NB Battery Pack

Reported
FAE Dept.

Date
Jun. 23th 2023

Agenda

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- NB Battery Pack Diagram
- Selection of the 2nd Protection IC
- Selection of the Power MOSFET
- Selection of the MOSFET for SCP
- Monitoring Location of the NTC and PTC

NB Battery Pack Diagram

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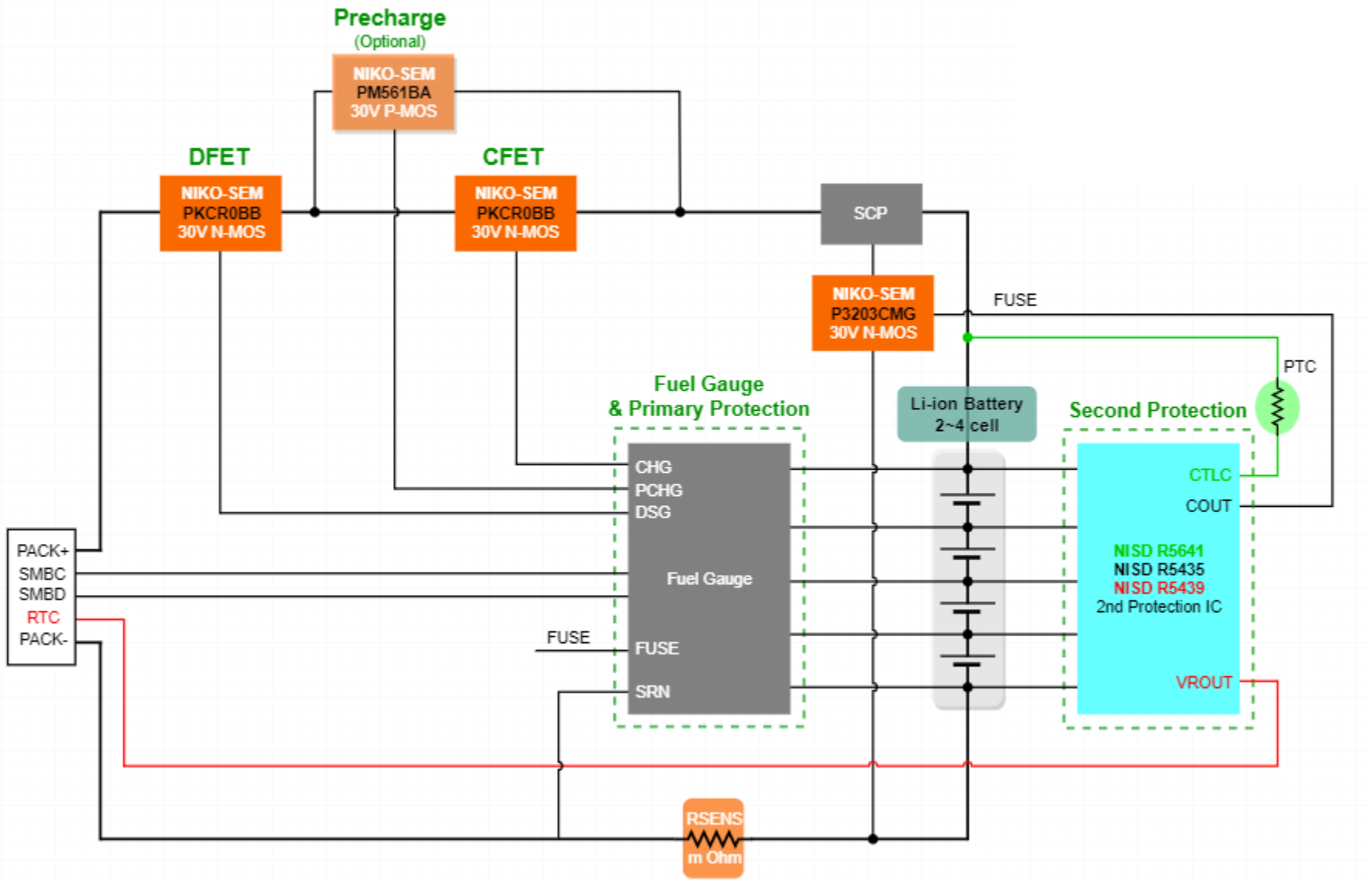

