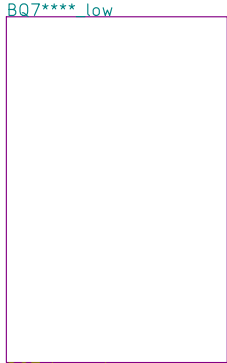
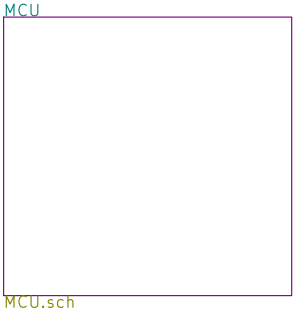
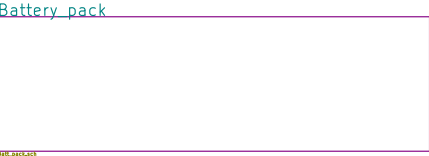
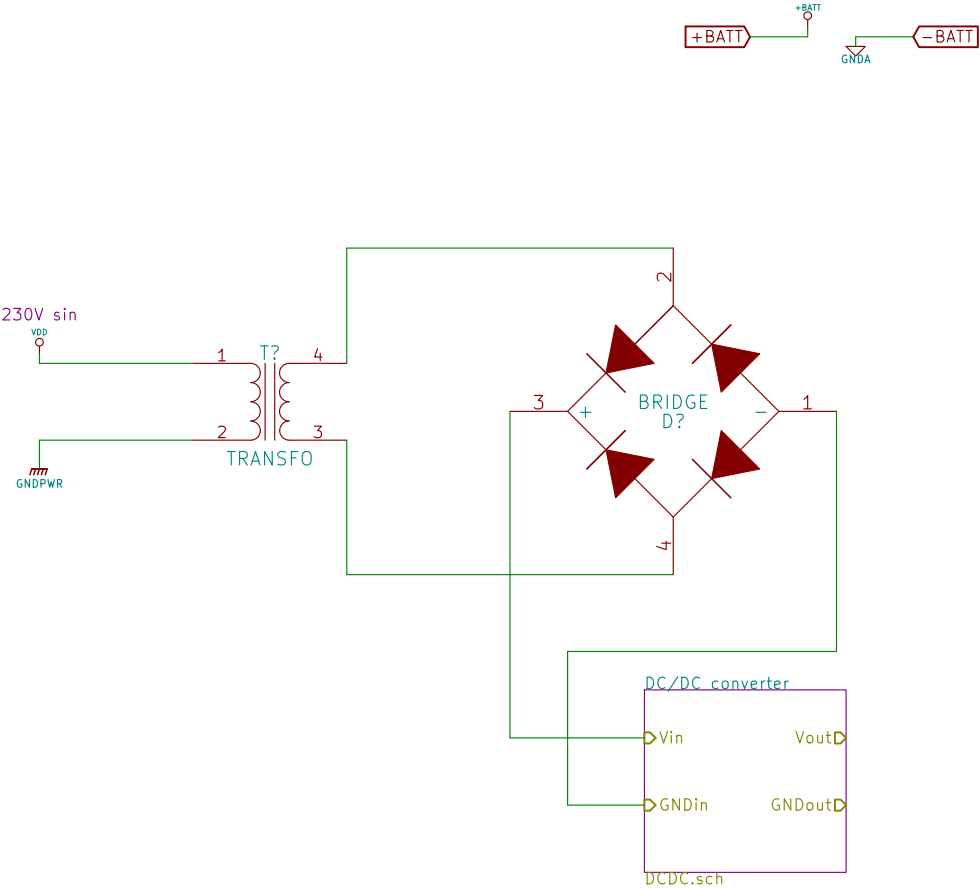


This is start of BMS it made of 4 components first is transformator from 220V/100V and graetz.
Next is DC/DC converter with variable currnet and voltage.(this first is more a charger)
Next on every cell i bq7*** microchip with abilty to measere and balance every battery cell
(one is doing that for 15 batterys)(balance is done with discharging).
And bq7*** is controled with some mcu



FESB			
Sheet: /			
File: BMS.sch			
Title:			
Size: A4	Date:		Rev:
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123456

A

Pick any MCU you whant and make schematic or him and strat codeing

B

C

D

FESB

Sheet: /MCU/
File: MCU.sch

Title:

Size: A4

Date:

Rev:

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Id: 2/101

123456

Bq7*** circuit its basicly disconnetced from other stuff looking a voltage of every cell and if needed discharging them.(balancing) Controlled by a MCU two of them because we have 30 batteries.

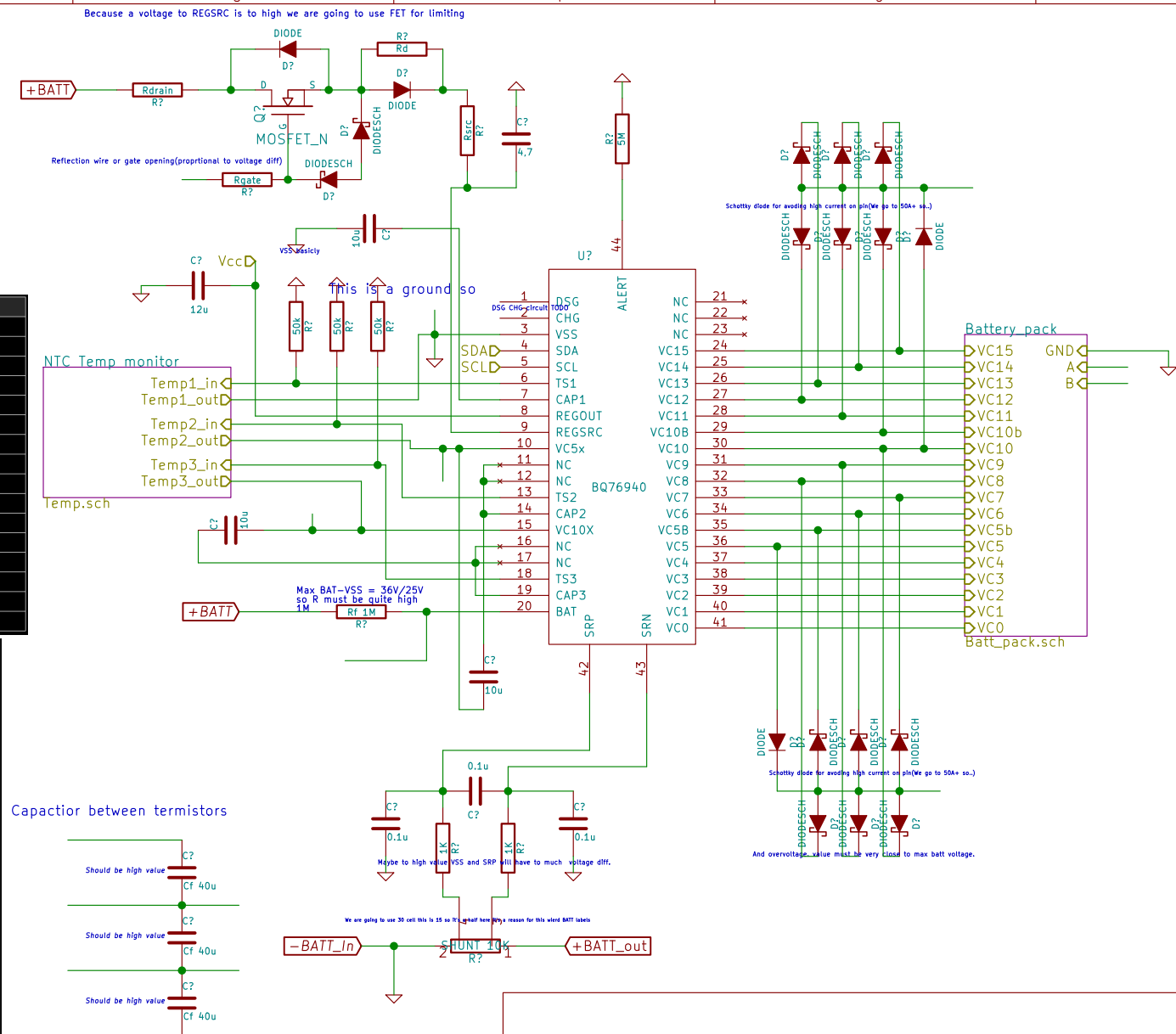
VSS is same as ground symbol in this sheet

Be caerfull with VSS and other pins beacuse we must maintaine a specific max voltage diff between pins.

Pin configuration

PIN	NAME	TYPE	DESCRIPTION
1	DSG	O	Discharge FET driver
2	CHG	O	Charge FET driver
3	VSS	—	Chip VSS
4	SDA	I/O	I ² C communication to the host controller
5	SCL	I	I ² C communication to the host controller
6	TS1	I	Thermistor #1 positive terminal ⁽¹⁾
7	CAP1	O	Capacitor to VSS
8	REGOUT	P	Output LDO
9	REGSRC	I	Input source for output LDO
10	VC5X	P	Thermistor #2 negative terminal
11	NC	—	No connect (short to CAP2)
12	NC	—	No connect (short to CAP2)
13	TS2	I	Thermistor #2 positive terminal ⁽¹⁾
14	CAP2	O	Capacitor to VC5X
15	VC10X	P	Thermistor #3 negative terminal
16	NC	—	No connect (short to CAP3)

PIN	NAME	TYPE	DESCRIPTION
17	NC	—	No connect (short to CAP3)
18	TS3	I	Thermistor #3 positive terminal ⁽¹⁾
19	CAP3	O	Capacitor to VC10X
20	BAT	P	Battery (top-most) terminal
21	NC	—	No connect
22	NC	—	No connect
23	NC	—	No connect
24	VC15	I	Sense voltage for 15th cell positive terminal
25	VC14	I	Sense voltage for 14th cell positive terminal
26	VC13	I	Sense voltage for 13th cell positive terminal
27	VC12	I	Sense voltage for 12th cell positive terminal
28	VC11	I	Sense voltage for 11th cell positive terminal
29	VC10B	I	Sense voltage for 10th cell negative terminal
30	VC10	I	Sense voltage for 10th cell positive terminal
31	VC9	I	Sense voltage for 9th cell positive terminal
32	VC8	I	Sense voltage for 8th cell positive terminal
33	VC7	I	Sense voltage for 7th cell positive terminal
34	VC6	I	Sense voltage for 6th cell positive terminal
35	VC5B	I	Sense voltage for 6th cell negative terminal
36	VC5	I	Sense voltage for 5th cell positive terminal
37	VC4	I	Sense voltage for 4th cell positive terminal
38	VC3	I	Sense voltage for 3rd cell positive terminal
39	VC2	I	Sense voltage for 2nd cell positive terminal
40	VC1	I	Sense voltage for 1st cell positive terminal
41	VC0	I	Sense voltage for 1st cell negative terminal
42	SRP	I	Negative current sense (nearest VSS)
43	SRN	I	Positive current sense
44	ALERT	I/O	Alert output and override input



FESB

Sheet: /BQ7***_high/
File: BQ7.sch

Title: BQ76940

Size: A4
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Date:
Rev:
Id: 3/101

Dont forget this when programming

Missing only for NTC so we can convert to Temp

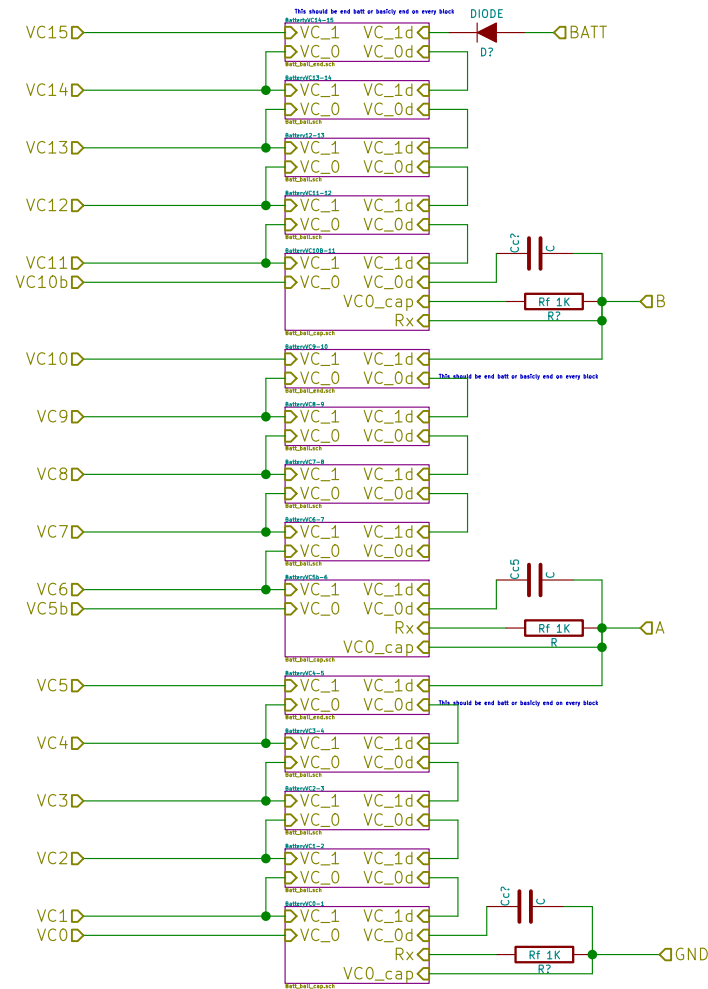
$$V_{TSX} = (ADC \text{ in Decimal}) \times 382 \mu V/LSB$$
$$R_{TS} = (10,000 \times V_{TSX}) \div (3.3 - V_{TSX})$$

Termistors
Connect with outer 6 pin



FESB		
Sheet: /BQ7***_high/NTC Temp monitor/ File: Temp.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 4/101

Mess bellow. Batt_ball circuit are sharing every pin except last and first
 So because they are sharing pin they are sharing a Rin so only
 last should have it.(IN every block).



FESB

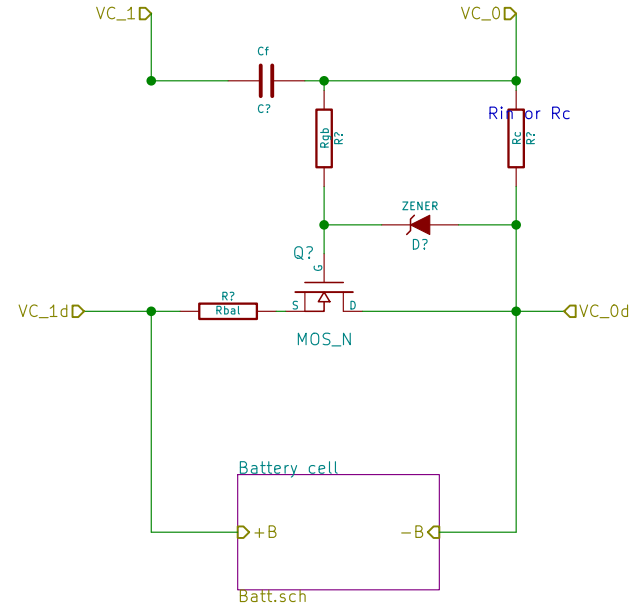
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 File: Batt_pack.sch

Title: Battery Pack

Size: A4 Date:
 KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:
 Id: 5/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC1-2/
File: Batt_ball.sch

Title:

Size: A4

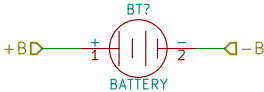
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Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

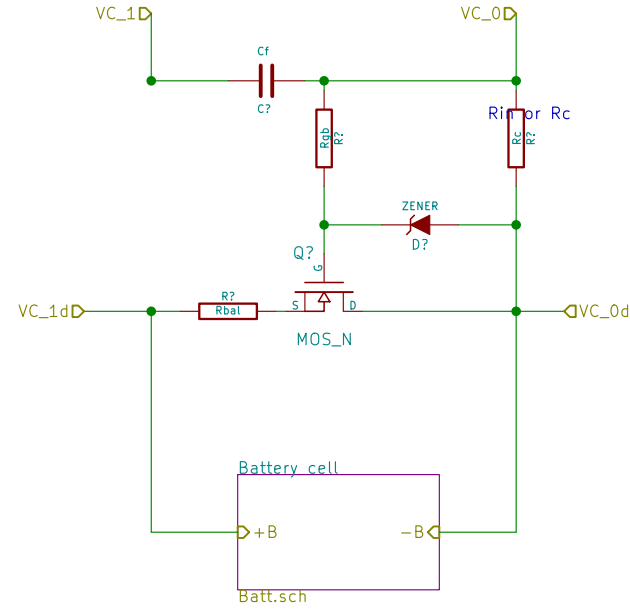
Id: 6/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC1-2/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 7/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC2-3/
File: Batt_ball.sch

Title:

Size: A4

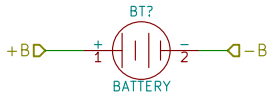
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KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

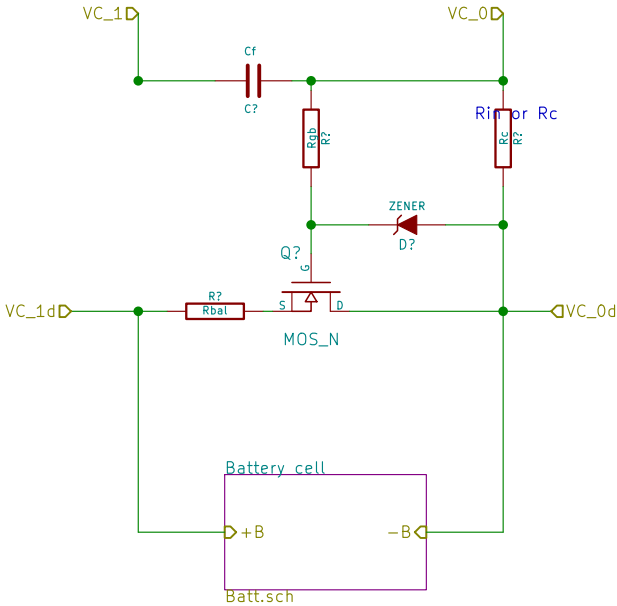
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Sheet for battery cell



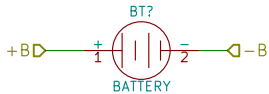
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File: Batt.sch		
Title:		
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KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 9/101

This is just mesurment and balancing circuit



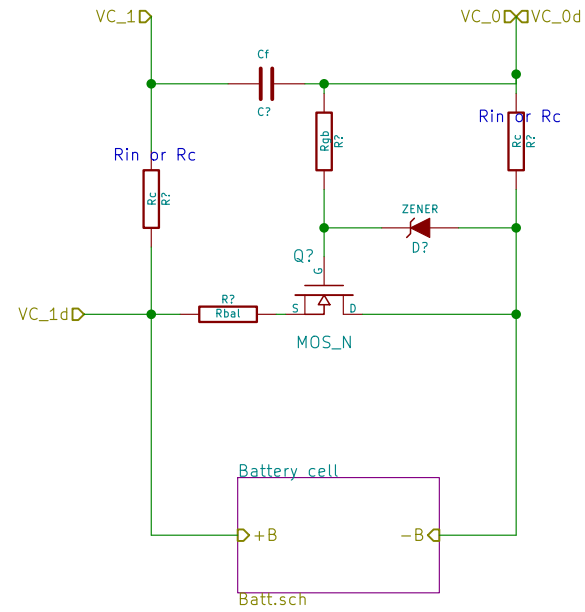
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File: Batt_ball.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 10/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC3-4/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product	Id: 11/101	

