO |
| BUS_SPI_MOSI | BUS_SPI_MOSI |
| CTRL_SYNC    |              |
| CTRL_SYNC    |              |
| COM_SPI_SCK  | COM_SPI_SCK  |
| COM_SPI_MISO | COM_SPI_MISO |
| COM_SPI_MOSI | COM_SPI_MOSI |
| COM_SPI_CS   | COM_SPI_CS   |

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## J1DATA

|              |              |
|--------------|--------------|
| BUS_I2C0_SDA | BUS_I2C0_SDA |
| BUS_I2C0_SCL | BUS_I2C0_SCL |
| BUS_I2C0_IRQ | BUS_I2C0_IRQ |
| BUS_I2C1_SDA | BUS_I2C1_SDA |
| BUS_I2C1_SCL | BUS_I2C1_SCL |
| BUS_I2C1_IRQ | BUS_I2C1_IRQ |
| BUS_SPI_SCK  | BUS_SPI_SCK  |
| BUS_SPI_MISO | BUS_SPI_MISO |
| BUS_SPI_MOSI | BUS_SPI_MOSI |
| CTRL_SYNC    |              |
| CTRL_SYNC    |              |
| COM_SPI_SCK  | COM_SPI_SCK  |
| COM_SPI_MISO | COM_SPI_MISO |
| COM_SPI_MOSI | COM_SPI_MOSI |
| COM_SPI_CS   | COM_SPI_CS   |

CougSat Socket  
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BI &lt;2A6&gt;

## J4GPIO

|        |        |
|--------|--------|
| GPIO-0 | GPIO-0 |
| GPIO-1 | GPIO-1 |
| GPIO-2 | GPIO-2 |
| GPIO-3 | GPIO-3 |
| GPIO-4 | GPIO-4 |
| GPIO-5 | GPIO-5 |
| GPIO-6 | GPIO-6 |
| GPIO-7 | GPIO-7 |

CougSat Socket  
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## J3GPIO

|        |        |
|--------|--------|
| GPIO-0 | GPIO-0 |
| GPIO-1 | GPIO-1 |
| GPIO-2 | GPIO-2 |
| GPIO-3 | GPIO-3 |
| GPIO-4 | GPIO-4 |
| GPIO-5 | GPIO-5 |
| GPIO-6 | GPIO-6 |
| GPIO-7 | GPIO-7 |

CougSat Socket  
05-0006

## J2GPIO

|        |        |
|--------|--------|
| GPIO-0 | GPIO-0 |
| GPIO-1 | GPIO-1 |
| GPIO-2 | GPIO-2 |
| GPIO-3 | GPIO-3 |
| GPIO-4 | GPIO-4 |
| GPIO-5 | GPIO-5 |
| GPIO-6 | GPIO-6 |
| GPIO-7 | GPIO-7 |

CougSat Socket  
05-0006

## J1GPIO

|        |        |
|--------|--------|
| GPIO-0 | GPIO-0 |
| GPIO-1 | GPIO-1 |
| GPIO-2 | GPIO-2 |
| GPIO-3 | GPIO-3 |
| GPIO-4 | GPIO-4 |
| GPIO-5 | GPIO-5 |
| GPIO-6 | GPIO-6 |
| GPIO-7 | GPIO-7 |

CougSat Socket  
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BI &lt;2B6&gt;

## J4JTAG

|               |               |
|---------------|---------------|
| BUS_JTAG_TCK  | BUS_JTAG_TCK  |
| BUS_JTAG_TDI  | BUS_JTAG_TDI  |
| BUS_JTAG_TDO  | BUS_JTAG_TDO  |
| BUS_JTAG_TMS  | BUS_JTAG_TMS  |
| BUS_JTAG_EN-0 | BUS_JTAG_EN-0 |
| BUS_JTAG_EN-1 | BUS_JTAG_EN-1 |
| BUS_JTAG_EN-2 | BUS_JTAG_EN-2 |
| BUS_JTAG_EN-3 | BUS_JTAG_EN-3 |