Selection of the 2nd Protection IC

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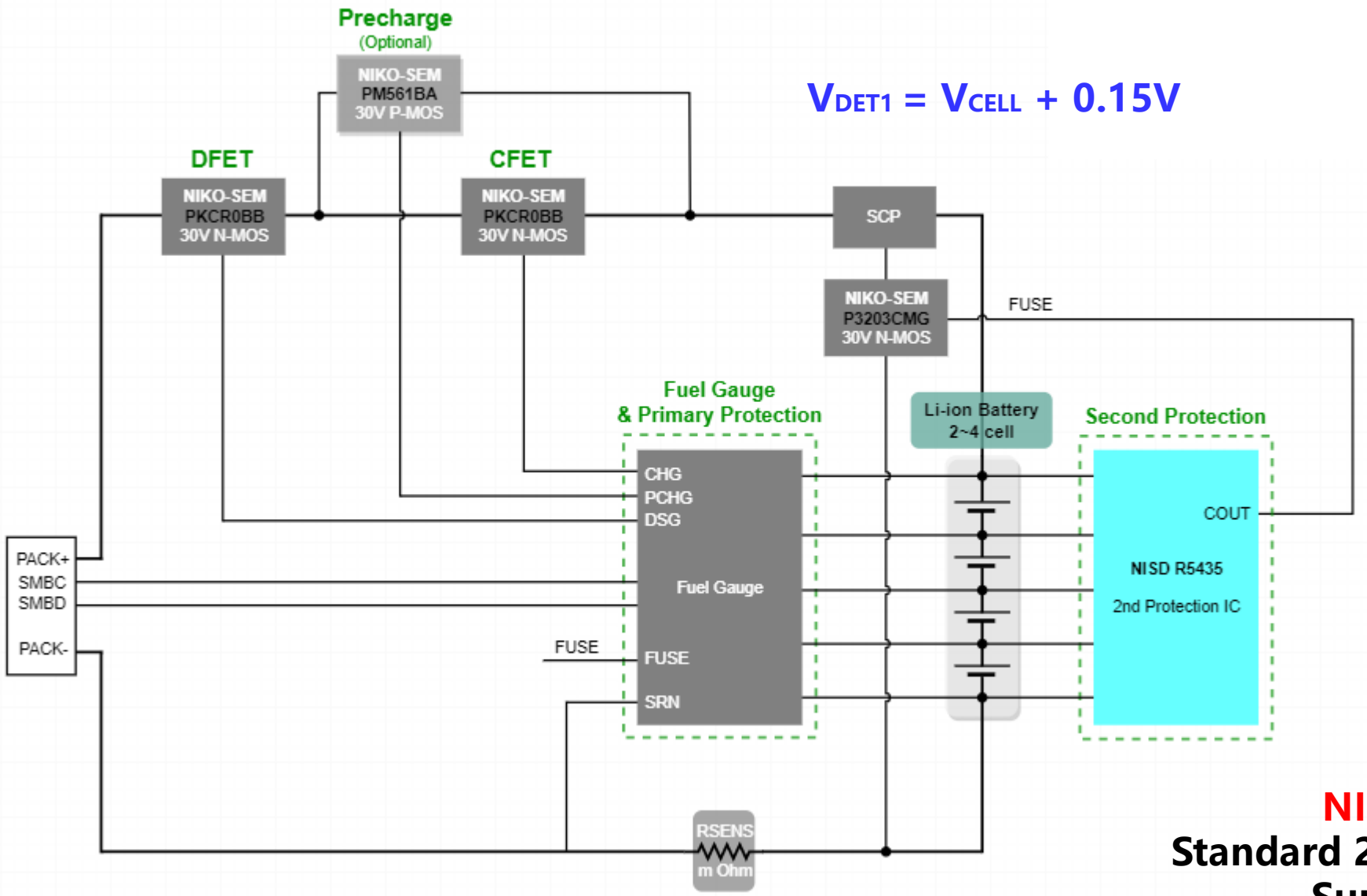

