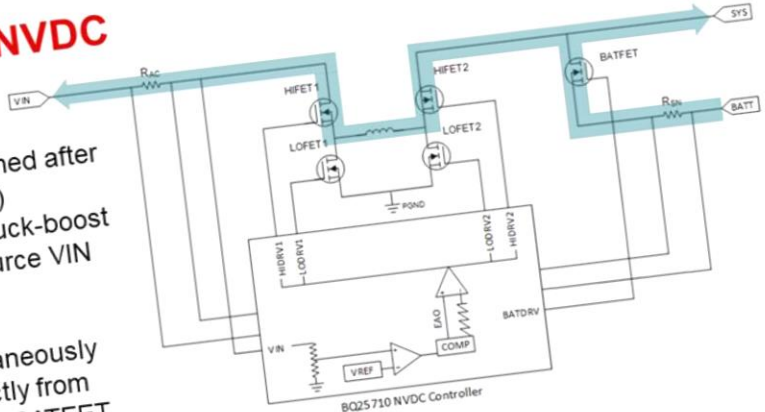
SUPPLEMENT, BOOST AND OTG MODES OF MULTI-CELL CHARGE CONTROLLERS

OTG Mode, NVDC

- OTG Mode (named after USB On-the-go) Operates the buck-boost regulator to source VIN from battery.
- SYS is simultaneously powered directly from battery across BATFET.



BQ25710 NVDC Controller

Texas Instruments

System requirements

Performance vs. budget
safe charging

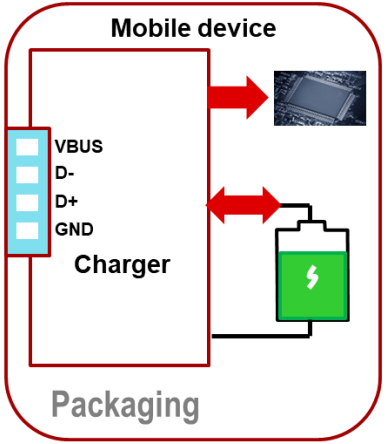
Convenient & universal

Input source

Adaptor or USB
Input current / Voltage

Control interface

Standalone
I2C
SMBus



System

Min Voltage
Current

Battery

Voltage, Charge Current
Chemistry Configuration
Capacity

Safety and protection

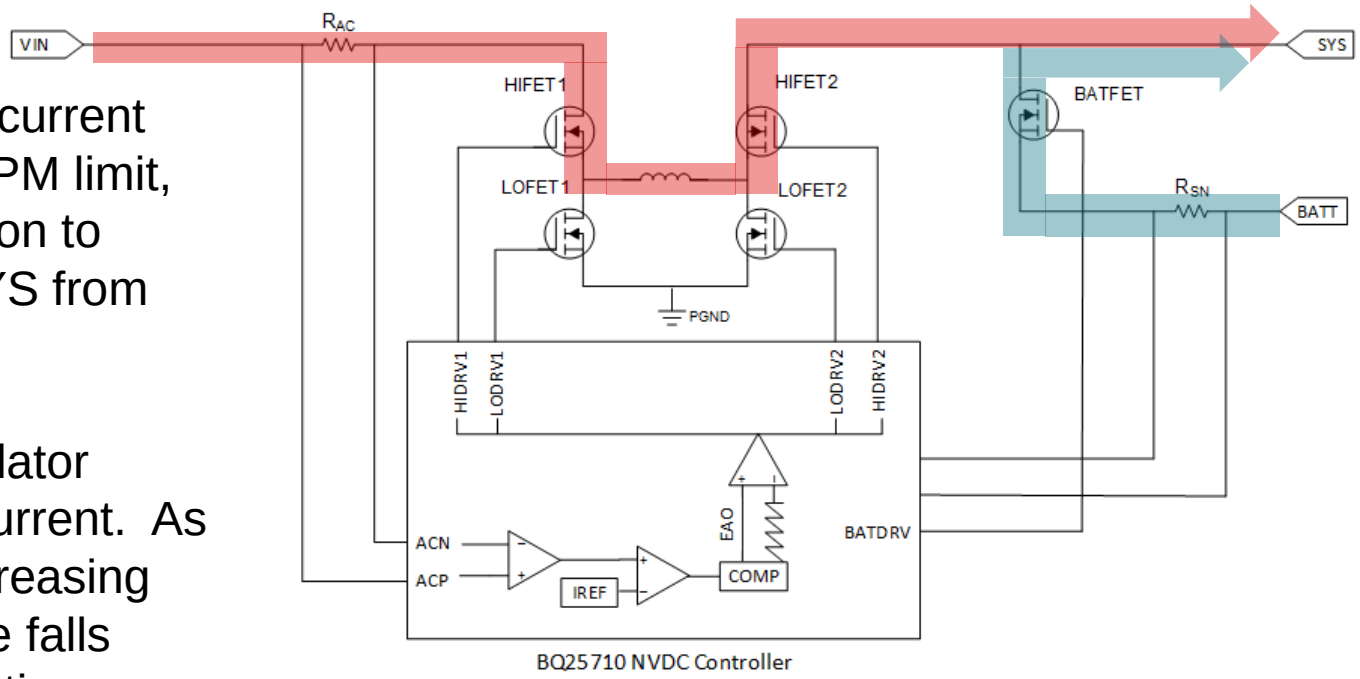
Overvoltage/Overcurrent/
Over-temperature, etc

