# Implementing Hot Rod QFN in Load Switches

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# Who we are

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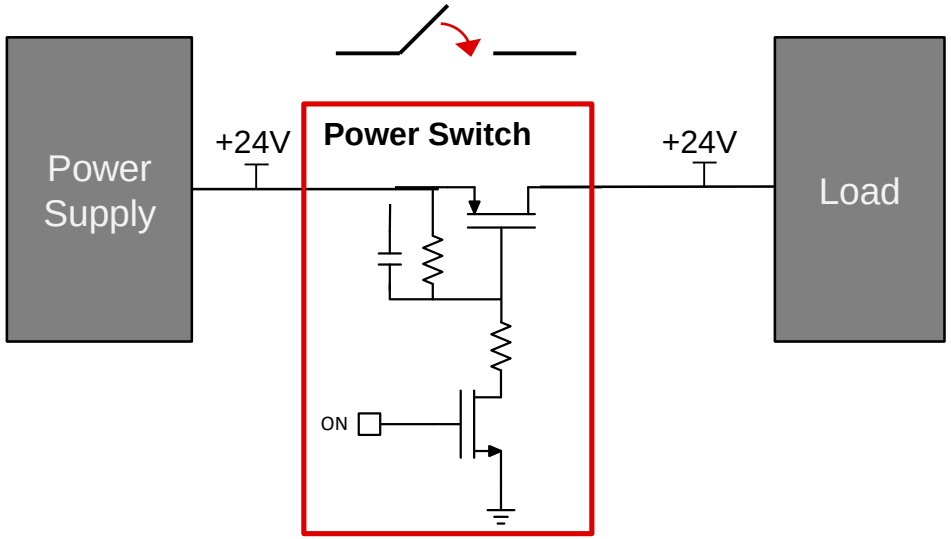
# Presentation Overview

- What is a power switch?
- TI power switch use case overview
- Basics of load switch
- Load Switch Road Map
- What makes TPS22992 so special
- TPS22992 One Pager
- System benefits of TPS22992
  - Inrush current control
  - Reduced power consumption
  - Power sequencing
- Conclusion

# What is a Power Switch?

A device that turns DC power OFF and ON to a load




The two main functions that a **Power Switch** can provide to a system is **power protection** and **power distribution**



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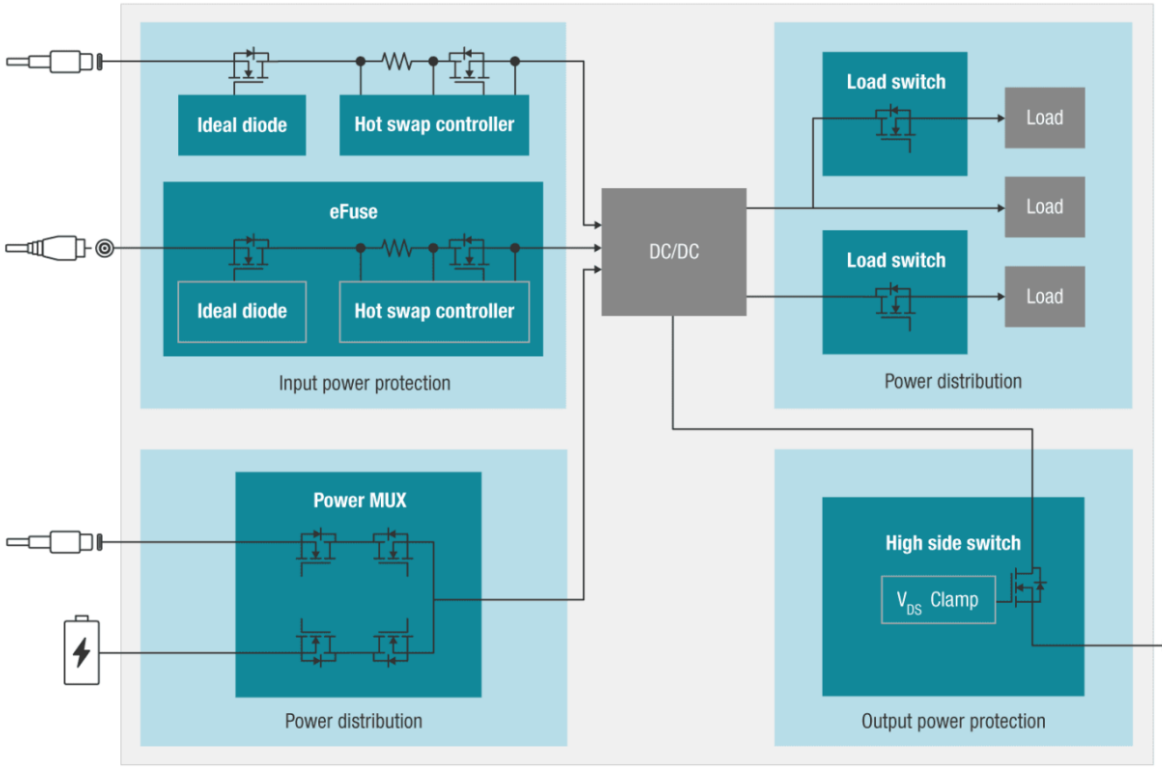
# Power Switches | Use Cases