$V_{DET1} = V_{CELL} + 0.15V$

NISD R5435 series
Standard 2nd protection IC
Support 2 ~ 3 cells

Selection of the 2nd Protection IC

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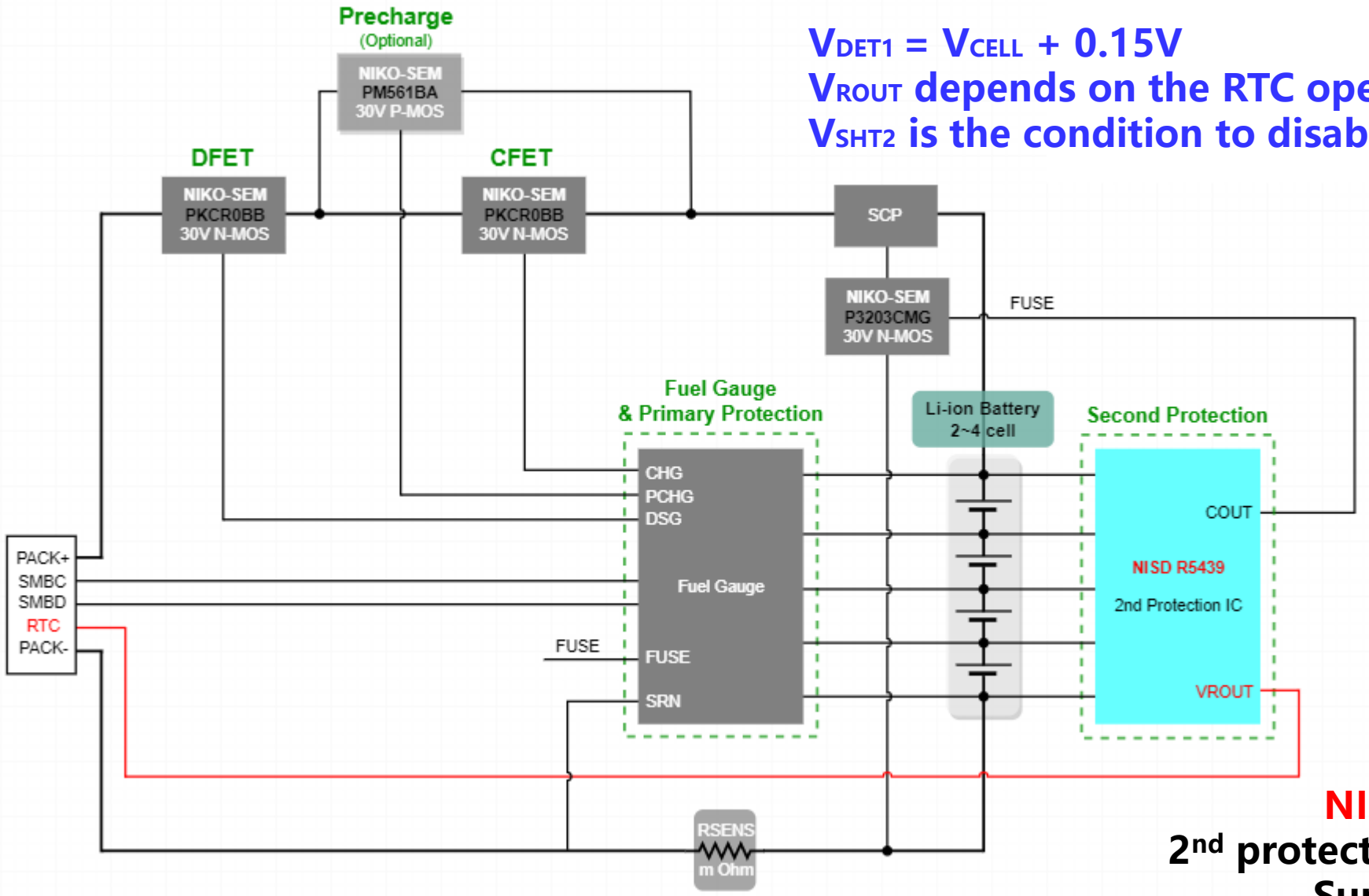

$V_{DET1} = V_{CELL} + 0.15V$

V_{ROUT} depends on the RTC operating voltage.

V_{SHT2} is the condition to disable V_{ROUT}.