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC4-5/
File: Batt_bal_end.sch

Title:

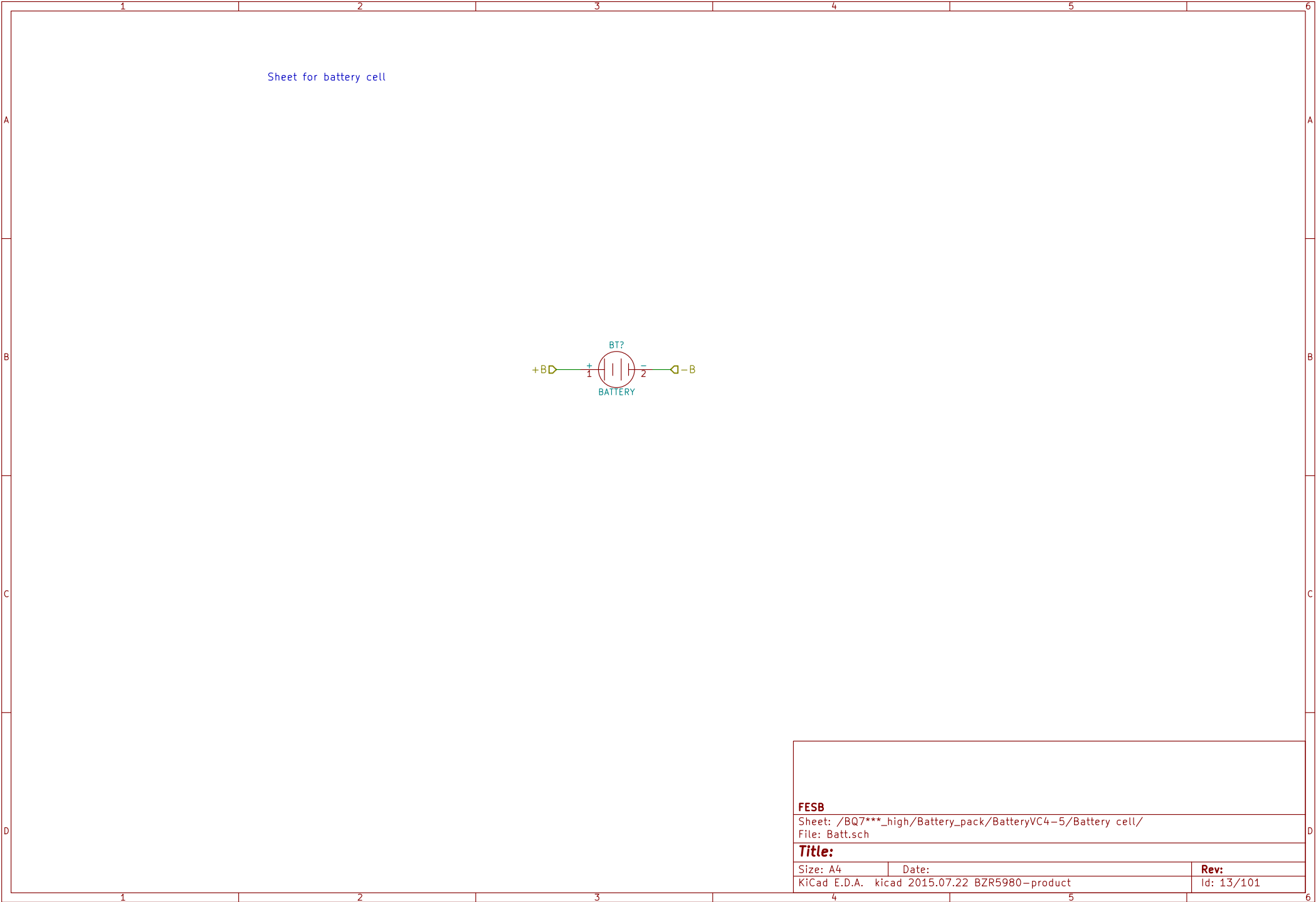
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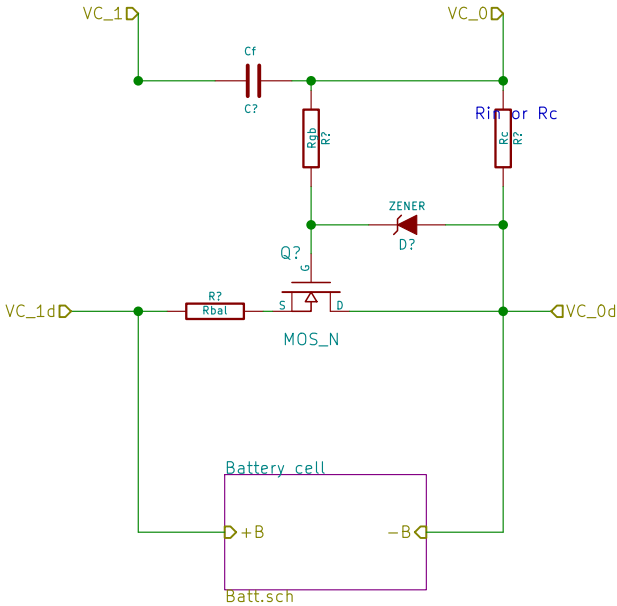
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Id: 12/101

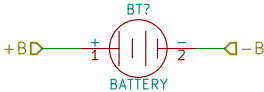


This is just mesurment and balancing circuit



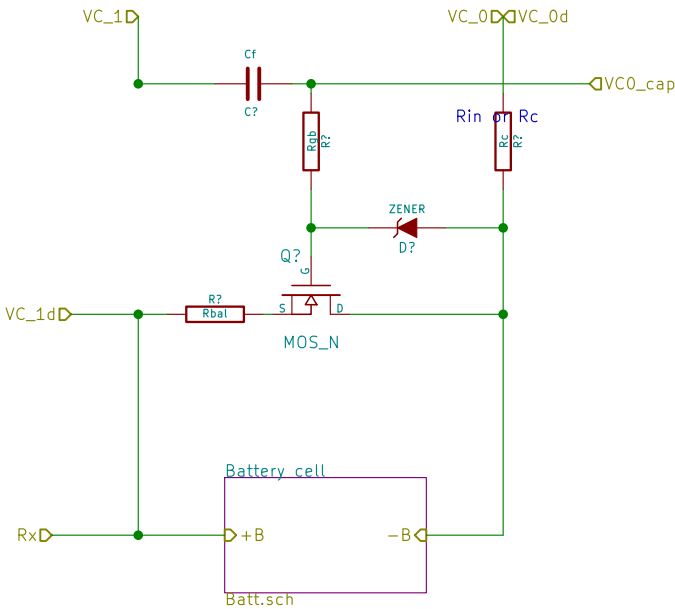
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Sheet: /BQ7***_high/Battery_pack/BatteryVC6-7/ File: Batt_ball.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 14/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC6-7/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product	Id: 15/101	

This is just mesurment and balancing circuit

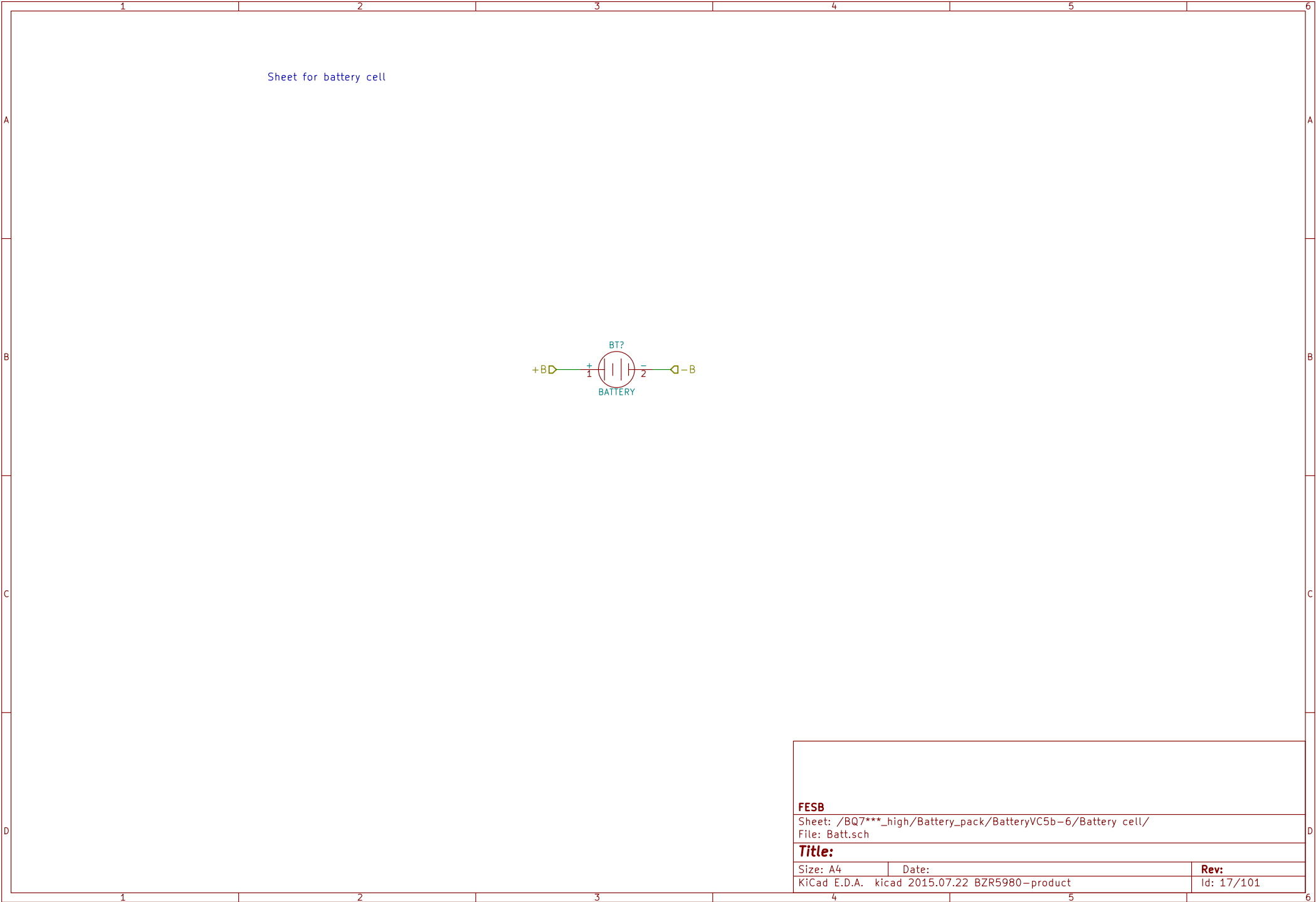


FESB

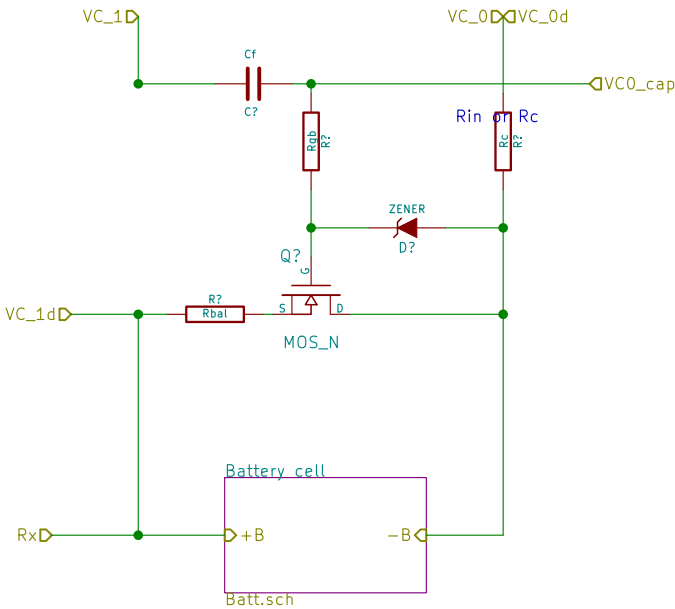
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File: Batt_ball_cap.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A.	kidcad 2015.07.22 BZR5980-product	Id: 16/101

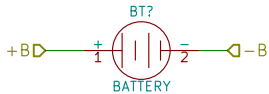


This is just mesurment and balancing circuit



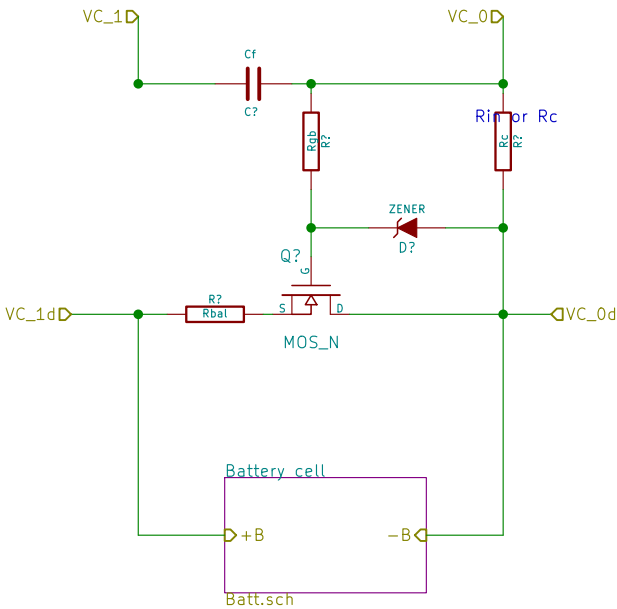
FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC0-1/		
File: Batt_ball_cap.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 18/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC0-1/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product	Id: 19/101	

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC7-8/
File: Batt_ball.sch

Title:

Size: A4

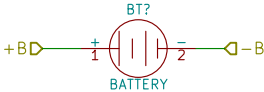
Date:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

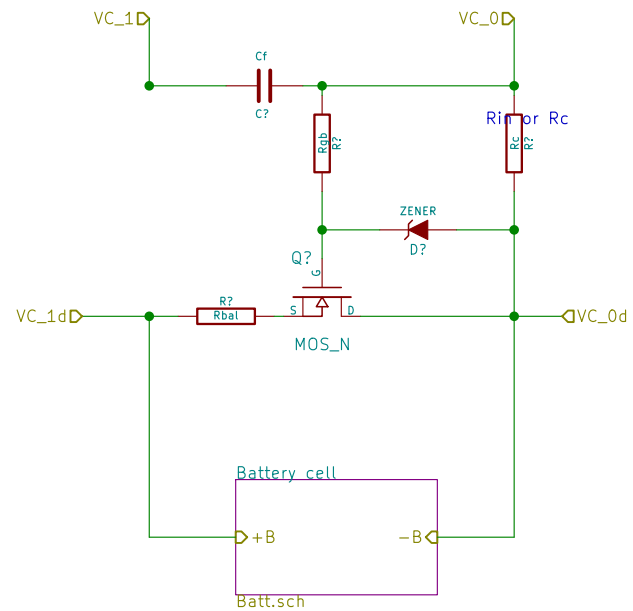
Id: 20/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC7-8/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product	Id: 21/101	

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC8-9/
File: Batt_ball.sch

Title:

Size: A4

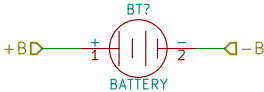
Date:

Rev:

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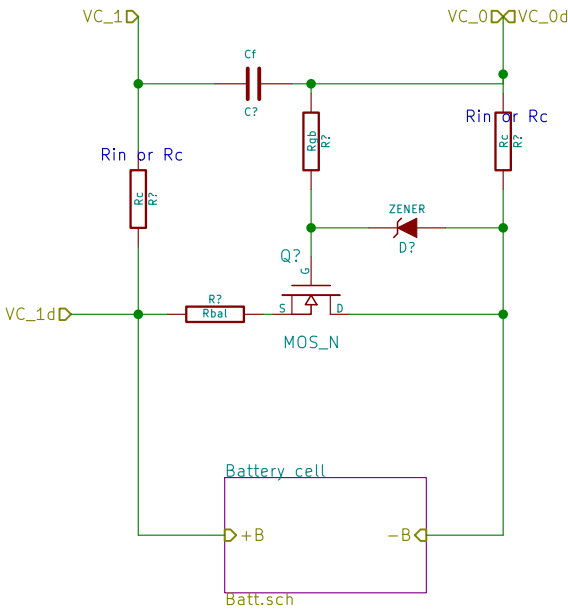
Id: 22/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC8-9/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 23/101

This is just mesurment and balancing circuit

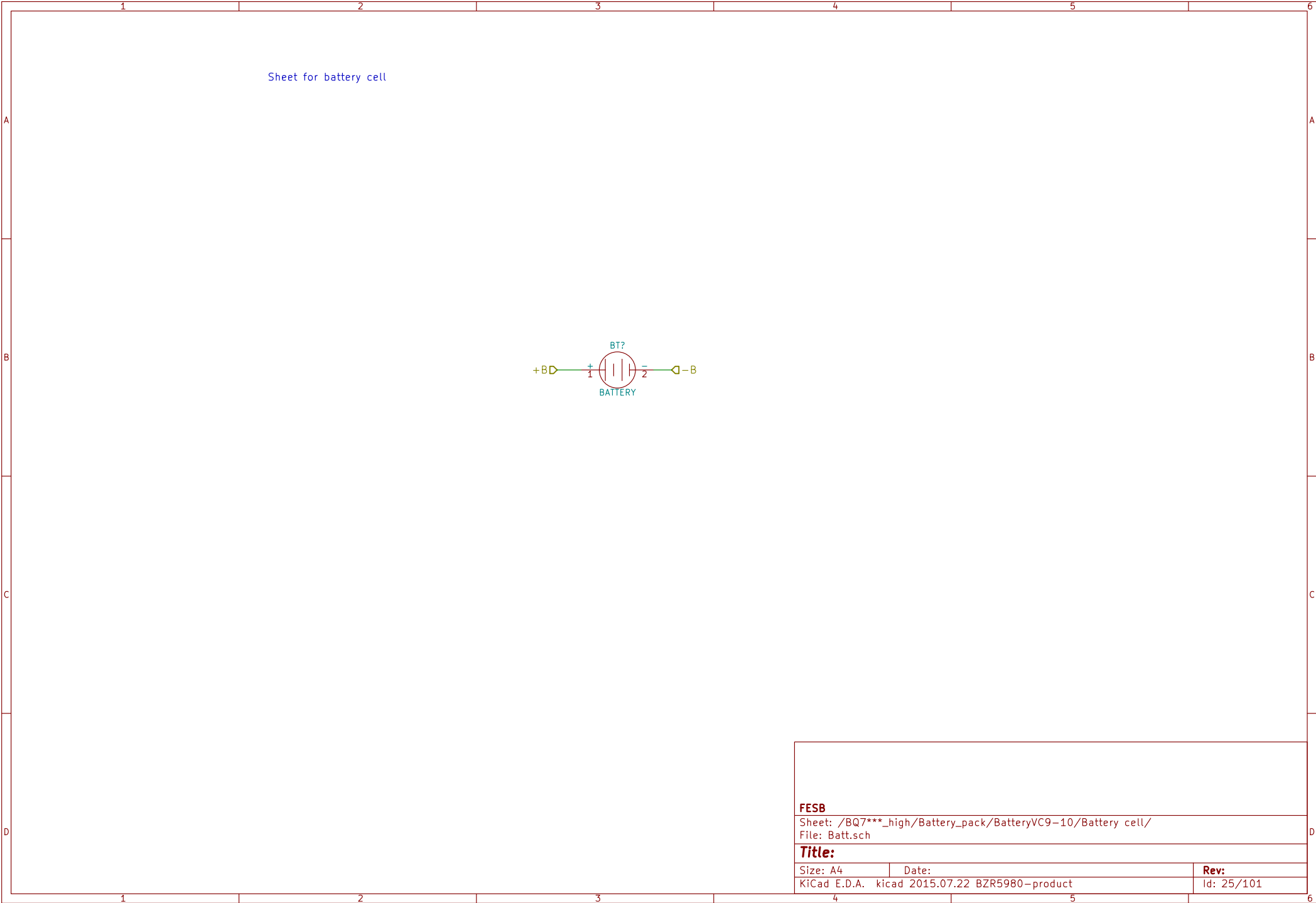


FESB

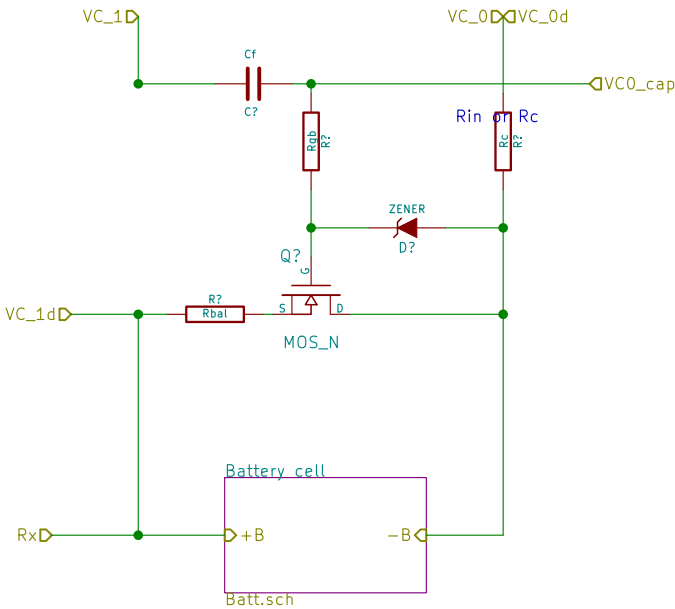
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File: Batt_bal_end.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 24/101