Battery run time & life time

Small solution size and cost effective

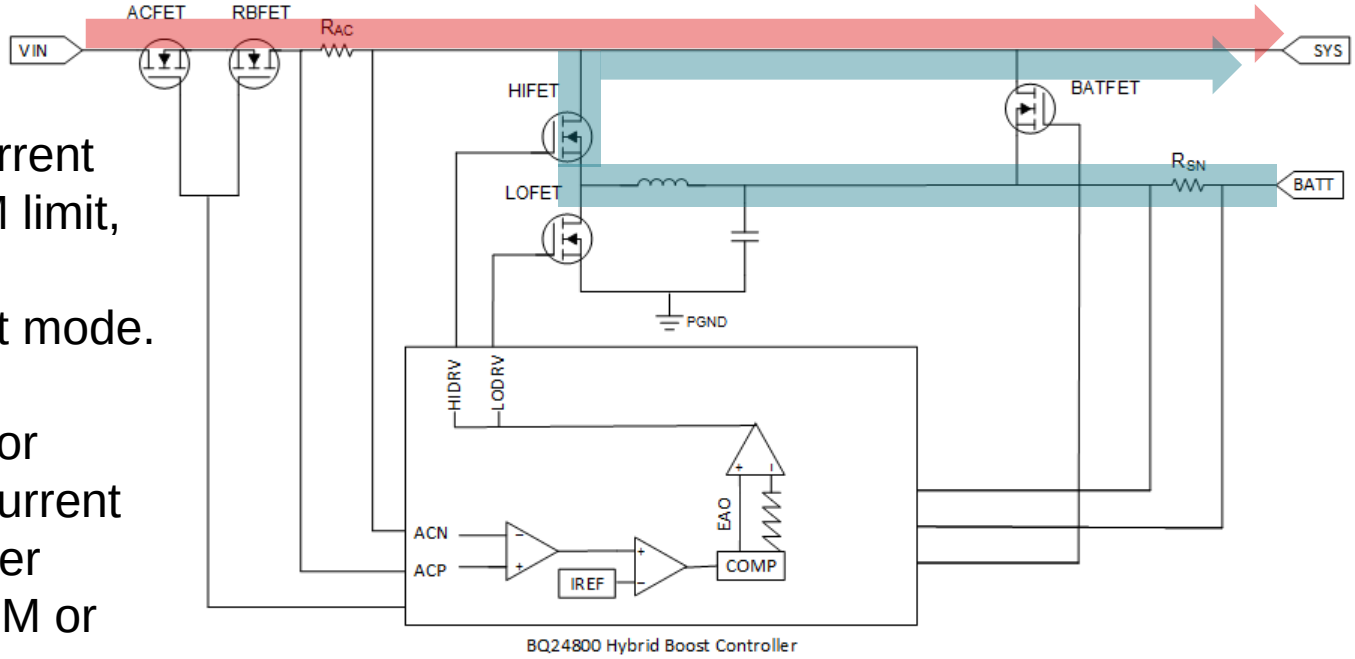
Battery supplements adapter power, NVDC

- When adapter current reaches IIN_DPM limit, BATFET turns on to supplement SYS from battery
- Switching regulator clamps input current. As SYS draws increasing current, voltage falls slightly, stimulating supplement from battery.