NISD R5439 series

2nd protection IC with LDO

Support 2 ~ 4 cells

Selection of the 2nd Protection IC

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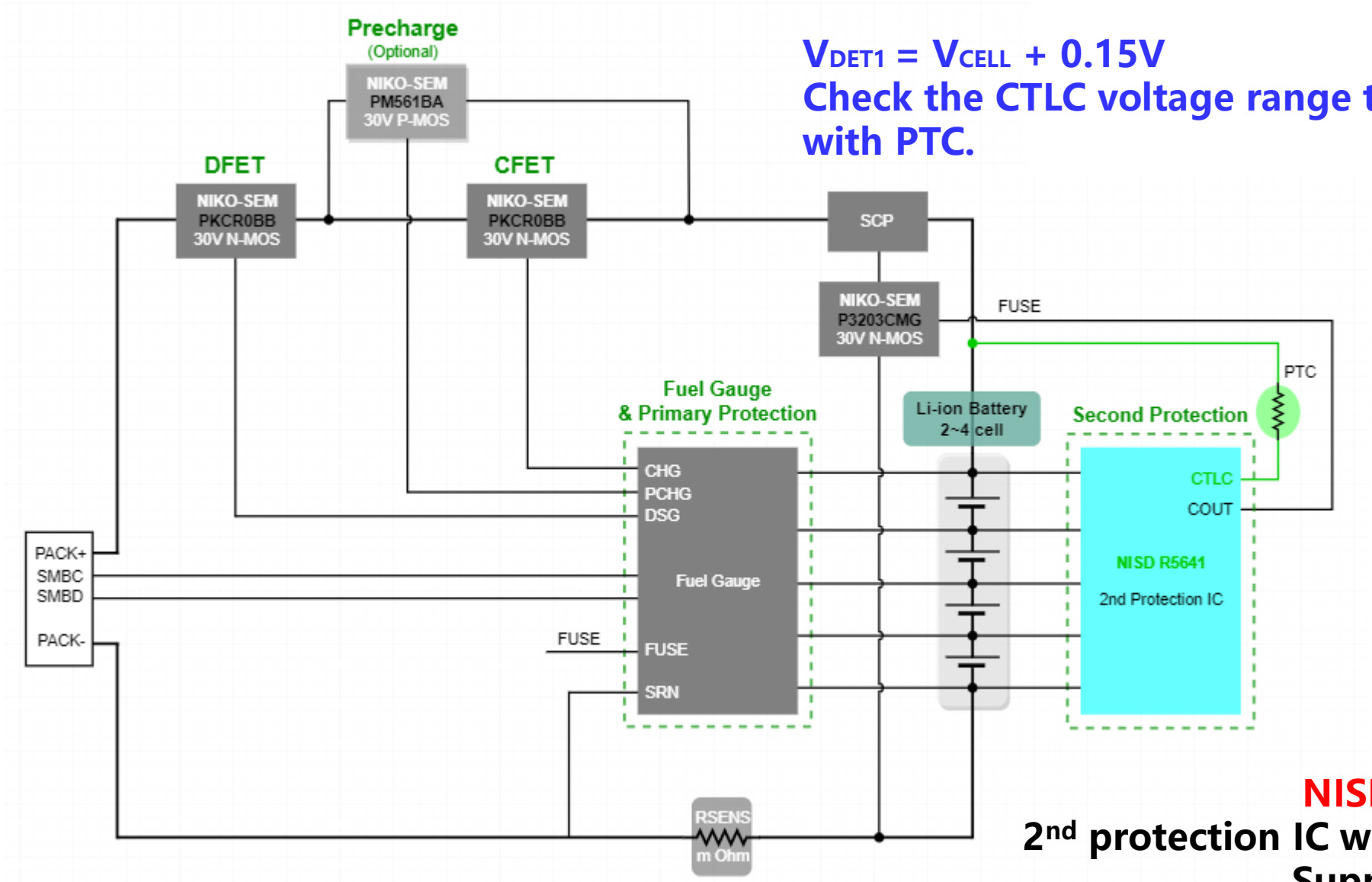

$V_{DET1} = V_{CELL} + 0.15V$

Check the CTLC voltage range to design OTP with PTC.