This is just mesurment and balancing circuit



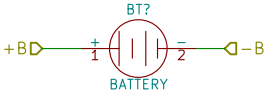
FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC10B-11/
File: Batt_ball_cap.sch

Title:

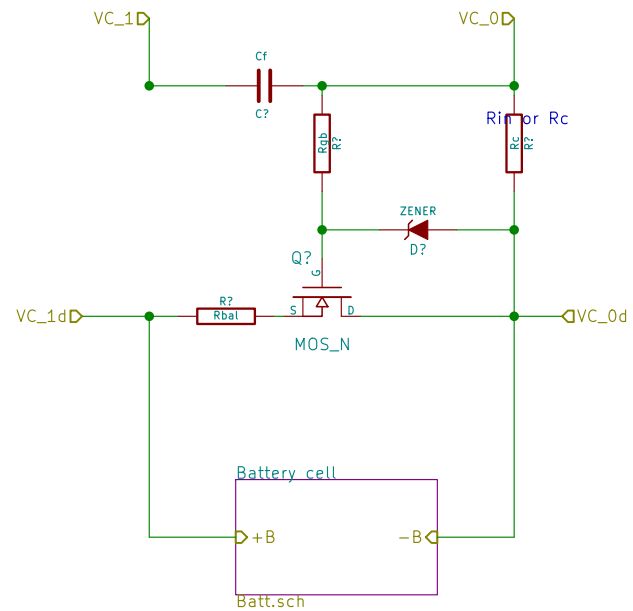
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KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 26/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC10B-11/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 27/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC11-12/
File: Batt_ball.sch

Title:

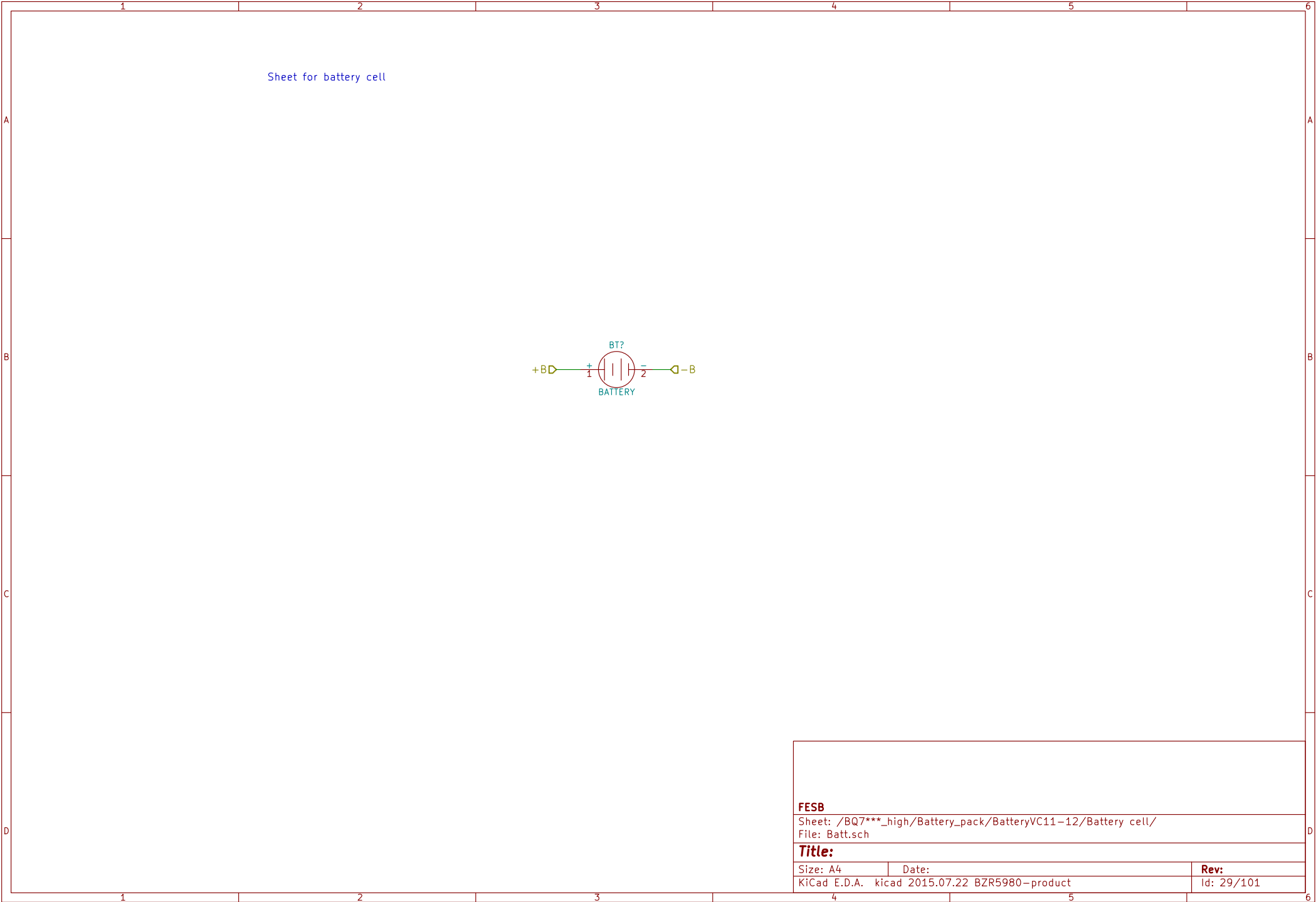
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Date:

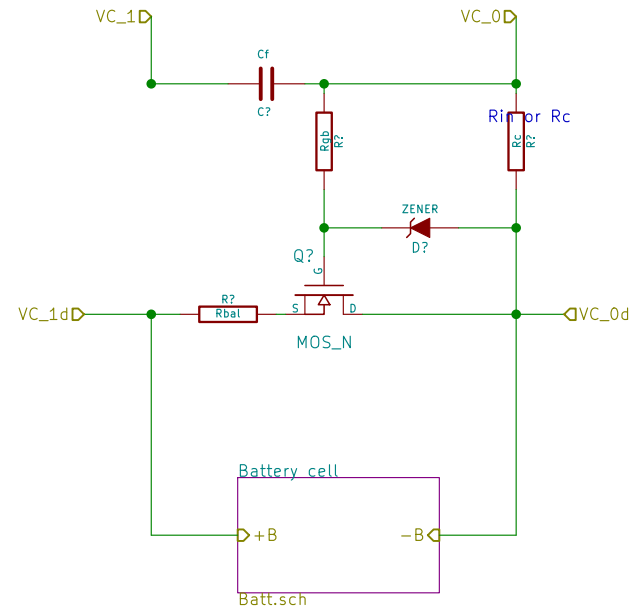
Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Id: 28/101



This is just mesurment and balancing circuit



FESB

Sheet: /BQ7***_high/Battery_pack/Battery12-13/
File: Batt_ball.sch

Title:

Size: A4

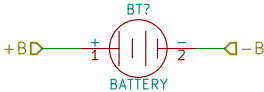
Date:

Rev:

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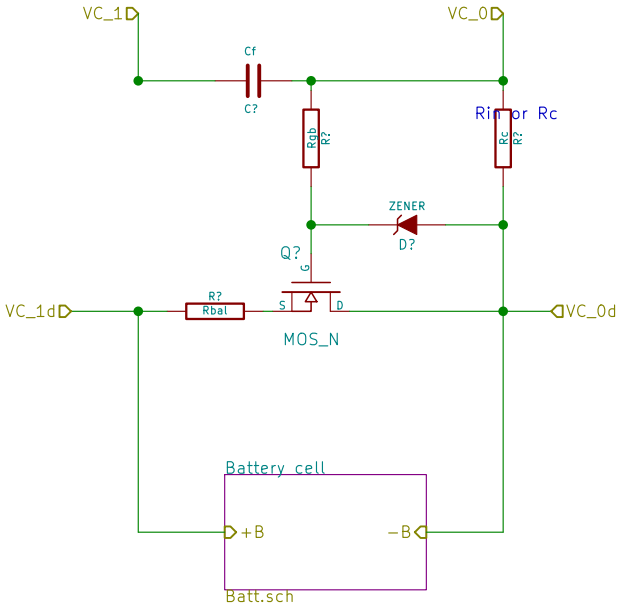
Id: 30/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/Battery12-13/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 31/101

This is just mesurment and balancing circuit



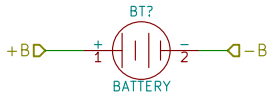
FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC13-14/
File: Batt_ball.sch

Title:

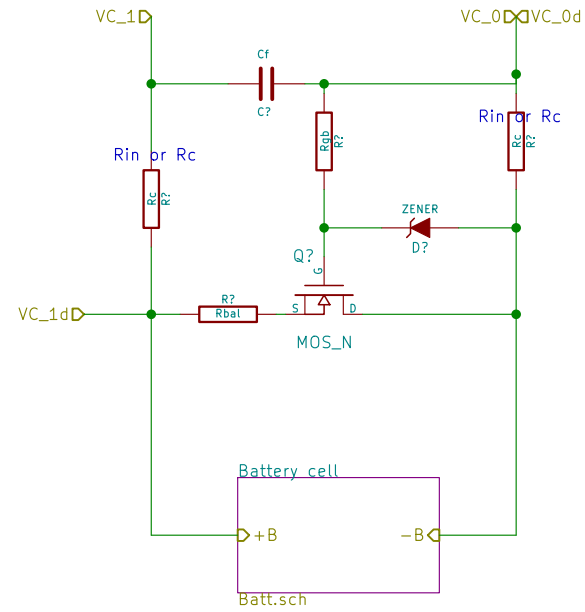
Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 32/101

Sheet for battery cell



FESB		
Sheet: /BQ7***_high/Battery_pack/BatteryVC13-14/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 33/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7***_high/Battery_pack/BatteryVC14-15/
File: Batt_bal_end.sch

Title:

Size: A4

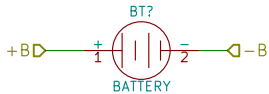
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Rev:

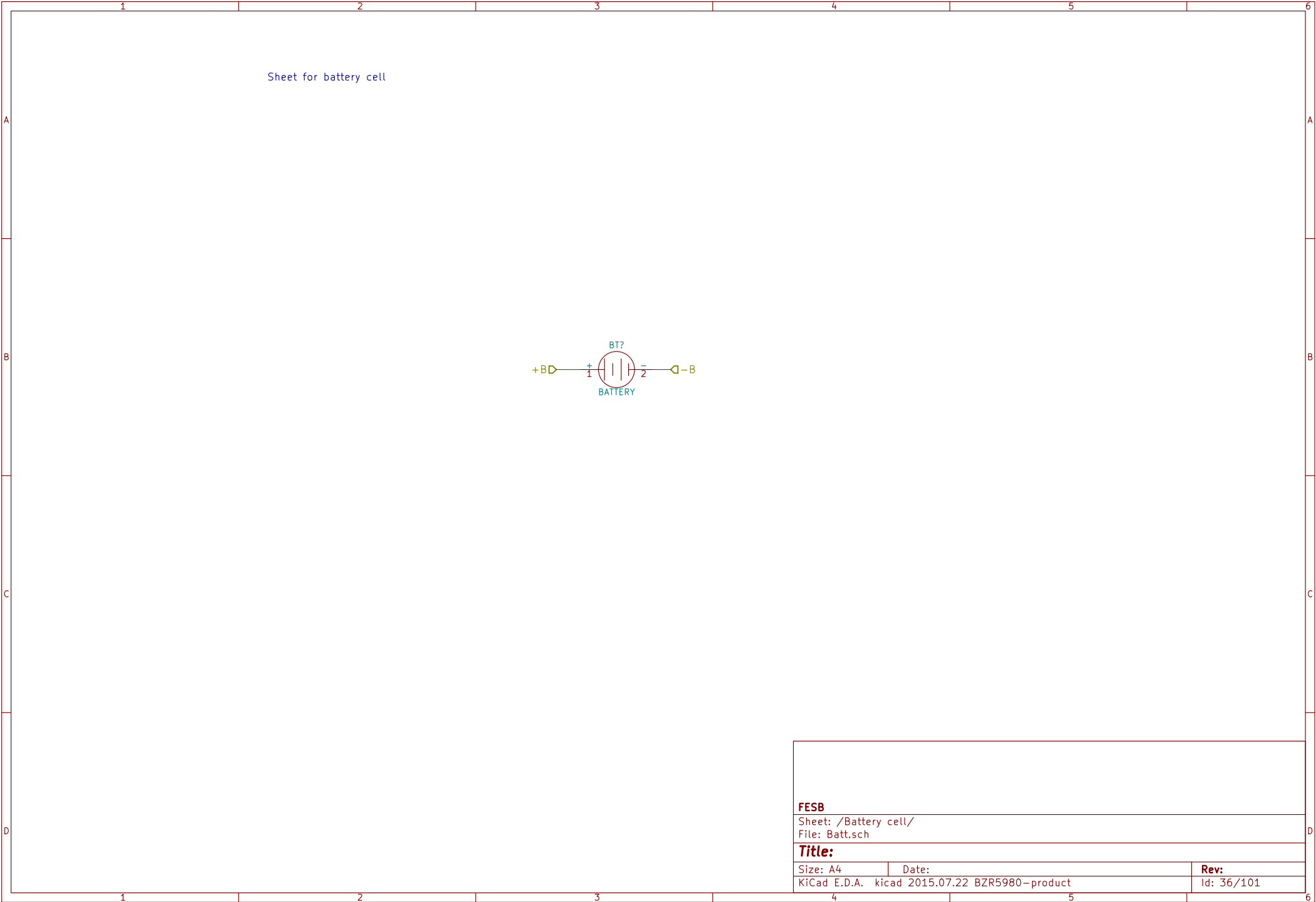
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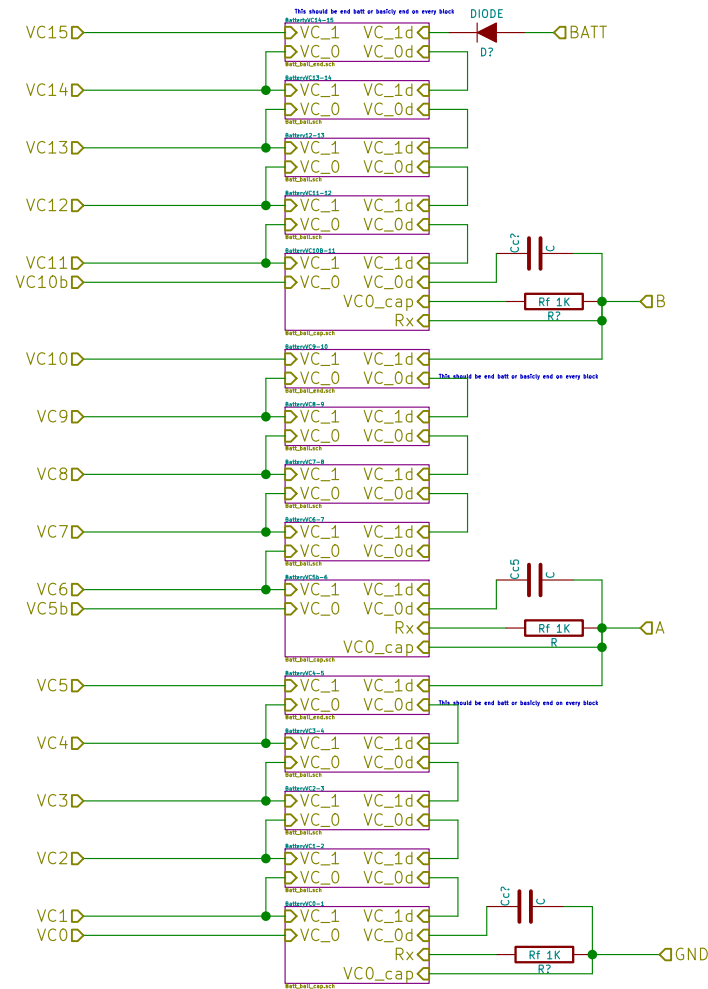
Sheet for battery cell



FESB		
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File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 35/101



Mess bellow. Batt_ball circuit are sharing every pin except last and first
 So because they are sharing pin they are sharing a Rin so only
 last should have it.(IN every block).