Battery supplements adapter power, hybrid boost

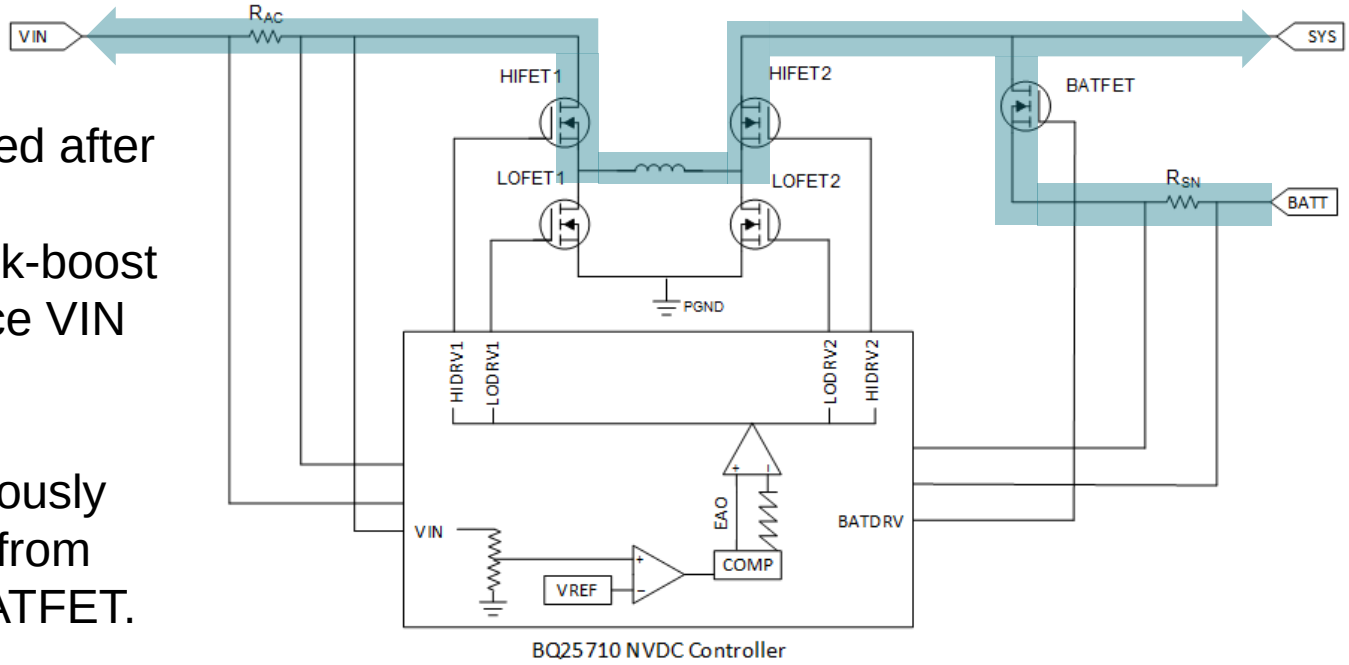
- When adapter current reaches IIN_DPM limit, regulator begins switching in boost mode.
- Switching regulator manages boost current to maintain adapter current at IIN_DPM or less.



BQ24800 Hybrid Boost Controller

OTG Mode, NVDC

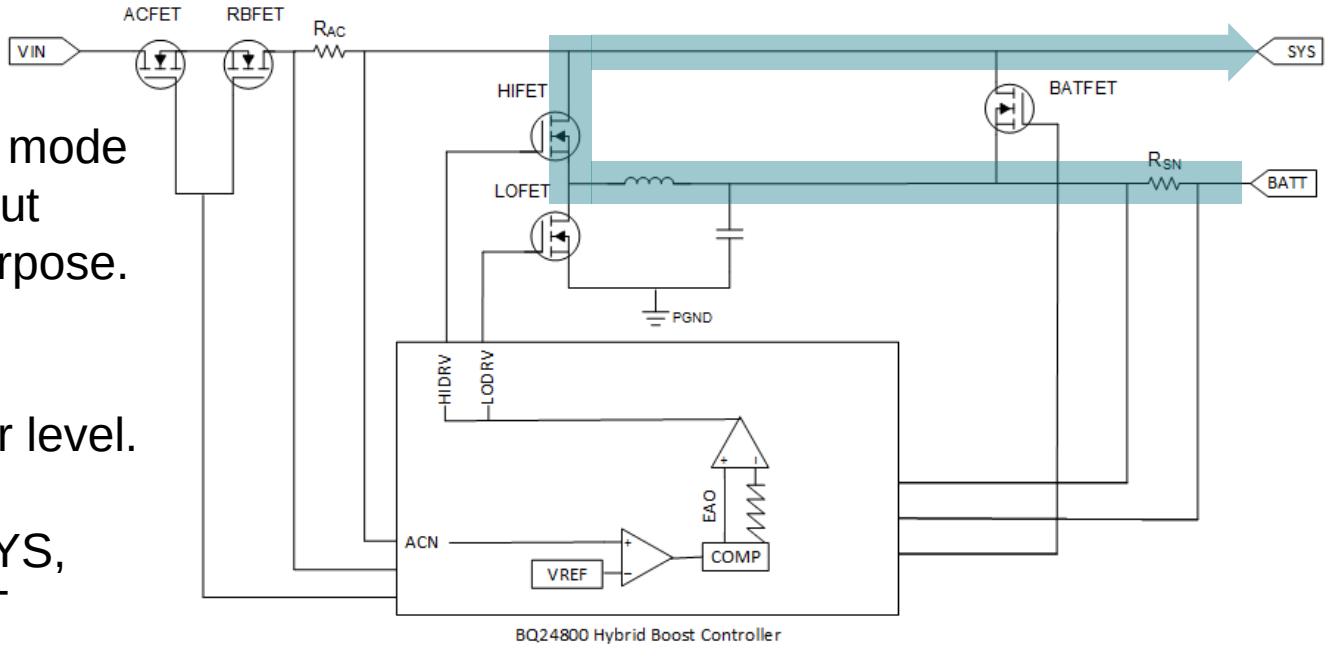
- OTG Mode (named after USB On-the-go) Operates the buck-boost regulator to source VIN from battery.
- SYS is simultaneously powered directly from battery across BATFET.



BQ25710 NVDC Controller

Battery boost mode, hybrid boost

- Battery-only Boost mode is similar to OTG but serves different purpose.
- Battery voltage is boosted to a higher level.
- Battery supplies SYS, but ACFET/RBFET remain disabled. Power is not supplied to VIN.



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