NISD R5641 series

2nd protection IC with Control Pin

Support 2 ~ 4 cells

Selection of the Power MOSFET

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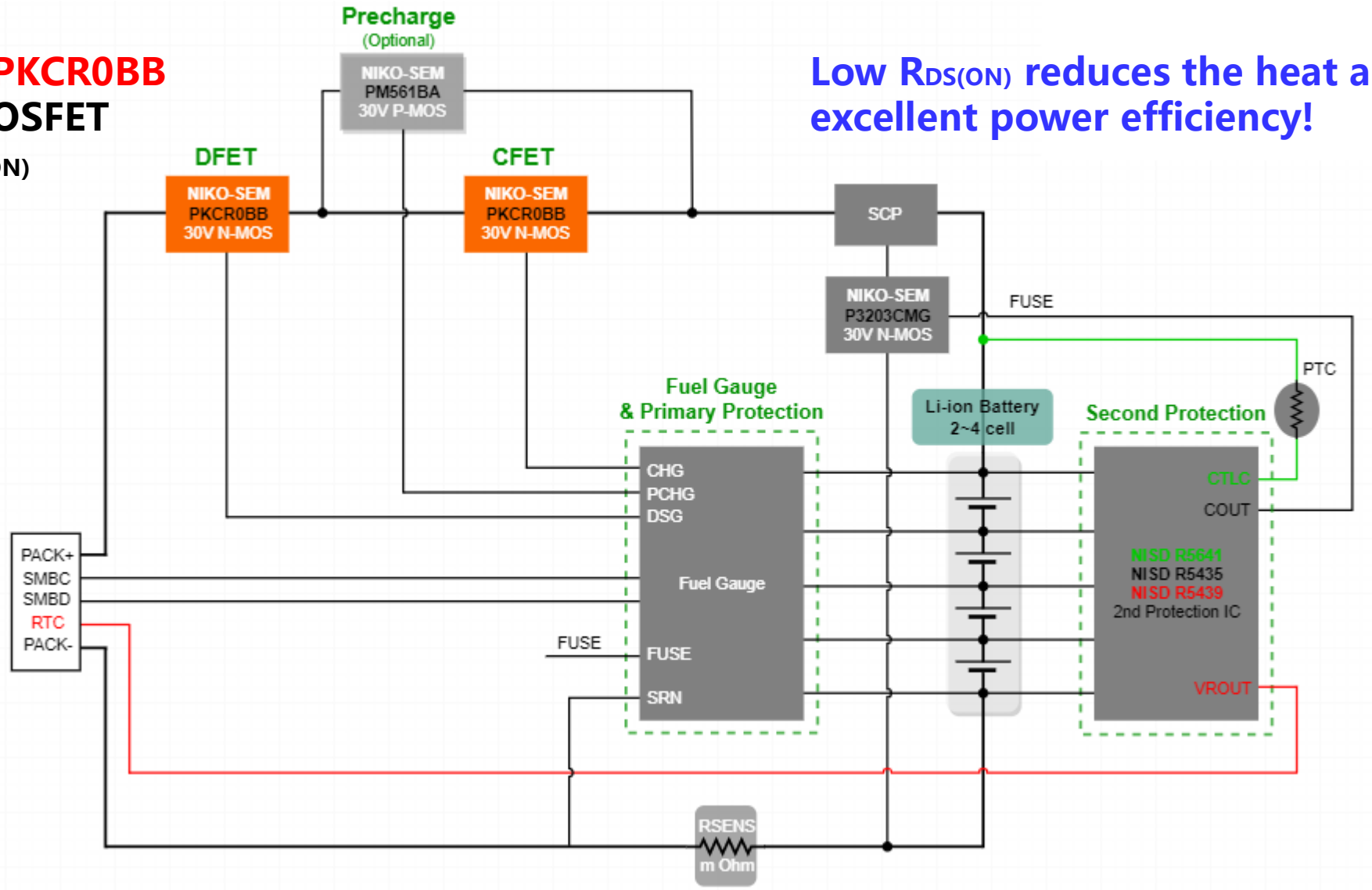
NIKO-SEM PKCR0BB
30V Nch MOSFET
1.2mΩ $R_{DS(ON)}$

Low $R_{DS(ON)}$ reduces the heat and makes excellent power efficiency!