FESB

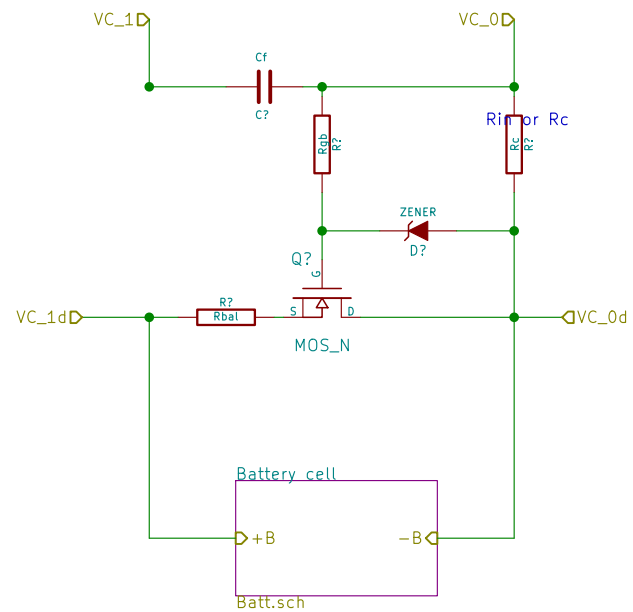
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 File: Batt_pack.sch

Title: Battery Pack

Size: A4 Date:
 KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:
 Id: 37/101

This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC1-2/
File: Batt_ball.sch

Title:

Size: A4

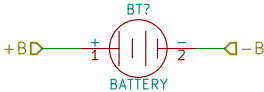
Date:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

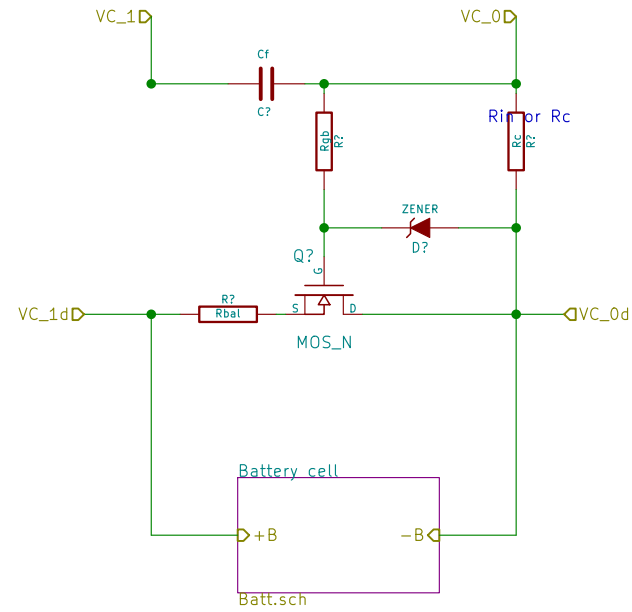
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Sheet for battery cell



FESB		
Sheet: /Battery_pack/BatteryVC1-2/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 39/101

This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC2-3/
File: Batt_ball.sch

Title:

Size: A4

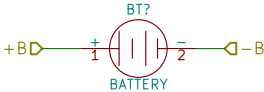
Date:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

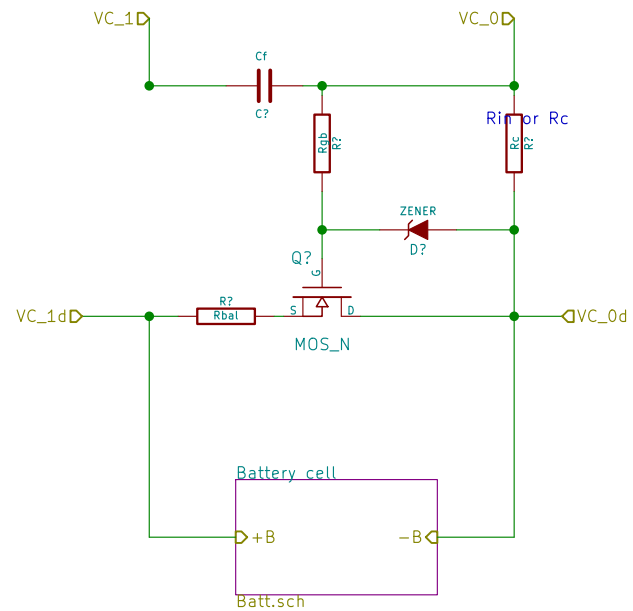
Id: 40/101

Sheet for battery cell



FESB		
Sheet: /Battery_pack/BatteryVC2-3/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 41/101

This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC3-4/
File: Batt_ball.sch

Title:

Size: A4

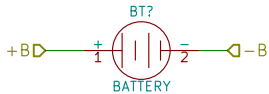
Date:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

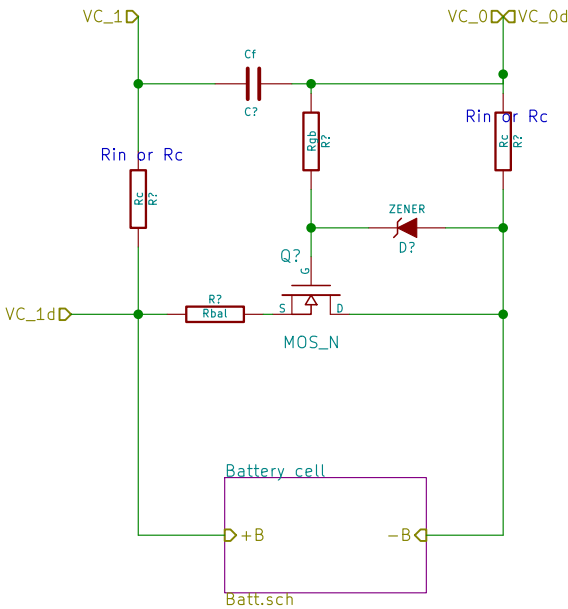
Id: 42/101

Sheet for battery cell



FESB		
Sheet: /Battery_pack/BatteryVC3-4/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 43/101

This is just mesurment and balancing circuit

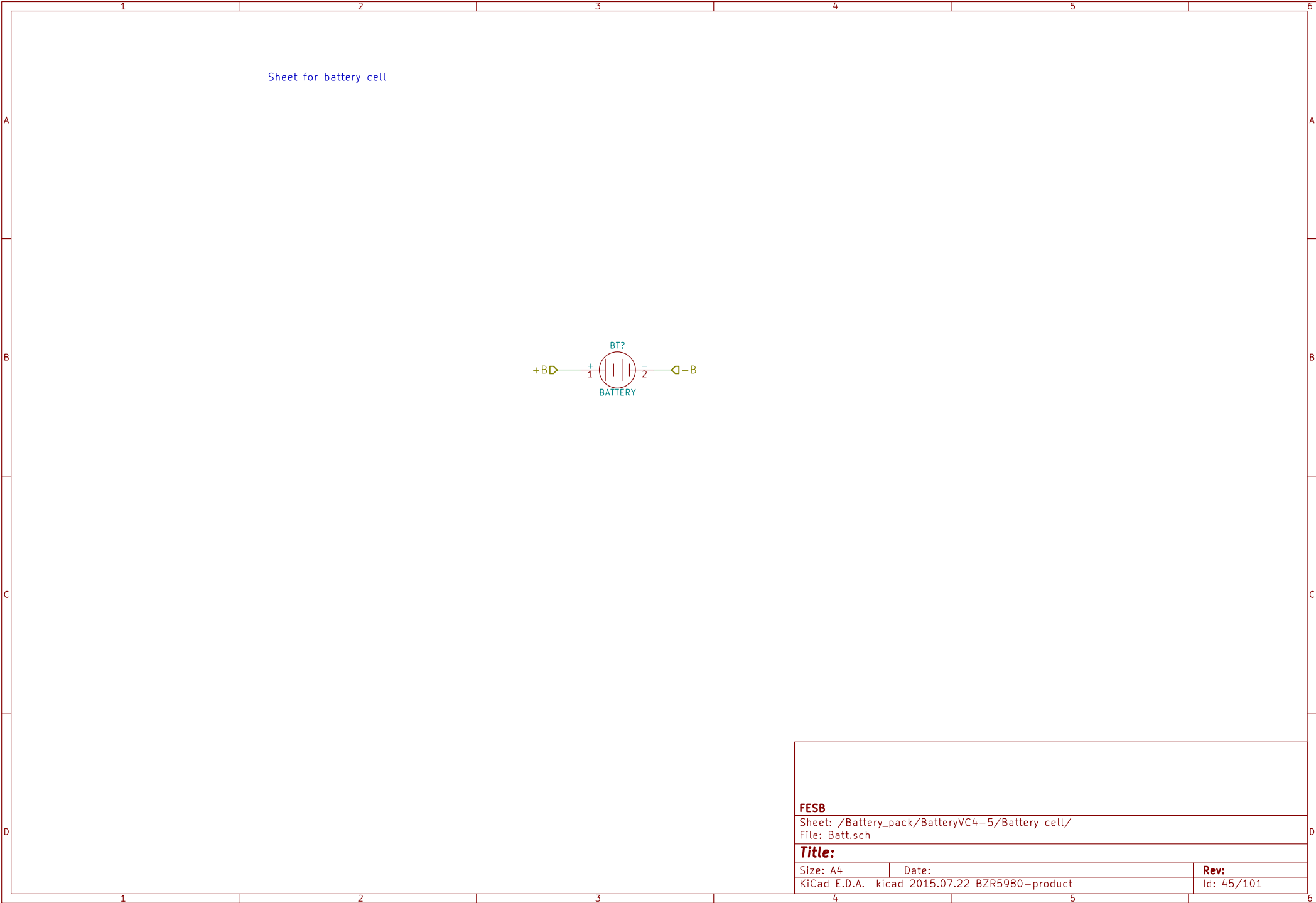


FESB

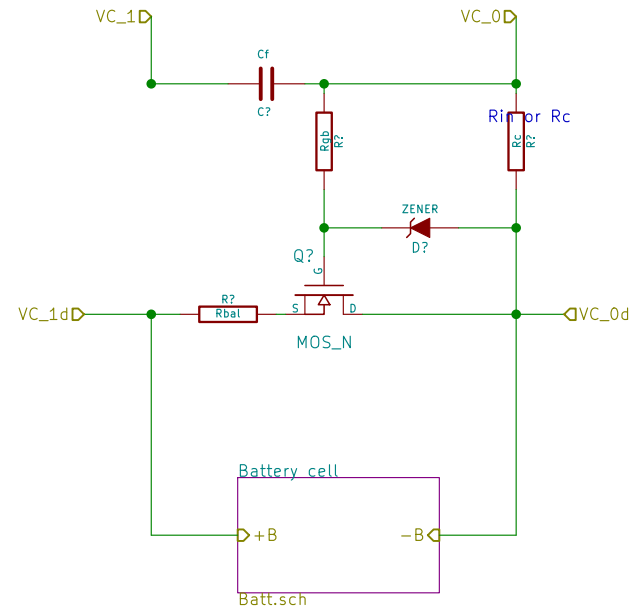
Sheet: /Battery_pack/BatteryVC4-5/
File: Batt_ball_end.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 44/101



This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC6-7/
File: Batt_ball.sch

Title:

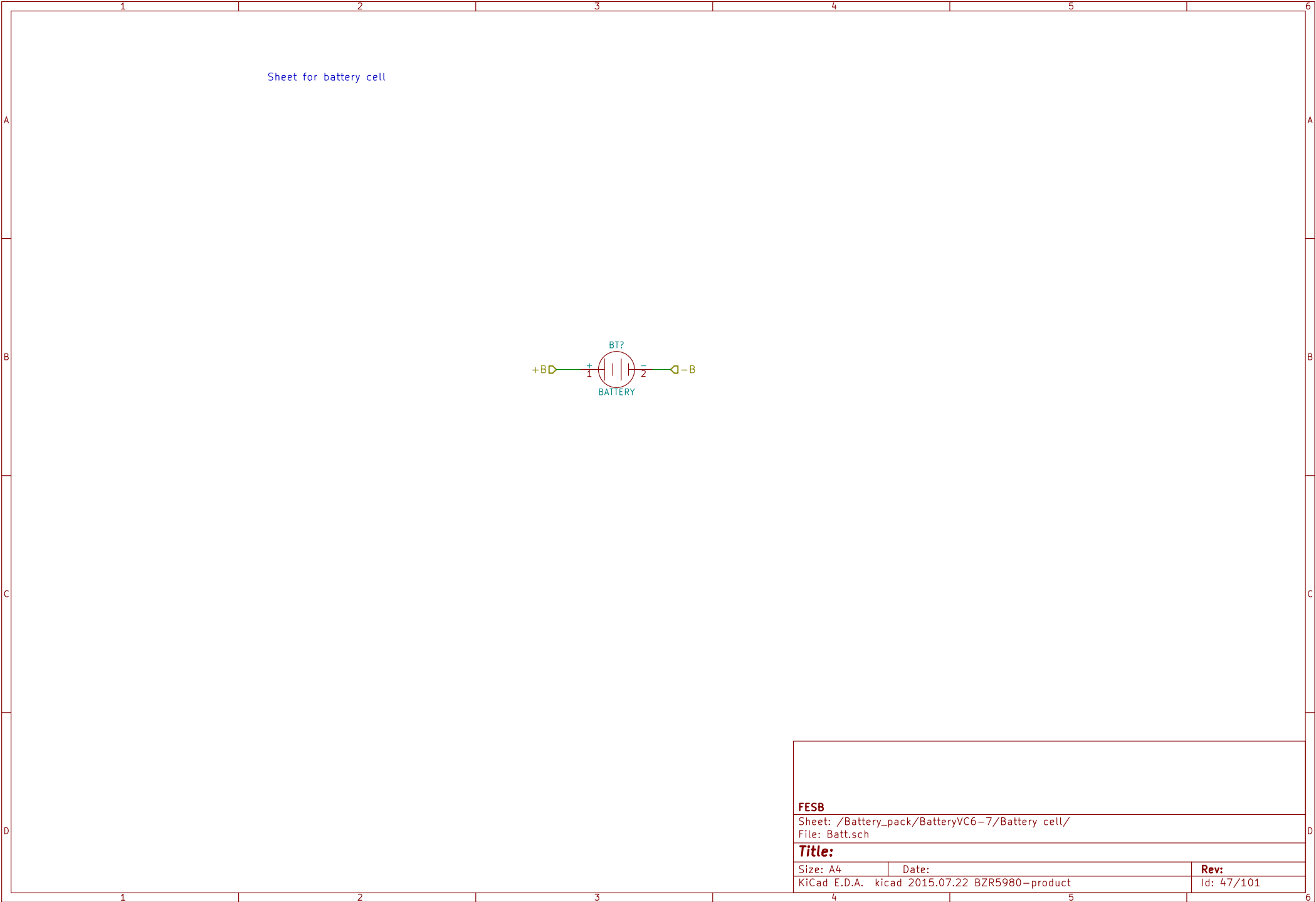
Size: A4

Date:

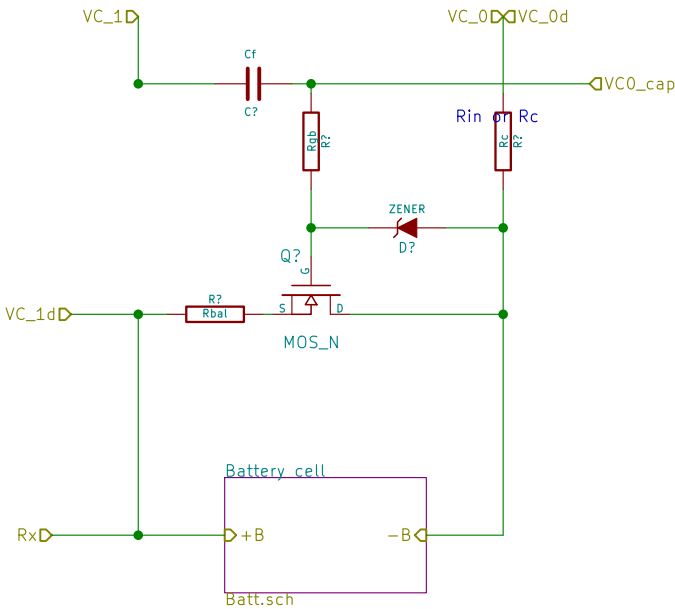
KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

Id: 46/101



This is just mesurment and balancing circuit

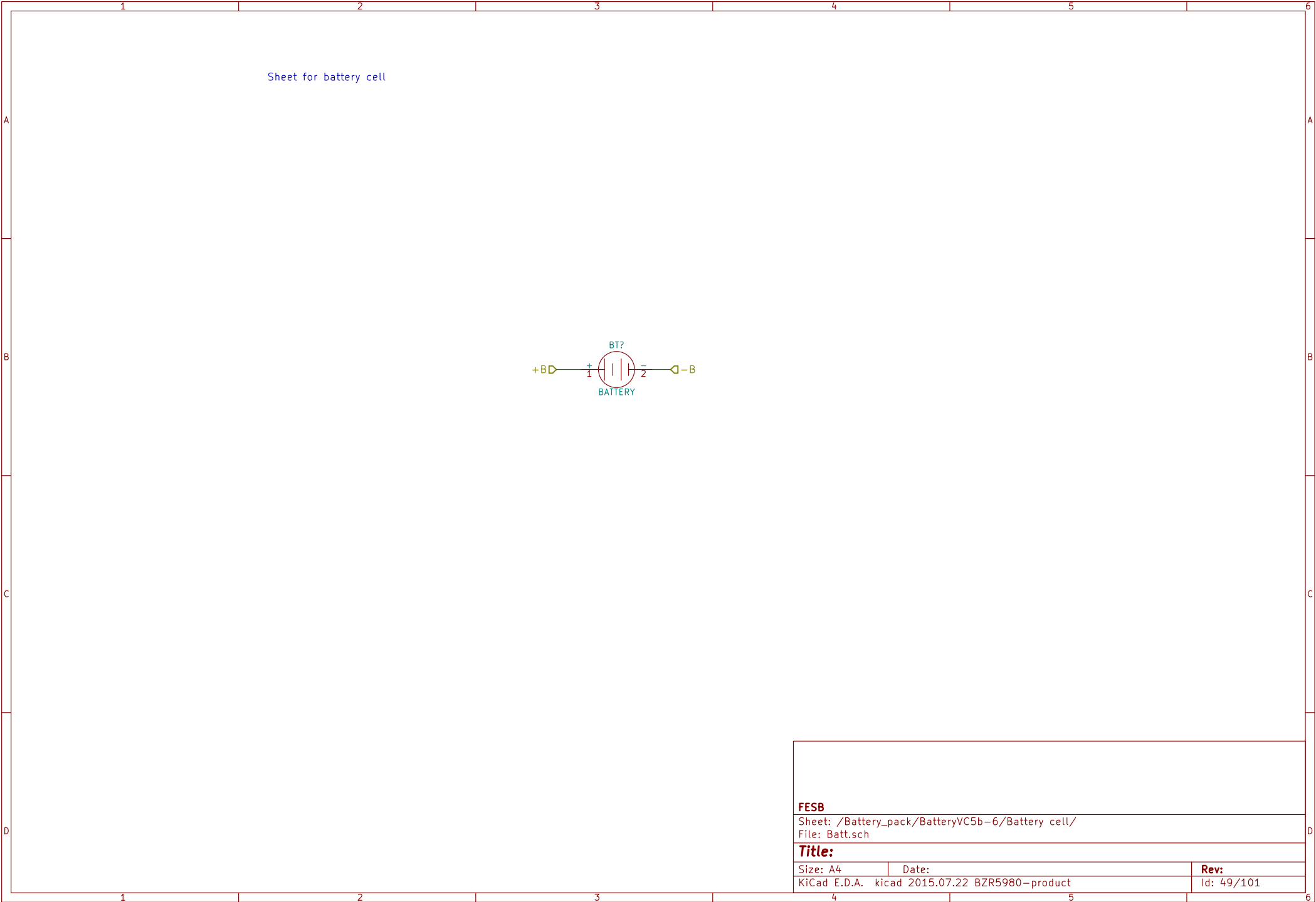


FESB

Sheet: /Battery_pack/BatteryVC5b-6/
File: Batt_ball_cap.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A.	kidcad 2015.07.22 BZR5980-product	Id: 48/101