CougSat Socket  
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## J3JTAG

|               |               |
|---------------|---------------|
| BUS_JTAG_TCK  | BUS_JTAG_TCK  |
| BUS_JTAG_TDI  | BUS_JTAG_TDI  |
| BUS_JTAG_TDO  | BUS_JTAG_TDO  |
| BUS_JTAG_TMS  | BUS_JTAG_TMS  |
| BUS_JTAG_EN-0 | BUS_JTAG_EN-0 |
| BUS_JTAG_EN-1 | BUS_JTAG_EN-1 |
| BUS_JTAG_EN-2 | BUS_JTAG_EN-2 |
| BUS_JTAG_EN-3 | BUS_JTAG_EN-3 |

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## J2JTAG

|               |               |
|---------------|---------------|
| BUS_JTAG_TCK  | BUS_JTAG_TCK  |
| BUS_JTAG_TDI  | BUS_JTAG_TDI  |
| BUS_JTAG_TDO  | BUS_JTAG_TDO  |
| BUS_JTAG_TMS  | BUS_JTAG_TMS  |
| BUS_JTAG_EN-0 | BUS_JTAG_EN-0 |
| BUS_JTAG_EN-1 | BUS_JTAG_EN-1 |
| BUS_JTAG_EN-2 | BUS_JTAG_EN-2 |
| BUS_JTAG_EN-3 | BUS_JTAG_EN-3 |

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## J1JTAG

|               |               |
|---------------|---------------|
| BUS_JTAG_TCK  | BUS_JTAG_TCK  |
| BUS_JTAG_TDI  | BUS_JTAG_TDI  |
| BUS_JTAG_TDO  | BUS_JTAG_TDO  |
| BUS_JTAG_TMS  | BUS_JTAG_TMS  |
| BUS_JTAG_EN-0 | BUS_JTAG_EN-0 |
| BUS_JTAG_EN-1 | BUS_JTAG_EN-1 |
| BUS_JTAG_EN-2 | BUS_JTAG_EN-2 |
| BUS_JTAG_EN-3 | BUS_JTAG_EN-3 |

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BI &lt;2C6&gt;

Cougs in  
Space EE

|           |                      |       |         |
|-----------|----------------------|-------|---------|
| Title:    | Data Bus Slots 4 - 7 | Size: | A       |
| Project:  | CougSat-1: Backplane | SKU:  | 68-0005 |
| Designer: | Hendrik Melse        | Rev:  | 3.1.0   |
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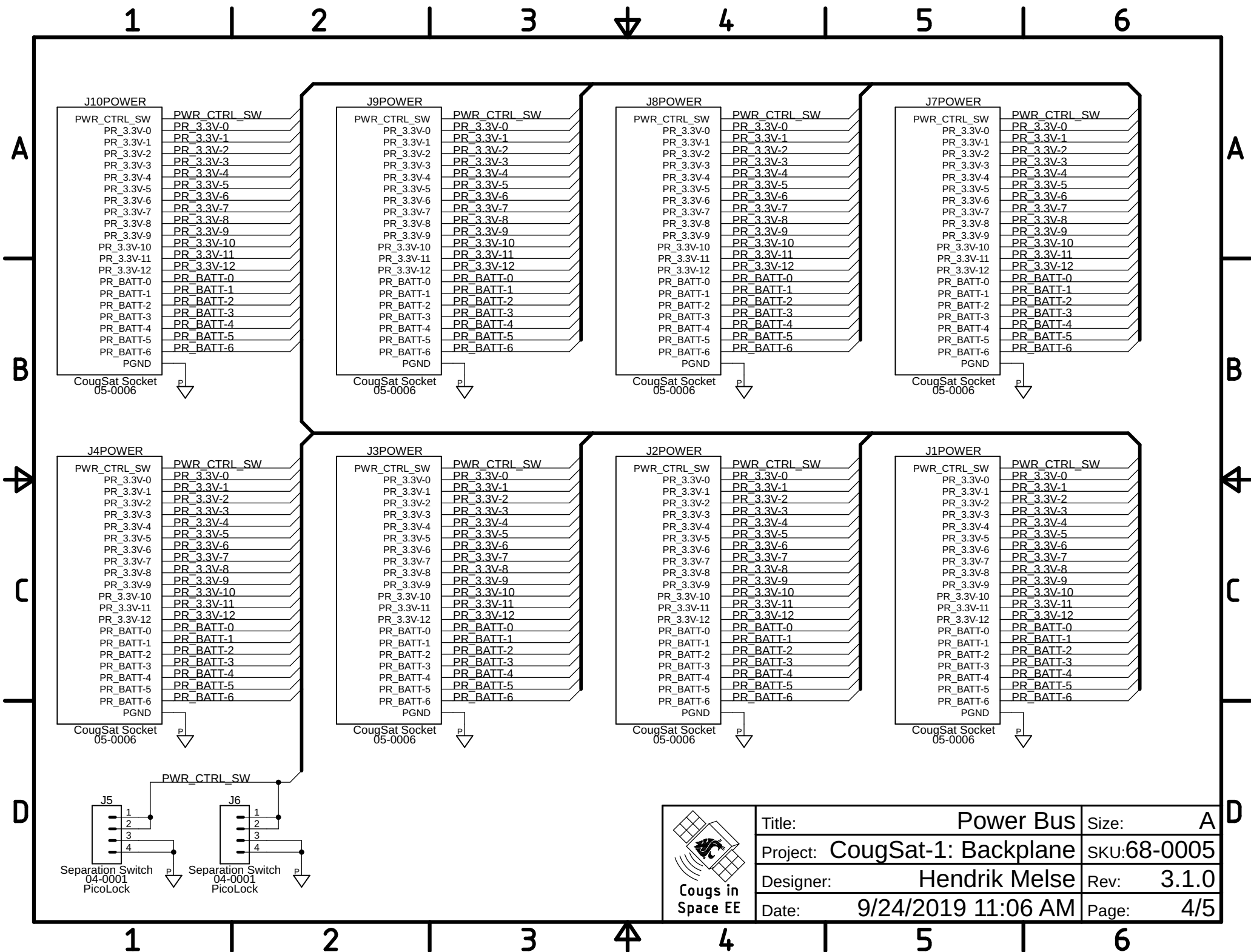
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A