Selection of the MOSFET for SCP

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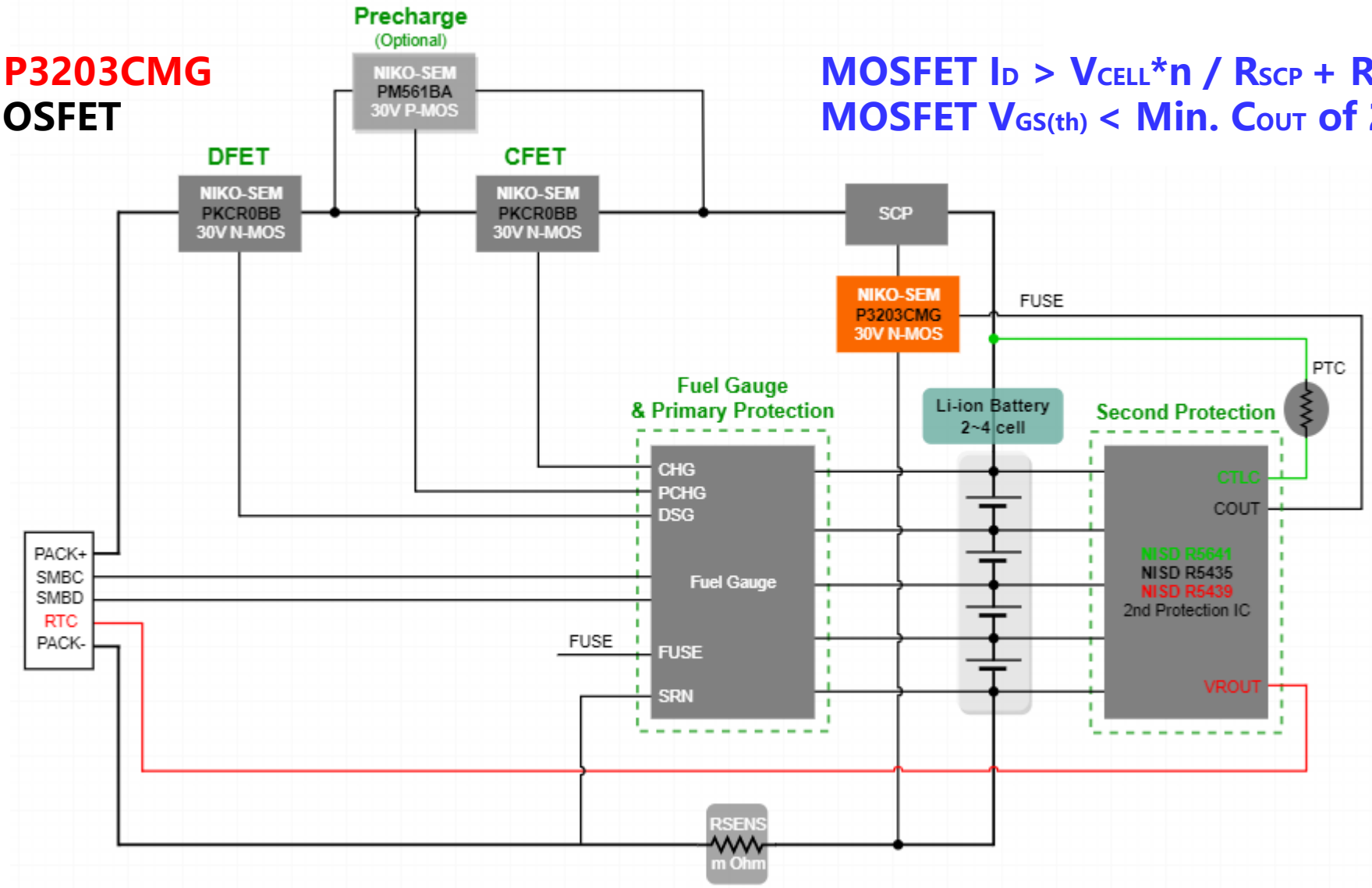
NIKO-SEM P3203CMG
30V Nch MOSFET
6A I_D
1.2V $V_{GS(th)}$