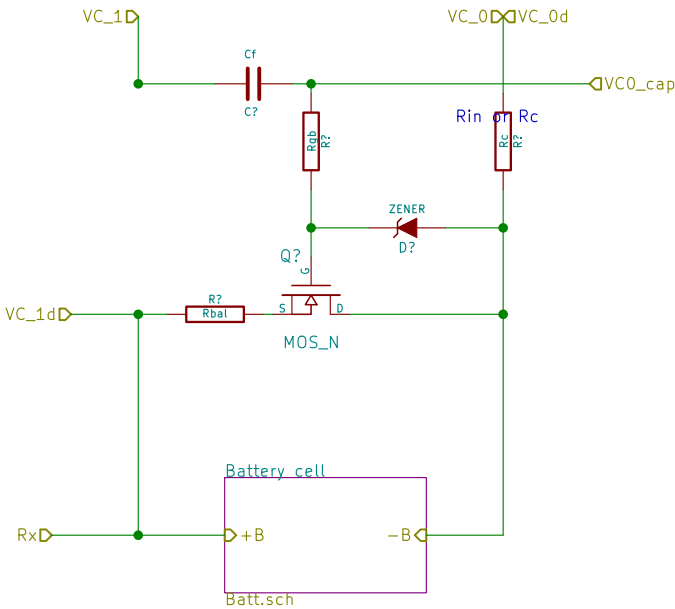
FESB

Sheet: /Battery_pack/BatteryVC5b-6/Battery cell/
File: Batt.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 49/101

This is just mesurment and balancing circuit

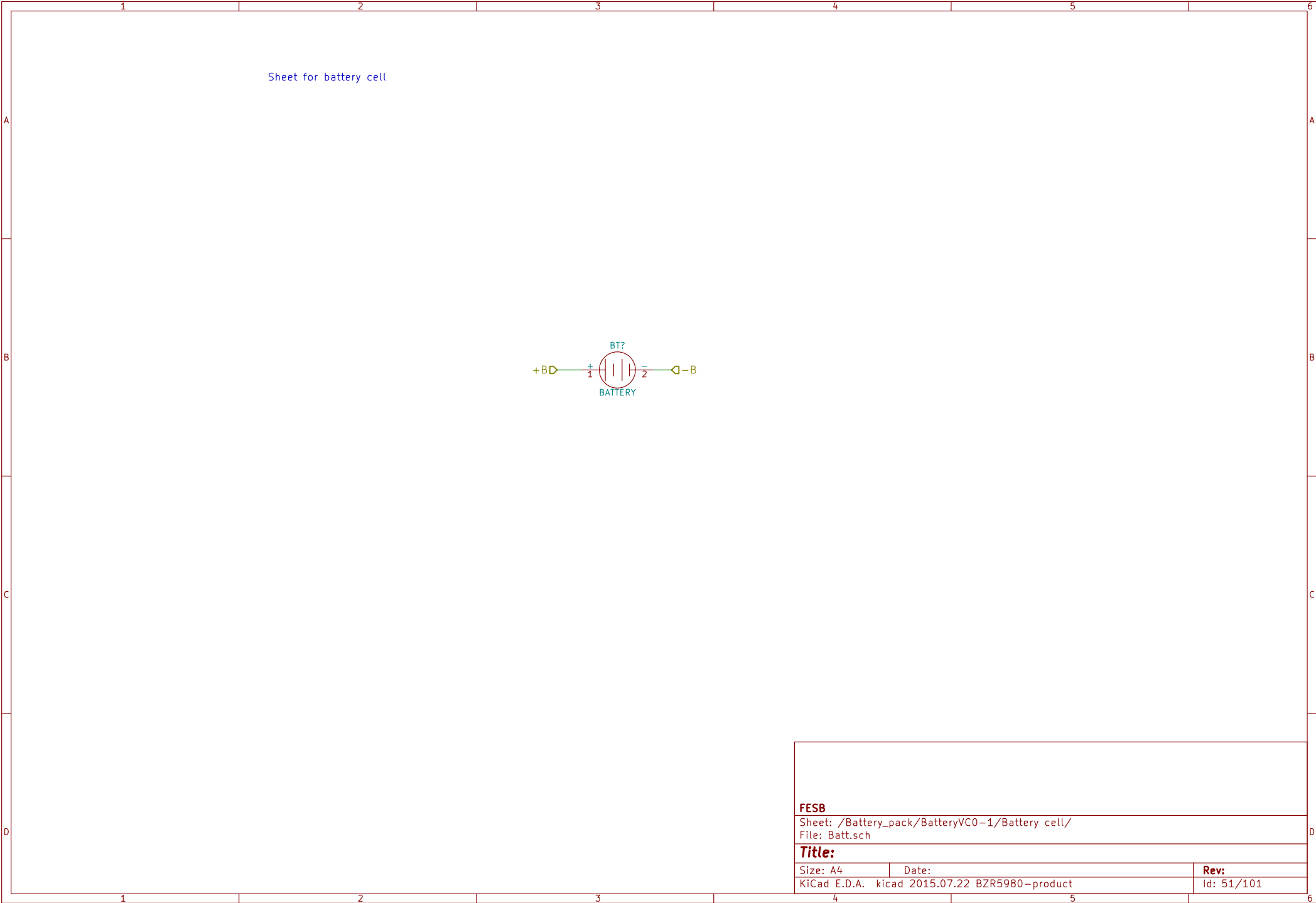


FESB

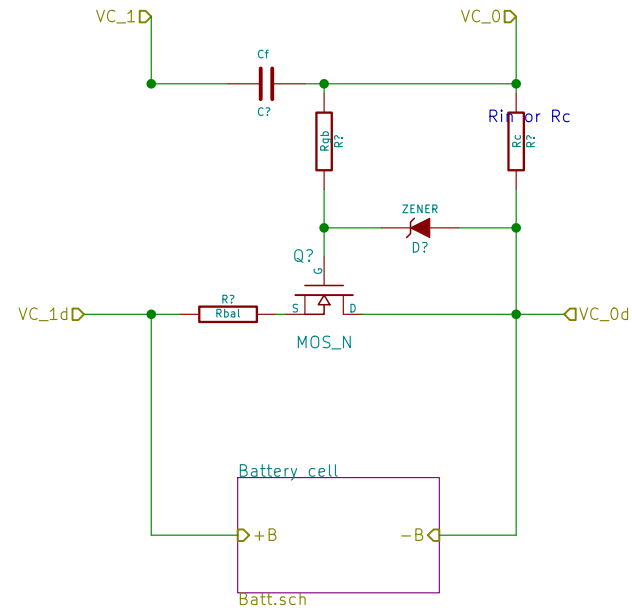
Sheet: /Battery_pack/BatteryVC0-1/
File: Batt_ball_cap.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 50/101



This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC7-8/
File: Batt_ball.sch

Title:

Size: A4

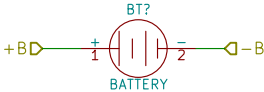
Date:

Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

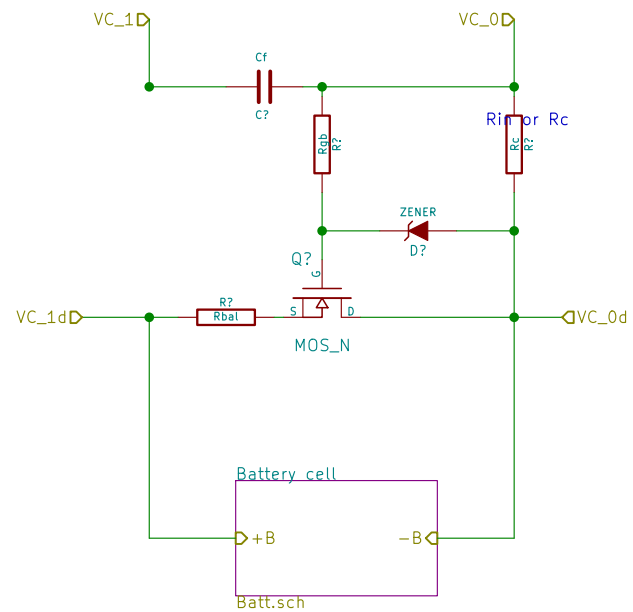
Id: 52/101

Sheet for battery cell



FESB		
Sheet: /Battery_pack/BatteryVC7-8/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 53/101

This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC8-9/
File: Batt_ball.sch

Title:

Size: A4

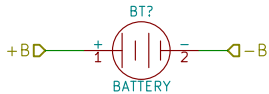
Date:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

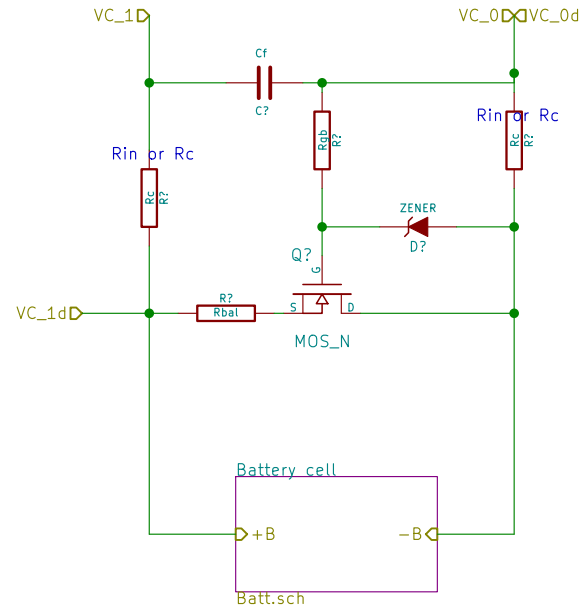
Id: 54/101

Sheet for battery cell



FESB		
Sheet: /Battery_pack/BatteryVC8-9/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 55/101

This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC9-10/
File: Batt_ball_end.sch

Title:

Size: A4

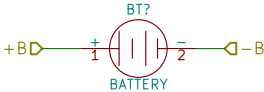
Date:

Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

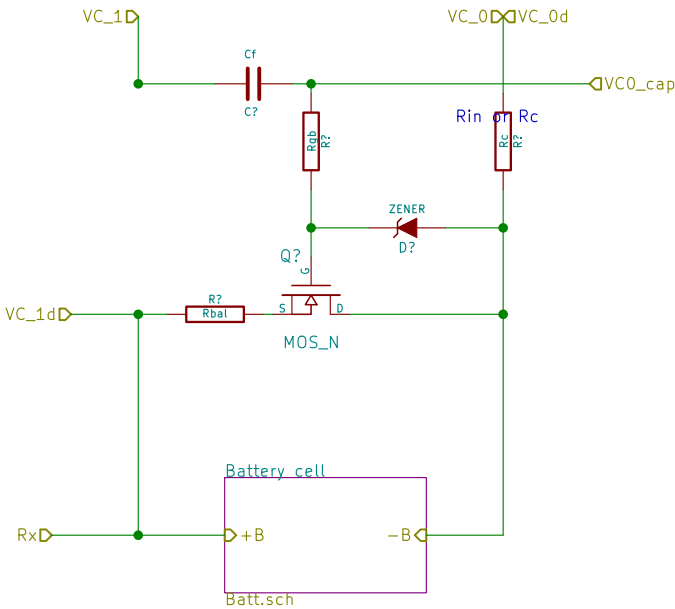
Id: 56/101

Sheet for battery cell



FESB		
Sheet: /Battery_pack/BatteryVC9-10/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 57/101

This is just mesurment and balancing circuit

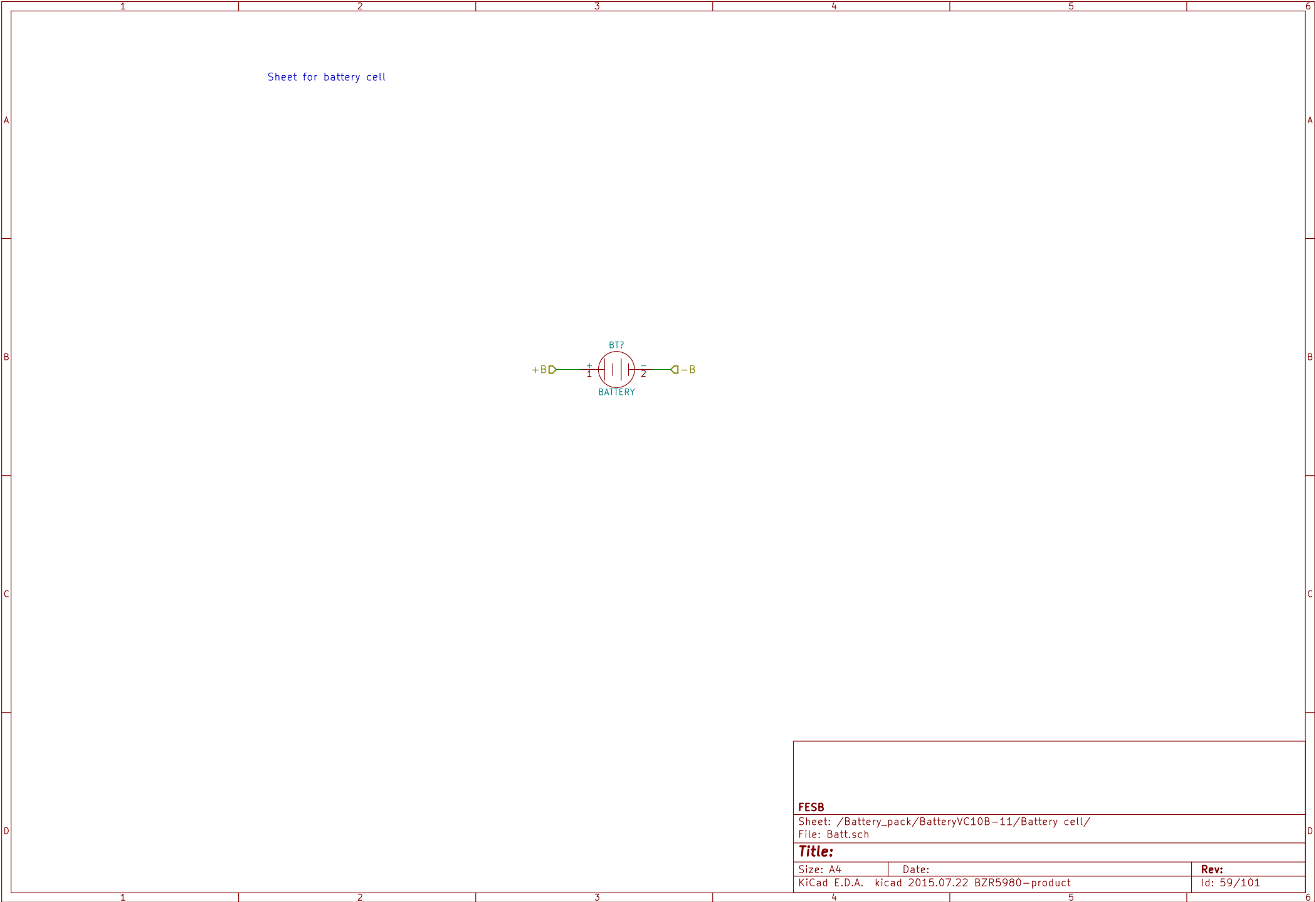


FESB

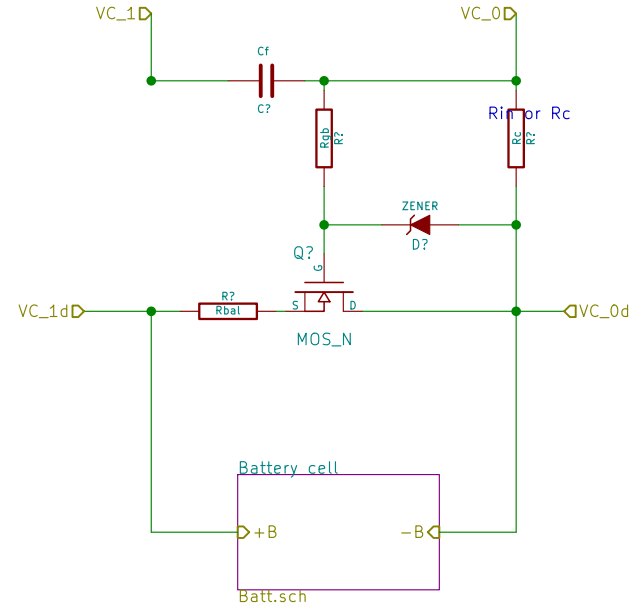
Sheet: /Battery_pack/BatteryVC10B-11/
File: Batt_ball_cap.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 58/101



This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC11-12/
File: Batt_ball.sch

Title:

Size: A4

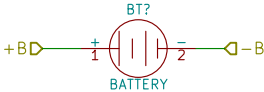
Date:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

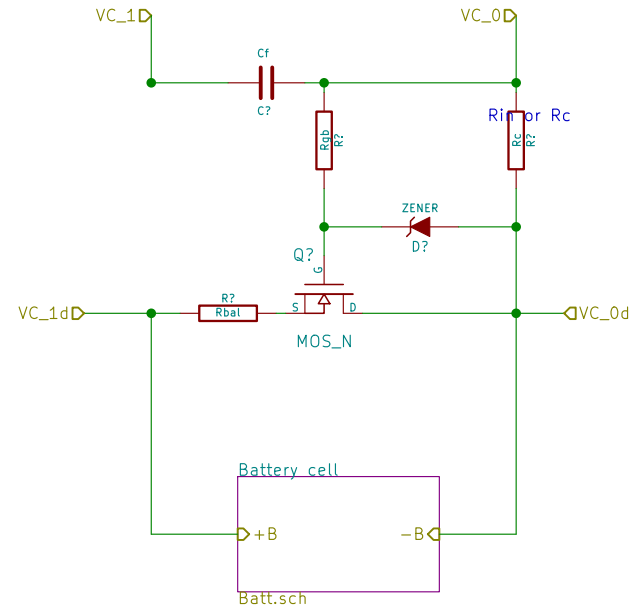
Id: 60/101

Sheet for battery cell



FESB		
Sheet: /Battery_pack/BatteryVC11-12/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 61/101

This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/Battery12-13/
File: Batt_ball.sch

Title:

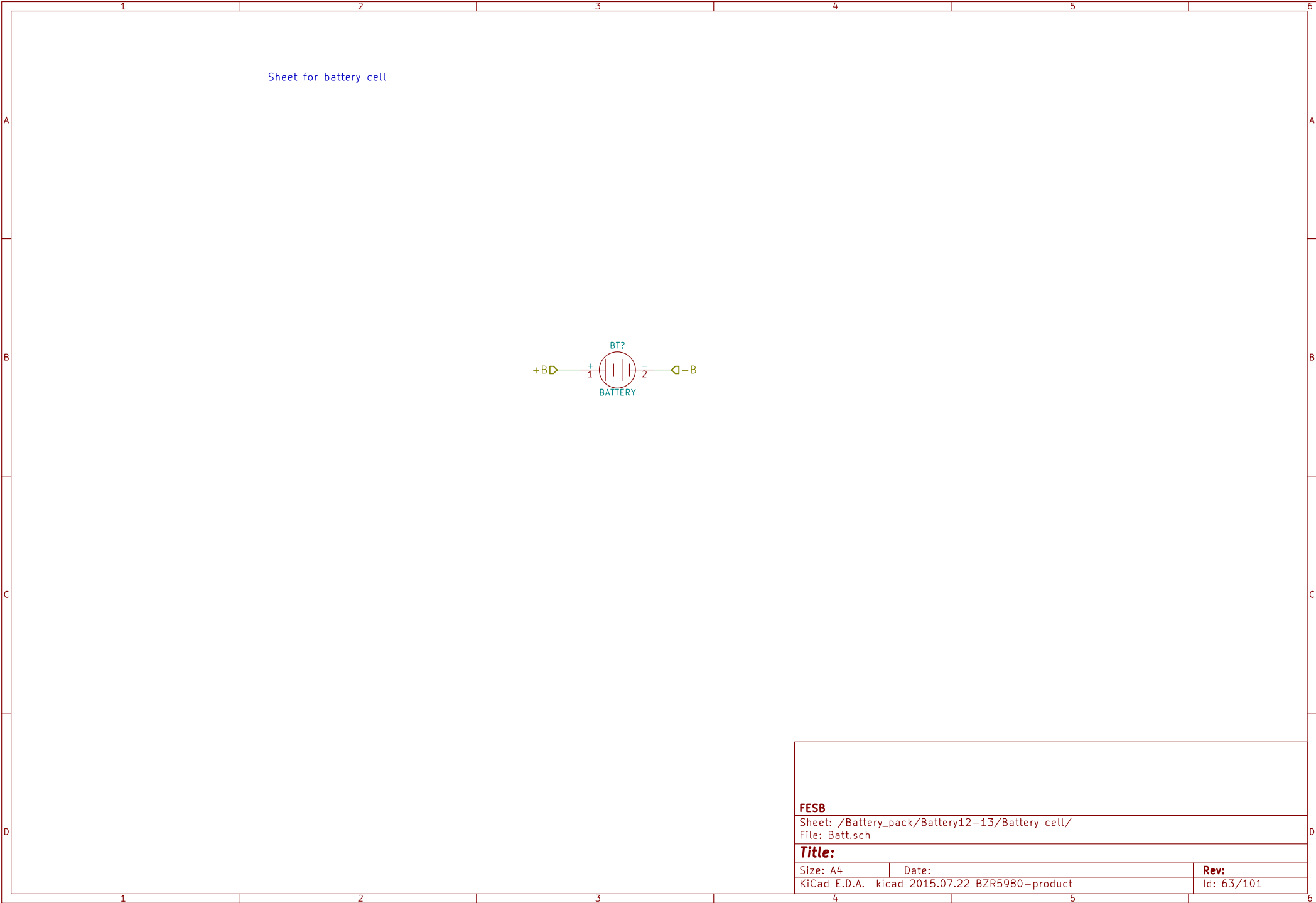
Size: A4

Date:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

Id: 62/101



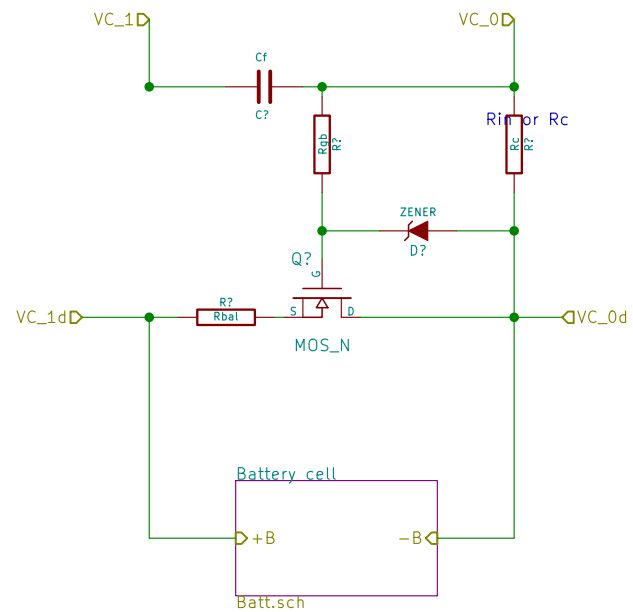
FESB

Sheet: /Battery_pack/Battery12-13/Battery cell/
File: Batt.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product	Id: 63/101	

This is just mesurment and balancing circuit



FESB

Sheet: /Battery_pack/BatteryVC13-14/
File: Batt_ball.sch

Title:

Size: A4

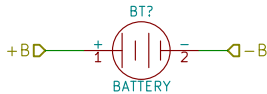
Date:

Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

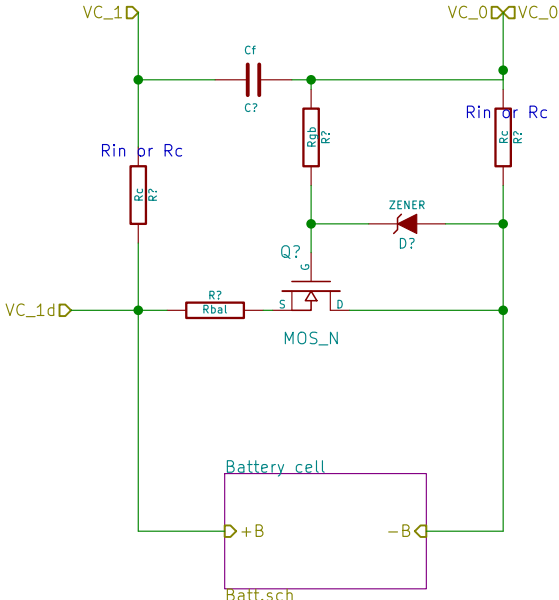
Id: 64/101

Sheet for battery cell



FESB		
Sheet: /Battery_pack/BatteryVC13-14/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 65/101

This is just measurement and balancing circuit



FESB

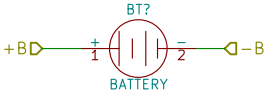
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File: Batt_ball_end.sch

Title:

Size: A4	Date:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product	

Rev: 1.0
Id: 66/101

Sheet for battery cell

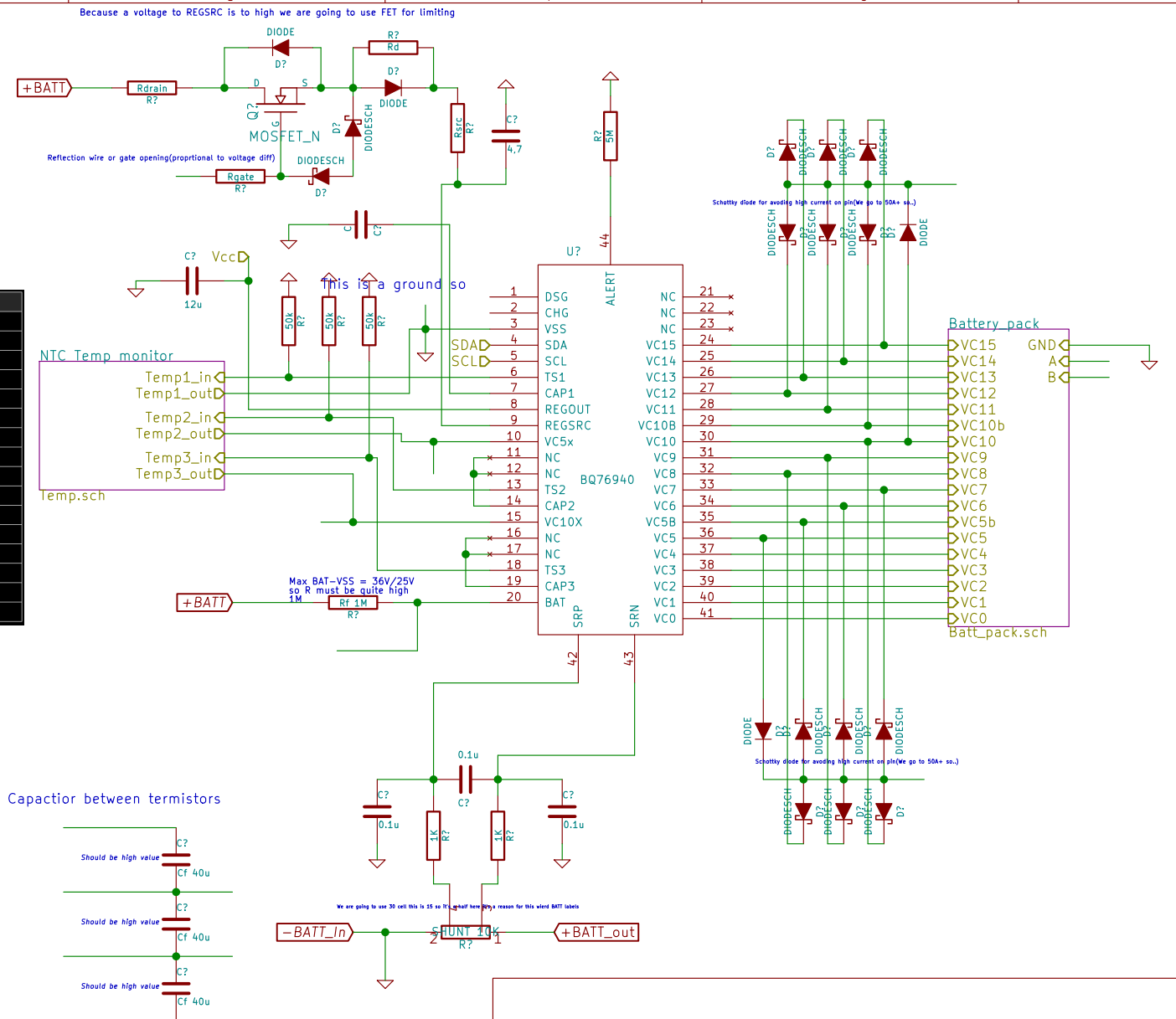


FESB		
Sheet: /Battery_pack/BatteryVC14-15/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 67/101

VSS is same as ground symbol in this sheet

PIN	NAME	TYPE	DESCRIPTION
1	DSG	O	Discharge FET driver
2	CHG	O	Charge FET driver
3	VSS	—	Chip VSS
4	SDA	I/O	I ² C communication to the host controller
5	SCL	I	I ² C communication to the host controller
6	TS1	I	Thermistor #1 positive terminal ⁽¹⁾
7	CAP1	O	Capacitor to VSS
8	REGOUT	P	Output LDO
9	REGSRC	I	Input source for output LDO
10	VC5X	P	Thermistor #2 negative terminal
11	NC	—	No connect (short to CAP2)
12	NC	—	No connect (short to CAP2)
13	TS2	I	Thermistor #2 positive terminal ⁽¹⁾
14	CAP2	O	Capacitor to VC5X
15	VC10X	P	Thermistor #3 negative terminal
16	NC	—	No connect (short to CAP3)

PIN	NAME	TYPE	DESCRIPTION
17	NC	—	No connect (short to CAP3)
18	TS3	I	Thermistor #3 positive terminal ⁽¹⁾
19	CAP3	O	Capacitor to VC10X
20	BAT	P	Battery (top-most) terminal
21	NC	—	No connect
22	NC	—	No connect
23	NC	—	No connect
24	VC15	I	Sense voltage for 15th cell positive terminal
25	VC14	I	Sense voltage for 14th cell positive terminal
26	VC13	I	Sense voltage for 13th cell positive terminal
27	VC12	I	Sense voltage for 12th cell positive terminal
28	VC11	I	Sense voltage for 11th cell positive terminal
29	VC10B	I	Sense voltage for 10th cell negative terminal
30	VC10	I	Sense voltage for 10th cell positive terminal
31	VC9	I	Sense voltage for 9th cell positive terminal
32	VC8	I	Sense voltage for 8th cell positive terminal
33	VC7	I	Sense voltage for 7th cell positive terminal
34	VC6	I	Sense voltage for 6th cell positive terminal
35	VC5B	I	Sense voltage for 6th cell negative terminal
36	VC5	I	Sense voltage for 5th cell positive terminal
37	VC4	I	Sense voltage for 4th cell positive terminal
38	VC3	I	Sense voltage for 3rd cell positive terminal
39	VC2	I	Sense voltage for 2nd cell positive terminal
40	VC1	I	Sense voltage for 1st cell positive terminal
41	VC0	I	Sense voltage for 1st cell negative terminal
42	SRP	I	Negative current sense (nearest VSS)
43	SRN	I	Positive current sense
44	ALERT	I/O	Alert output and override input



Dont forget this when programming

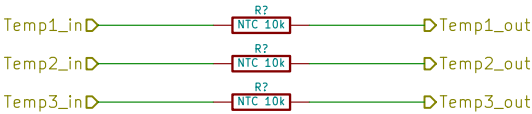
Size: A4	Date:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product	

Rev:
Id: 68/101

Missing only for NTC so we can convert to Temp

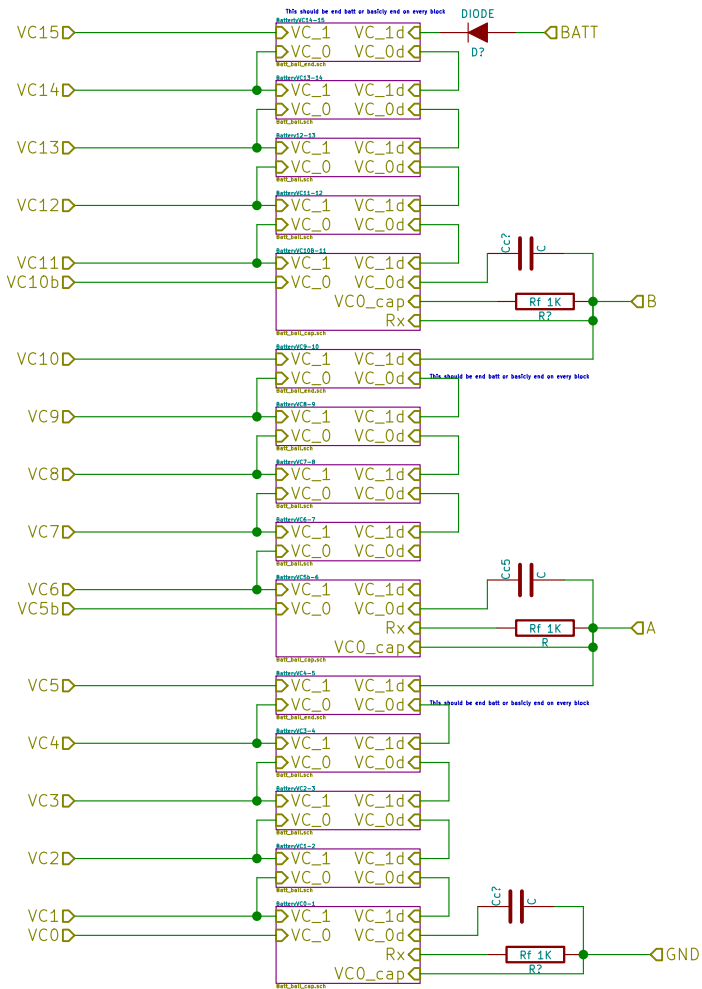
$$V_{TSX} = (ADC \text{ in Decimal}) \times 382 \mu V/LSB$$
$$R_{TS} = (10,000 \times V_{TSX}) \div (3.3 - V_{TSX})$$

Termistors
Connect with outer 6 pin



FESB		
Sheet: /BQ7****_low/NTC Temp monitor/ File: Temp.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 69/101

Mess bellow. Batt_ball circuit are sharing every pin except last and first
So because they are sharing pin they are sharing a Rin so only
last should have it.(IN every block).



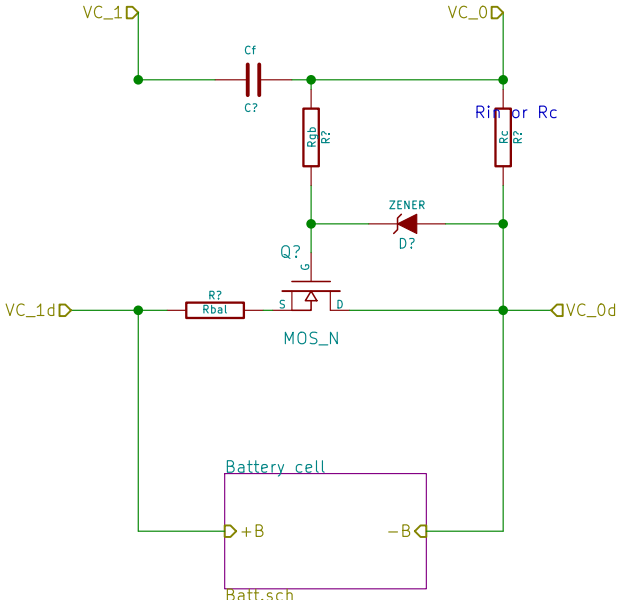
FESB

Sheet: /BQ7****_low/Battery_pack/
File: Batt_pack.sch

Title: Battery Pack

Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 70/101

This is just measurement and balancing circuit



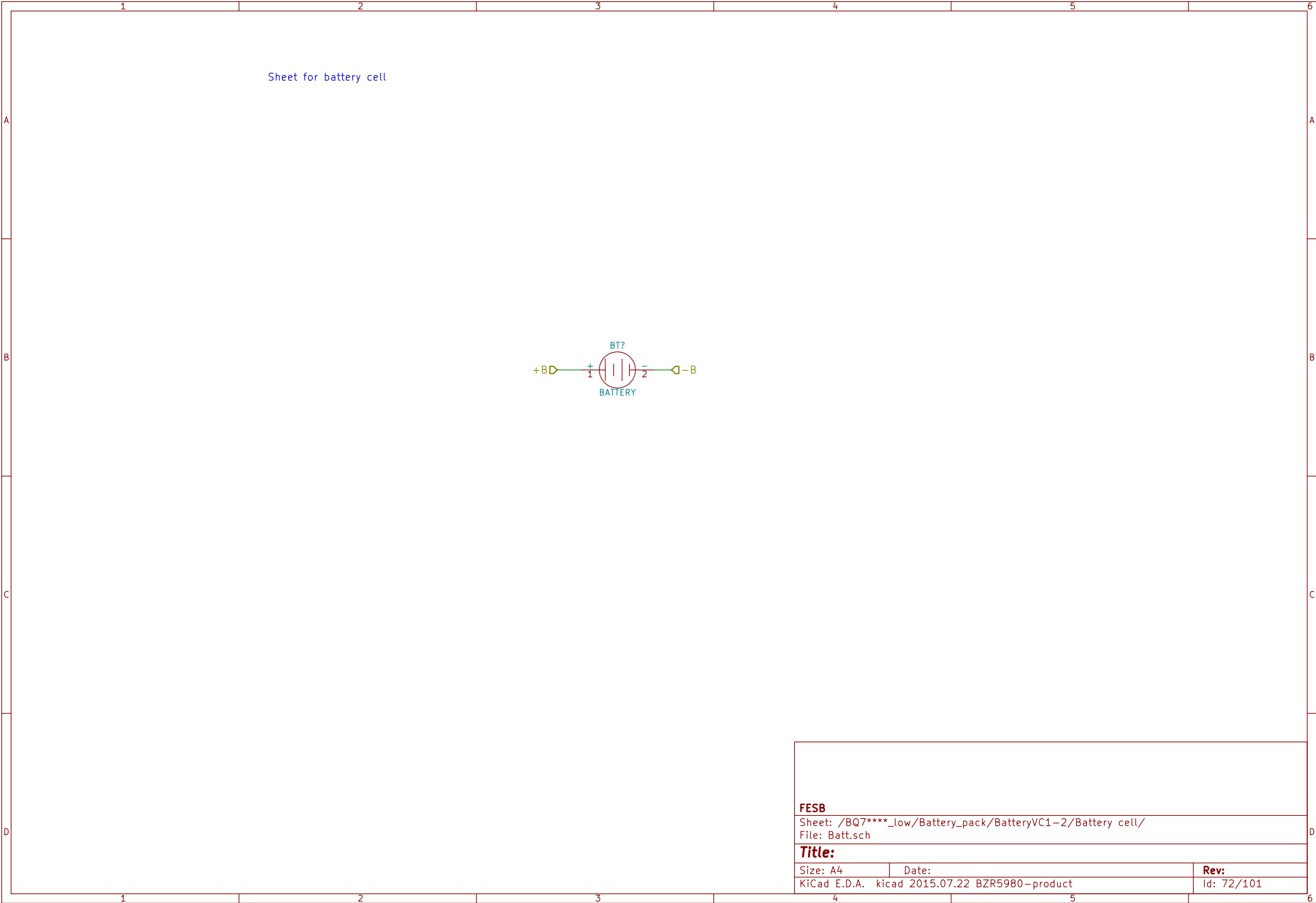
FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC1-2/
File: Batt_ball.sch