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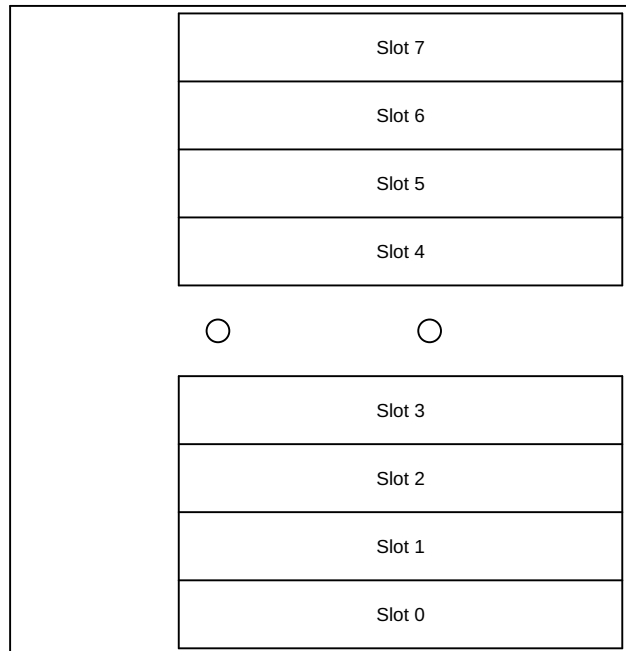
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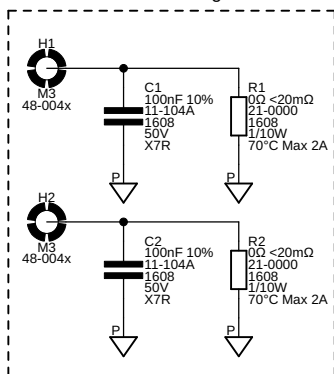
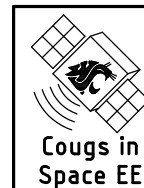
C

D

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Z  
↑

CAD Note: Mounting Holes

LOGO3  
Satellite 16mm**Cougs in  
Space**LOGO100  
Satellite 16mm**Cougs in  
Space**LOGO2  
SignatureLOGO1  
Text**Cougs in  
Space**

|           |                      |       |         |
|-----------|----------------------|-------|---------|
| Title:    | Mechanical           | Size: | A       |
| Project:  | CougSat-1: Backplane | SKU:  | 68-0005 |
| Designer: | Hendrik Melse        | Rev:  | 3.1.0   |
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