MOSFET I_D > V_{CELL}*n / R_{SCP} + $R_{DS(ON)}$
MOSFET $V_{GS(th)}$ < Min. C_{OUT} of 2nd PTIC



Monitoring Location of the NTC and PTC

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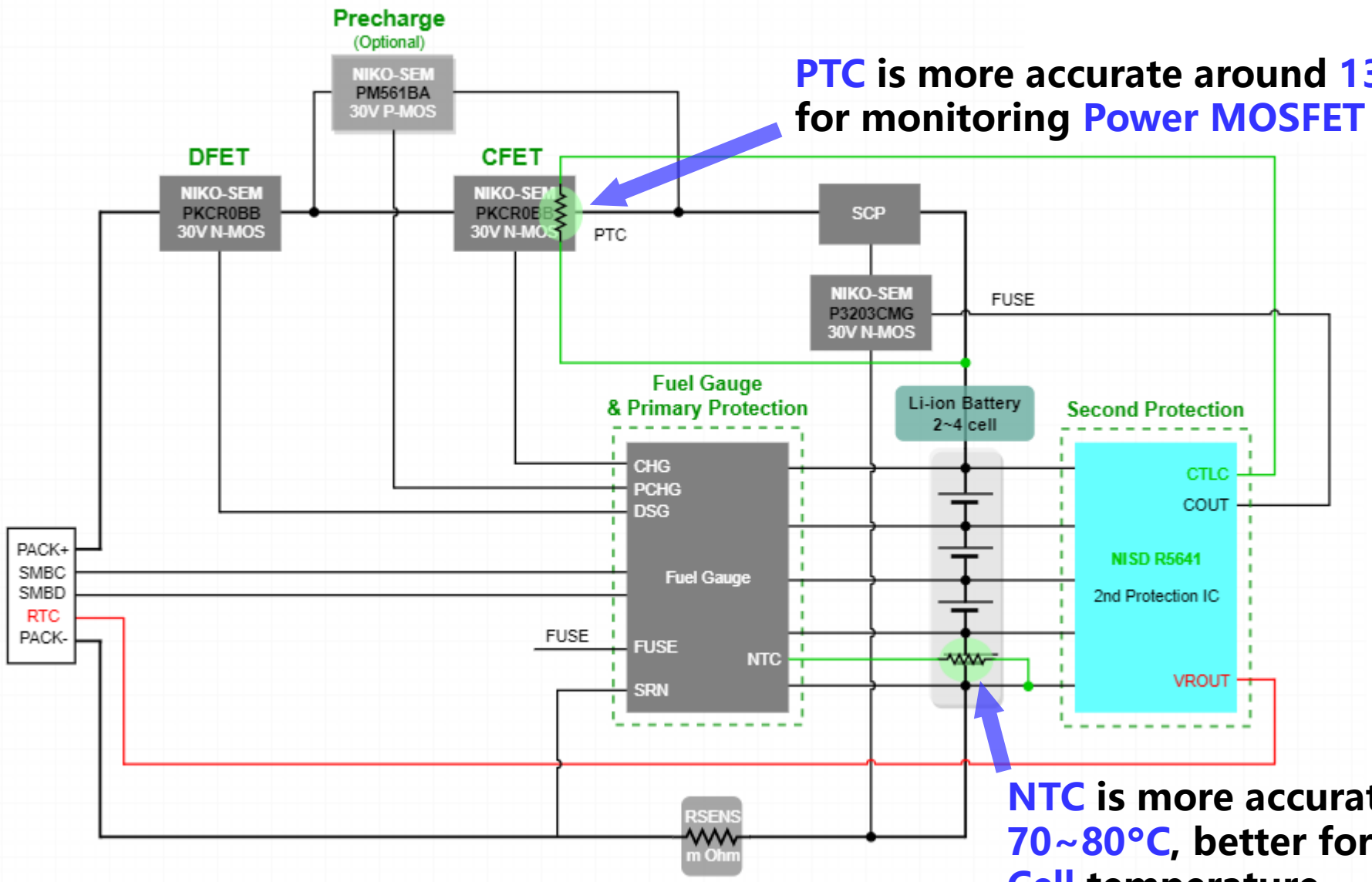

PTC is more accurate around **130°C**, better for monitoring **Power MOSFET** temperature.

NTC is more accurate around **70~80°C**, better for monitoring **Cell** temperature.

Thank You!