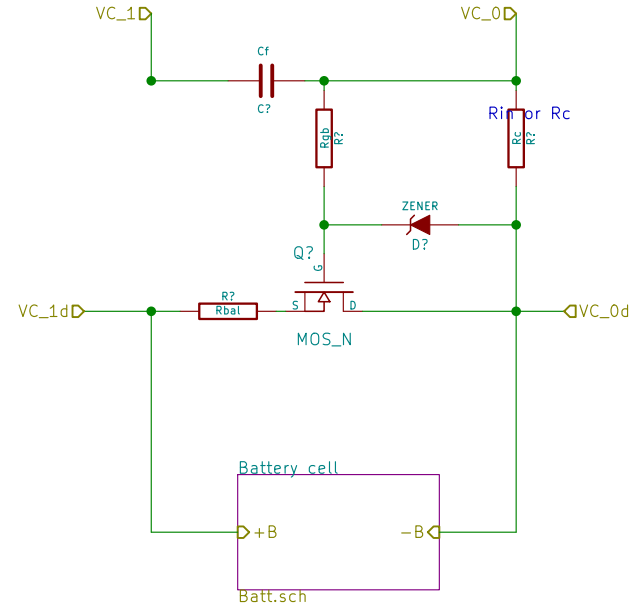
Title:

Size: A4	Date:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product	

Rev: 1.0
Id: 71/101



This is just mesurment and balancing circuit



FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC2-3/
File: Batt_ball.sch

Title:

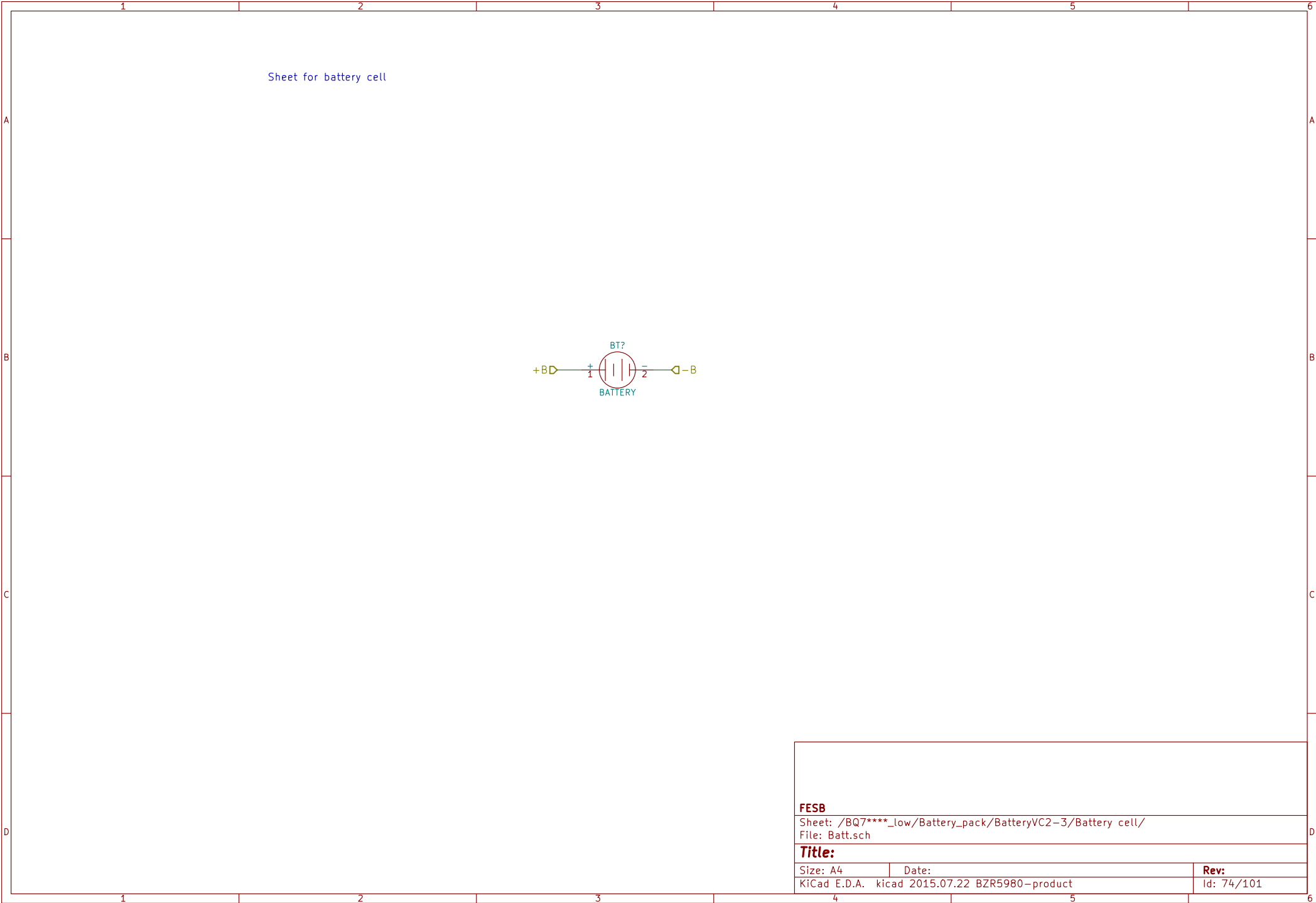
Size: A4

Date:

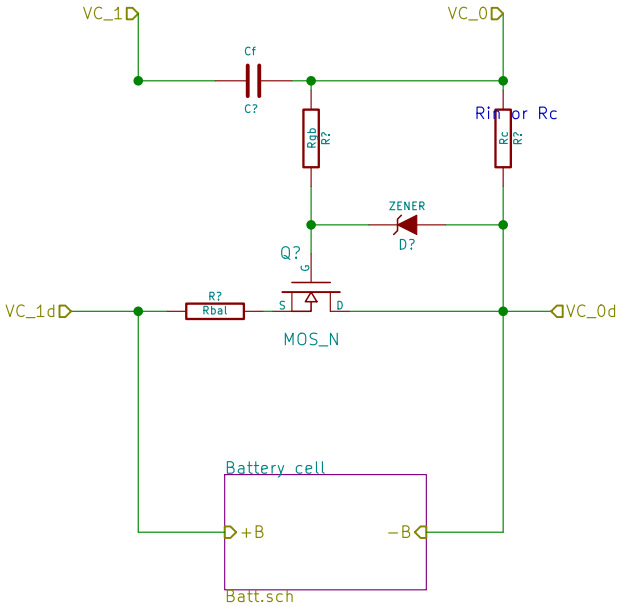
Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Id: 73/101



This is just mesurment and balancing circuit



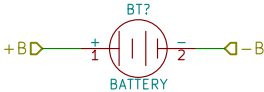
FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC3-4/
File: Batt_ball.sch

Title:

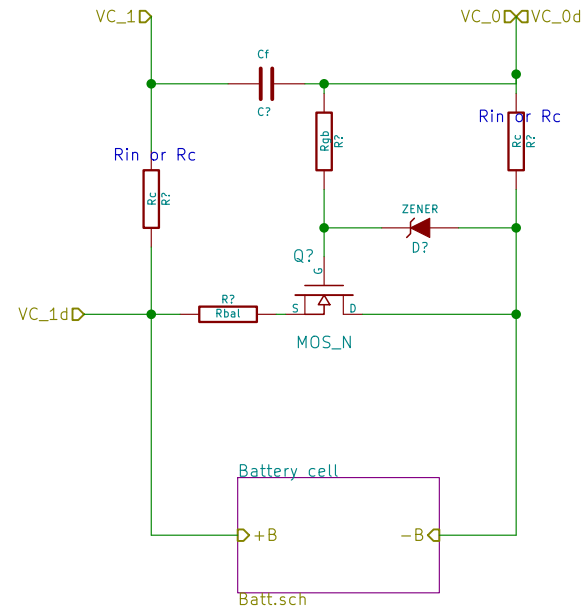
Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 75/101

Sheet for battery cell



FESB		
Sheet: /BQ7****_low/Battery_pack/BatteryVC3-4/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 76/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC4-5/
File: Batt_bal_end.sch

Title:

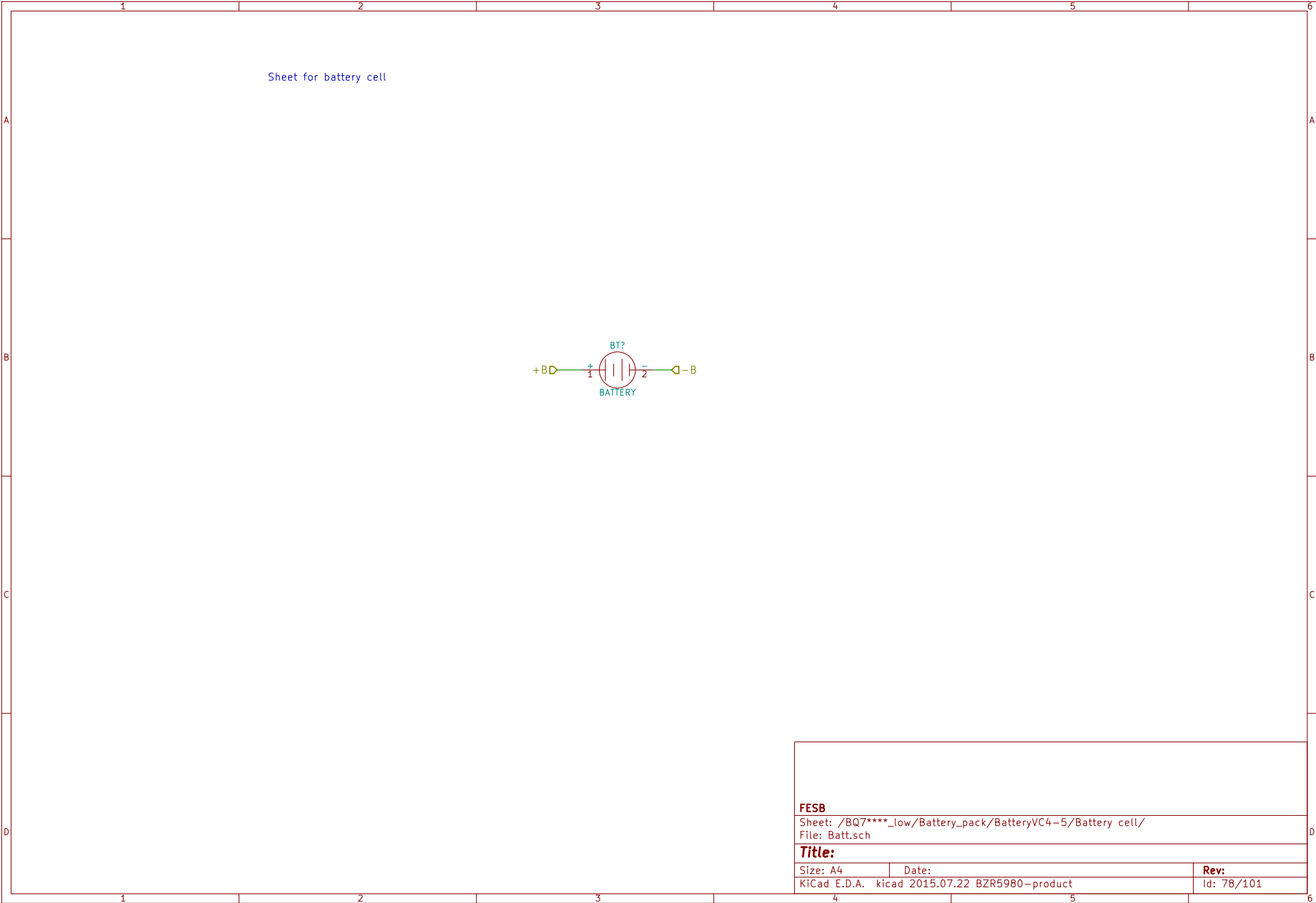
Size: A4

Date:

Rev:

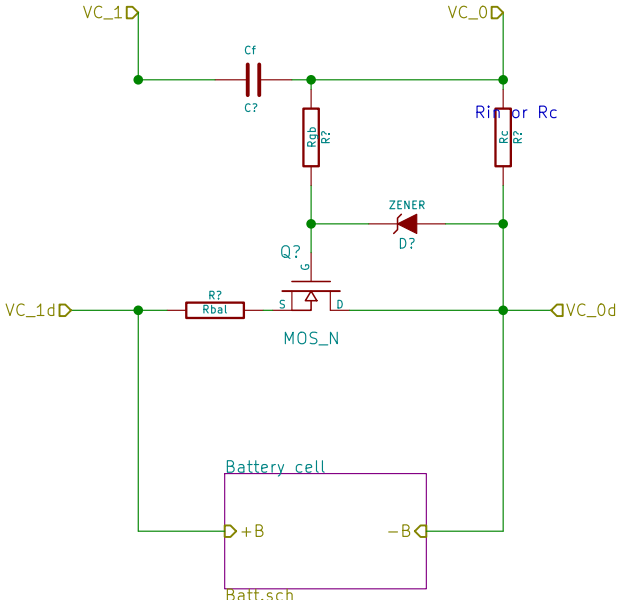
KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Id: 77/101



FESB		
Sheet: /BQ7****_low/Battery_pack/BatteryVC4-5/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 78/101

This is just measurement and balancing circuit



FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC6-7/
File: Batt_ball.sch

Title:

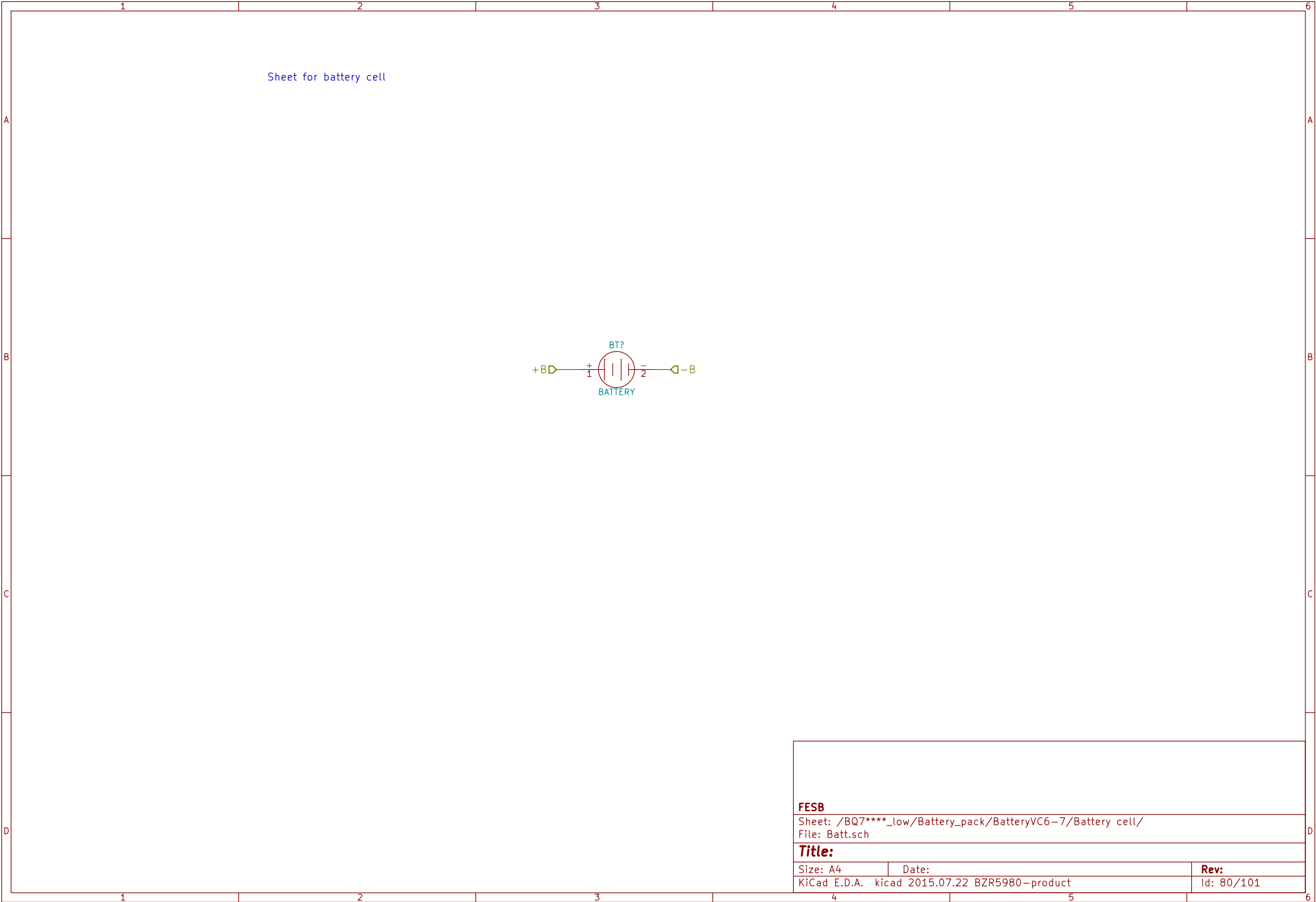
Size: A4

Date _____

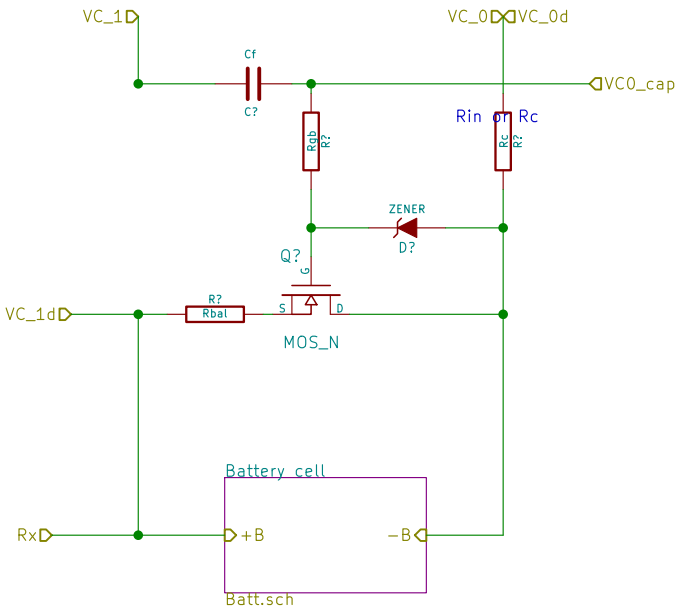
KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Rev:

Id: 79/101



This is just mesurment and balancing circuit



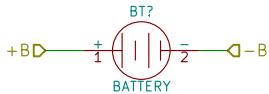
FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC5b-6/
File: Batt_ball_cap.sch

Title:

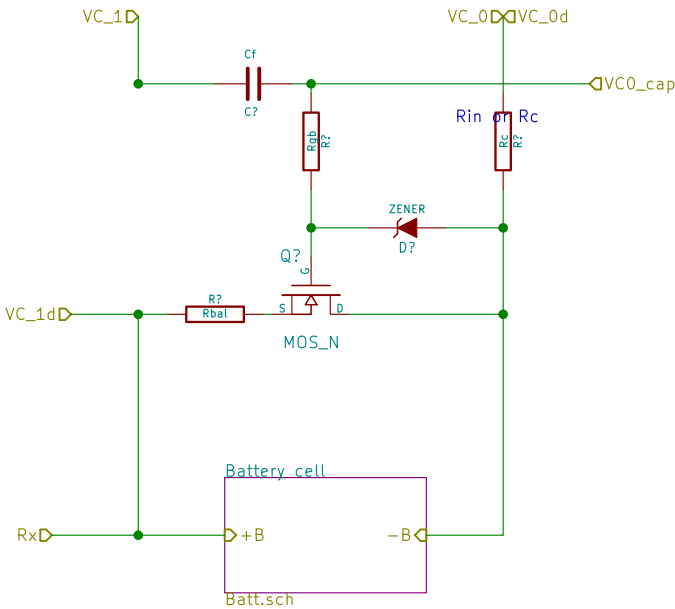
Size: A4	Date:	Rev:
KiCad E.D.A.	kidcad 2015.07.22 BZR5980-product	Id: 81/101

Sheet for battery cell



FESB		
Sheet: /BQ7****_low/Battery_pack/BatteryVC5b-6/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 82/101

This is just mesurment and balancing circuit



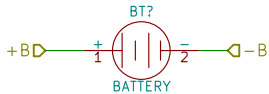
FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC0-1/
File: Batt_ball_cap.sch

Title:

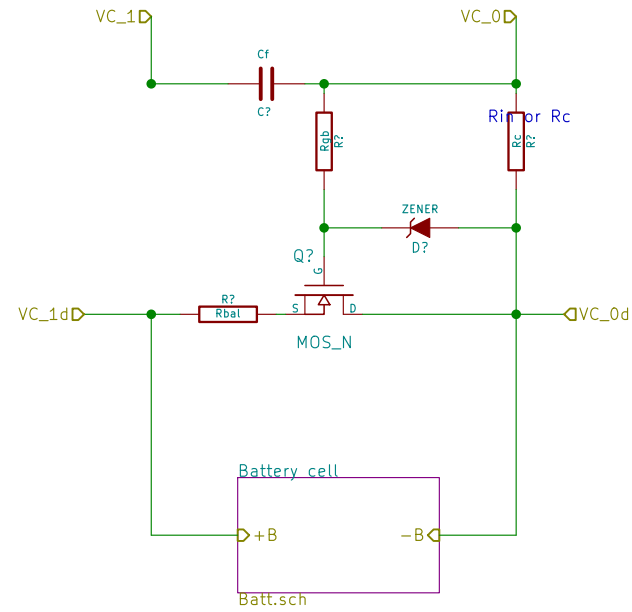
Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 83/101

Sheet for battery cell



FESB		
Sheet: /BQ7****_low/Battery_pack/BatteryVC0-1/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 84/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC7-8/
File: Batt_ball.sch

Title:

Size: A4

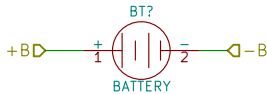
Date:

Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

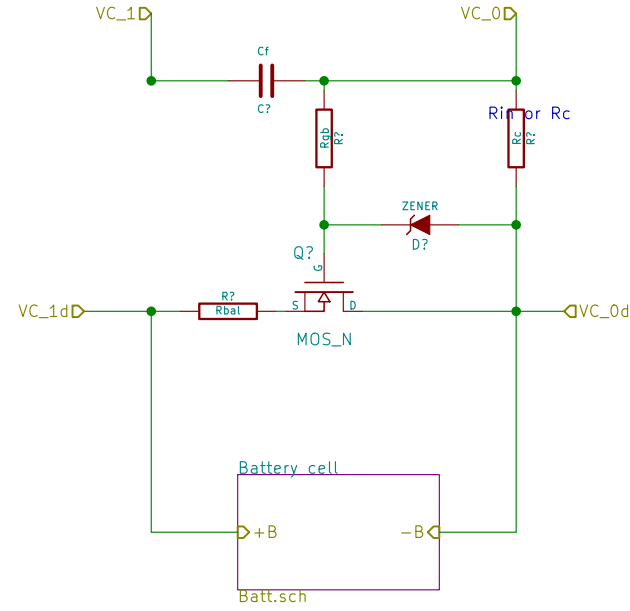
Id: 85/101

Sheet for battery cell



FESB		
Sheet: /BQ7****_low/Battery_pack/BatteryVC7-8/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 86/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC8-9/
File: Batt_ball.sch

Title:

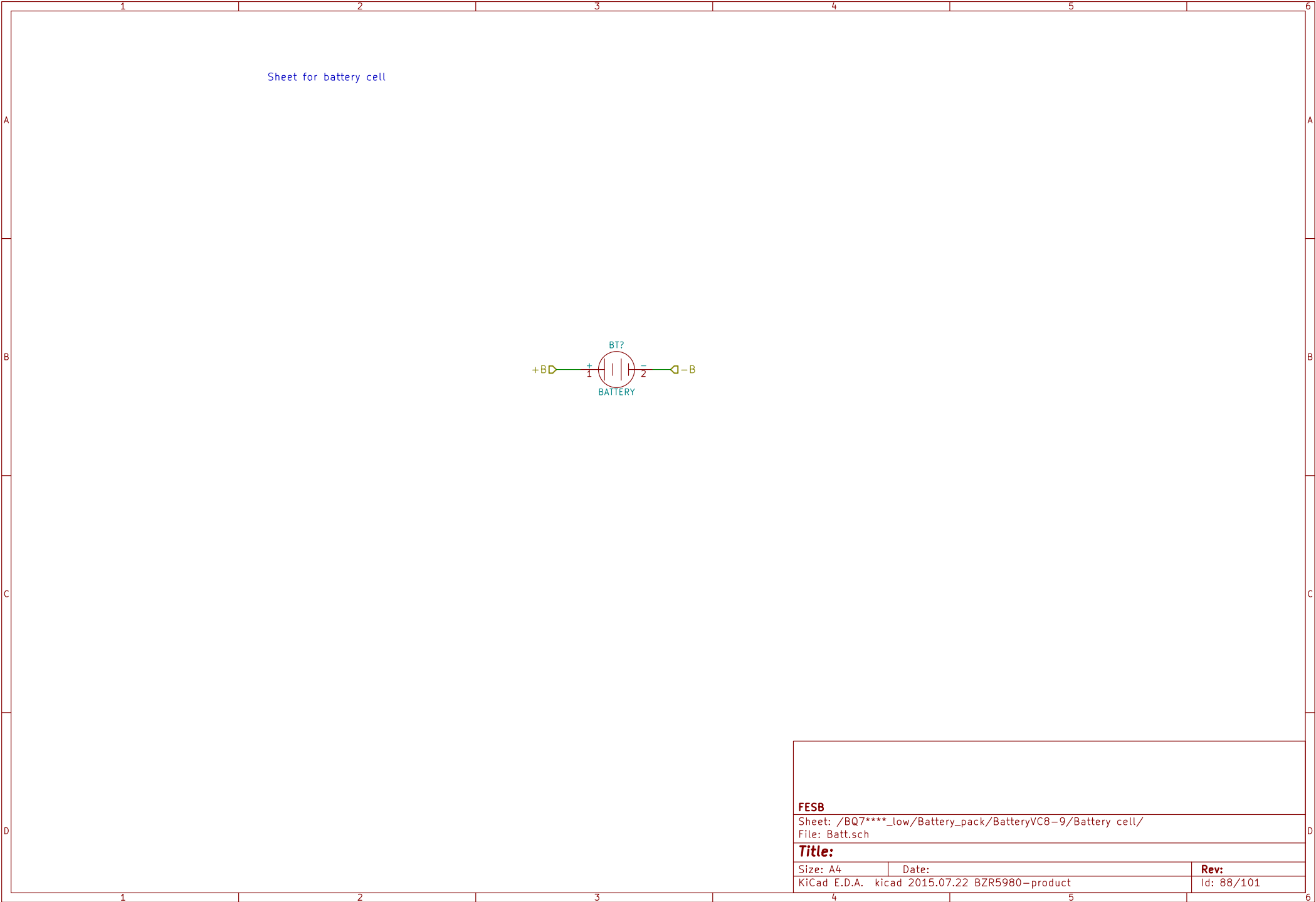
Size: A4

Date:

Rev:

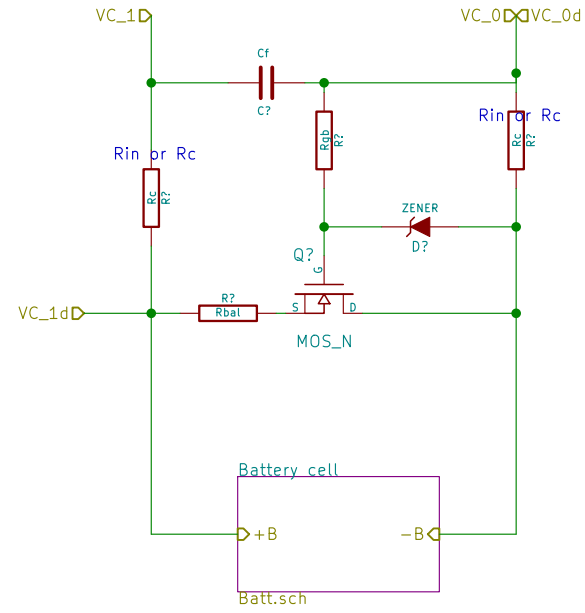
KiCad E.D.A. kicad 2015.07.22 BZR5980-product

Id: 87/101



FESB		
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File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 88/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC9-10/
File: Batt_bal_end.sch

Title:

Size: A4

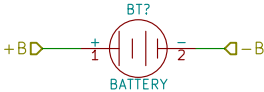
Date:

Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

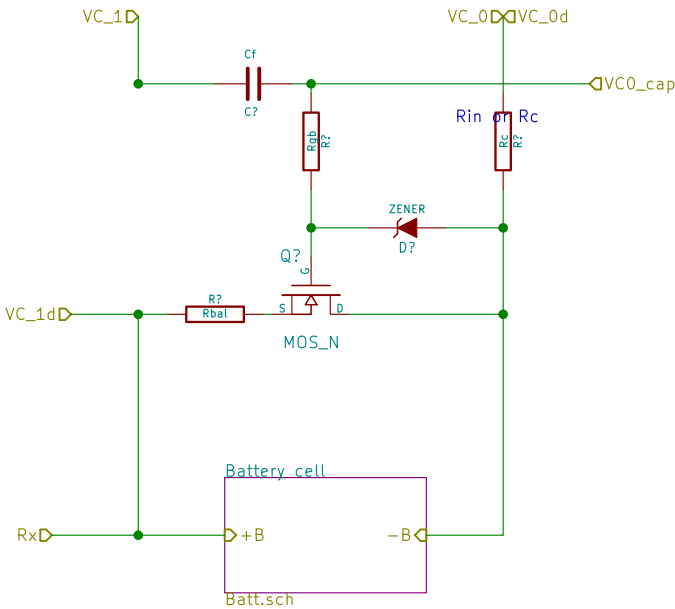
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Sheet for battery cell



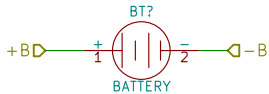
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KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 90/101

This is just mesurment and balancing circuit



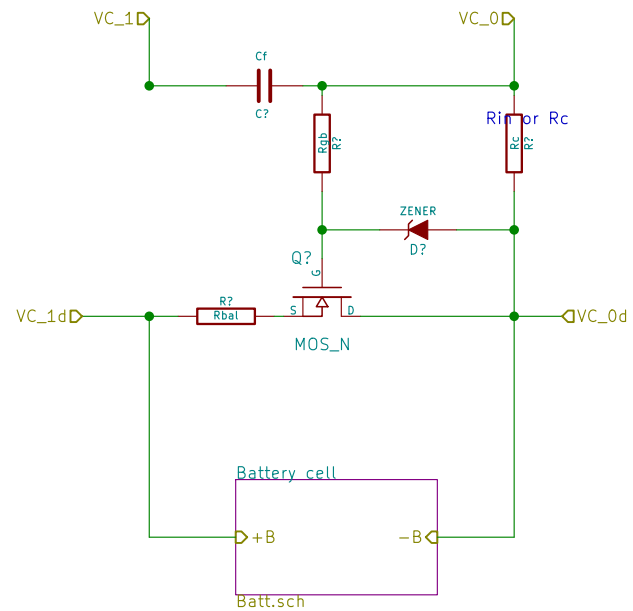
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Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 91/101

Sheet for battery cell



FESB		
Sheet: /BQ7****_low/Battery_pack/BatteryVC10B-11/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 92/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC11-12/
File: Batt_ball.sch

Title:

Size: A4

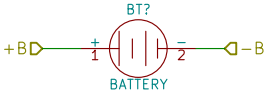
Date:

Rev:

KiCad E.D.A. kicad 2015.07.22 BZR5980-product

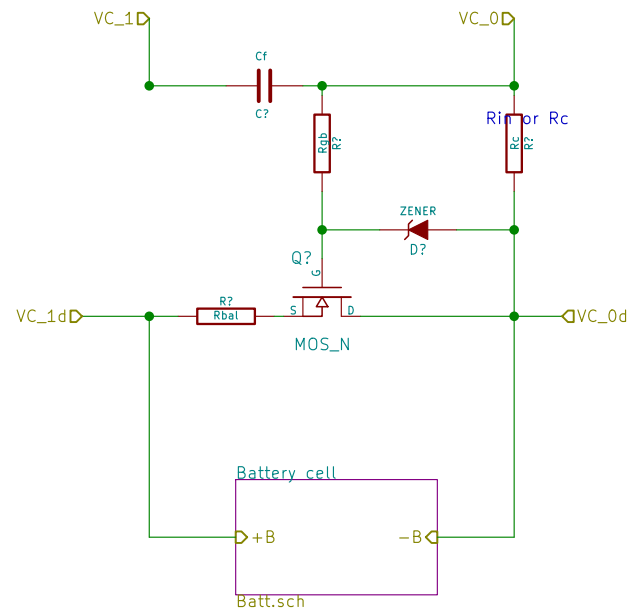
Id: 93/101

Sheet for battery cell



FESB		
Sheet: /BQ7****_low/Battery_pack/BatteryVC11-12/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 94/101

This is just mesurment and balancing circuit



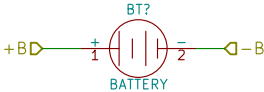
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Title:

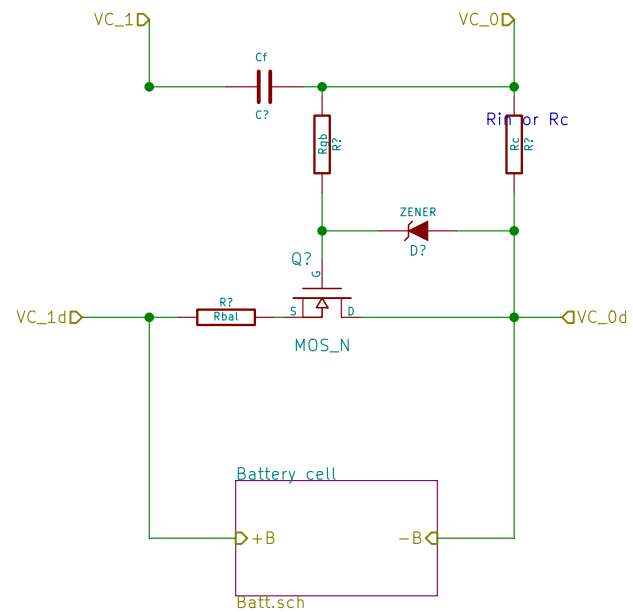
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KiCad E.D.A.	kidcad 2015.07.22 BZR5980-product	Id: 95/101

Sheet for battery cell



FESB		
Sheet: /BQ7****_low/Battery_pack/Battery12-13/Battery cell/		
File: Batt.sch		
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KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 96/101

This is just mesurment and balancing circuit



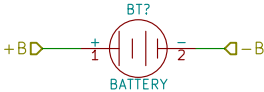
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File: Batt_ball.sch

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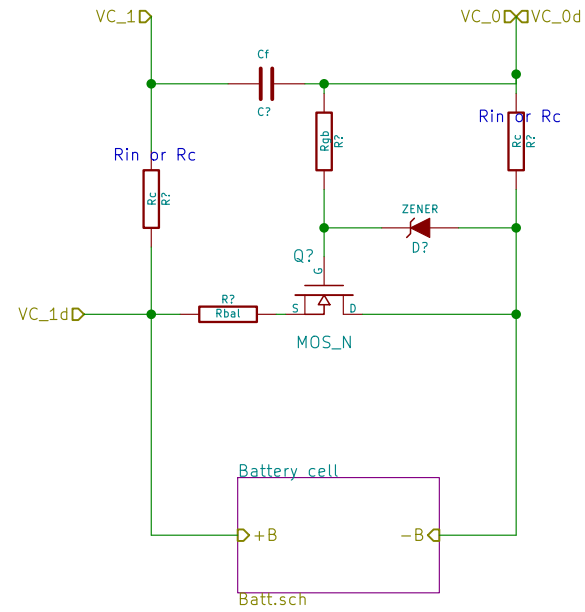
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KiCad E.D.A. kicad 2015.07.22 BZR5980-product	Id: 97/101	

Sheet for battery cell



FESB		
Sheet: /BQ7****_low/Battery_pack/BatteryVC13-14/Battery cell/		
File: Batt.sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 2015.07.22 BZR5980-product		Id: 98/101

This is just mesurment and balancing circuit



FESB

Sheet: /BQ7****_low/Battery_pack/BatteryVC14-15/
File: Batt_bal_end.sch

Title:

Size: A4	Date:	Rev:
KiCad E.D.A.	kiCad 2015.07.22 BZR5980-product	Id: 99/101