## Common Design Challenges

**Input Power Protection**

Reverse current blocking
Current limiting
Overvoltage protection
Inrush current control
Surge immunity
Reverse Polarity Protection

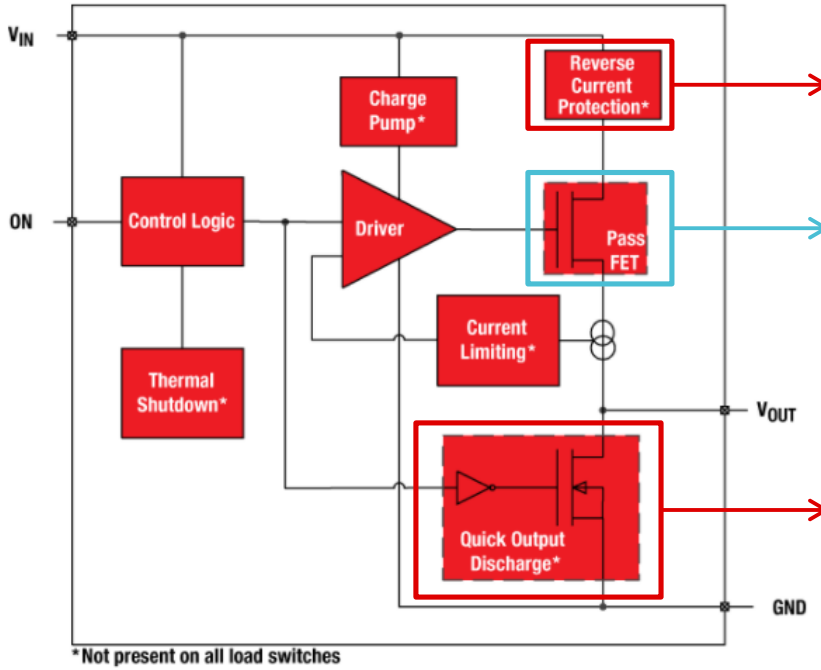
**Power Distribution**

Power Sequencing
Inrush current control
Power Muxing/Power Oring

**Output Power Protection**

Current limiting
Inductive load driving

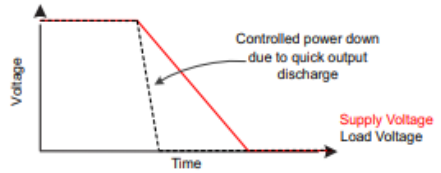
# Basics of load switch | overview



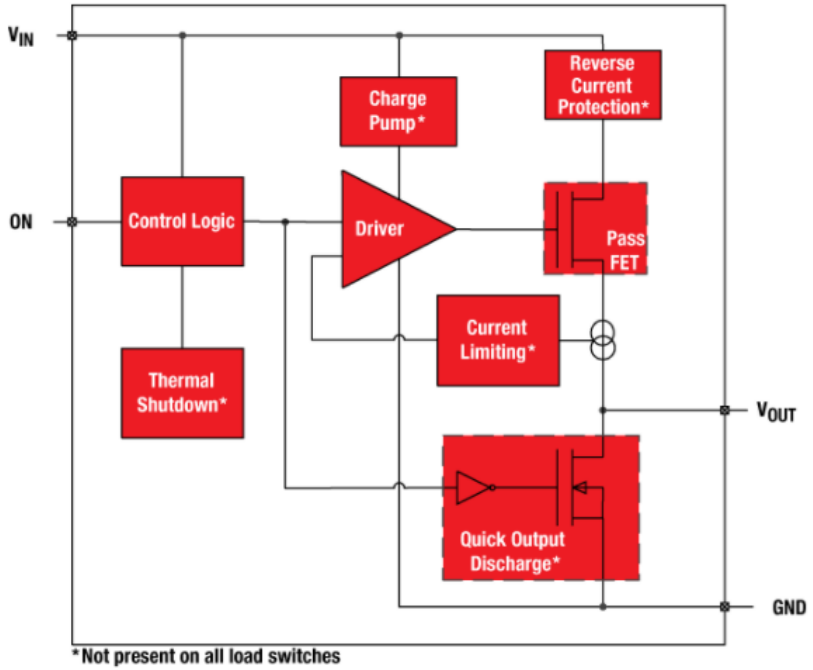

Additional features are included in different load switches. These include, but are not limited to, thermal shutdown, current limiting, and reverse current protection.

main component of the load switch, which determines the maximum input voltage and maximum load current the load switch can handle

on-chip resistor from VOUT to GND that is turned on when the device is disabled via the ON pin. This will discharge the output node, preventing the output from floating



# Basics of load switch | basic applications




- Power distribution
- Power sequencing
- Inrush current control
- Controlled power down
- Current limiting



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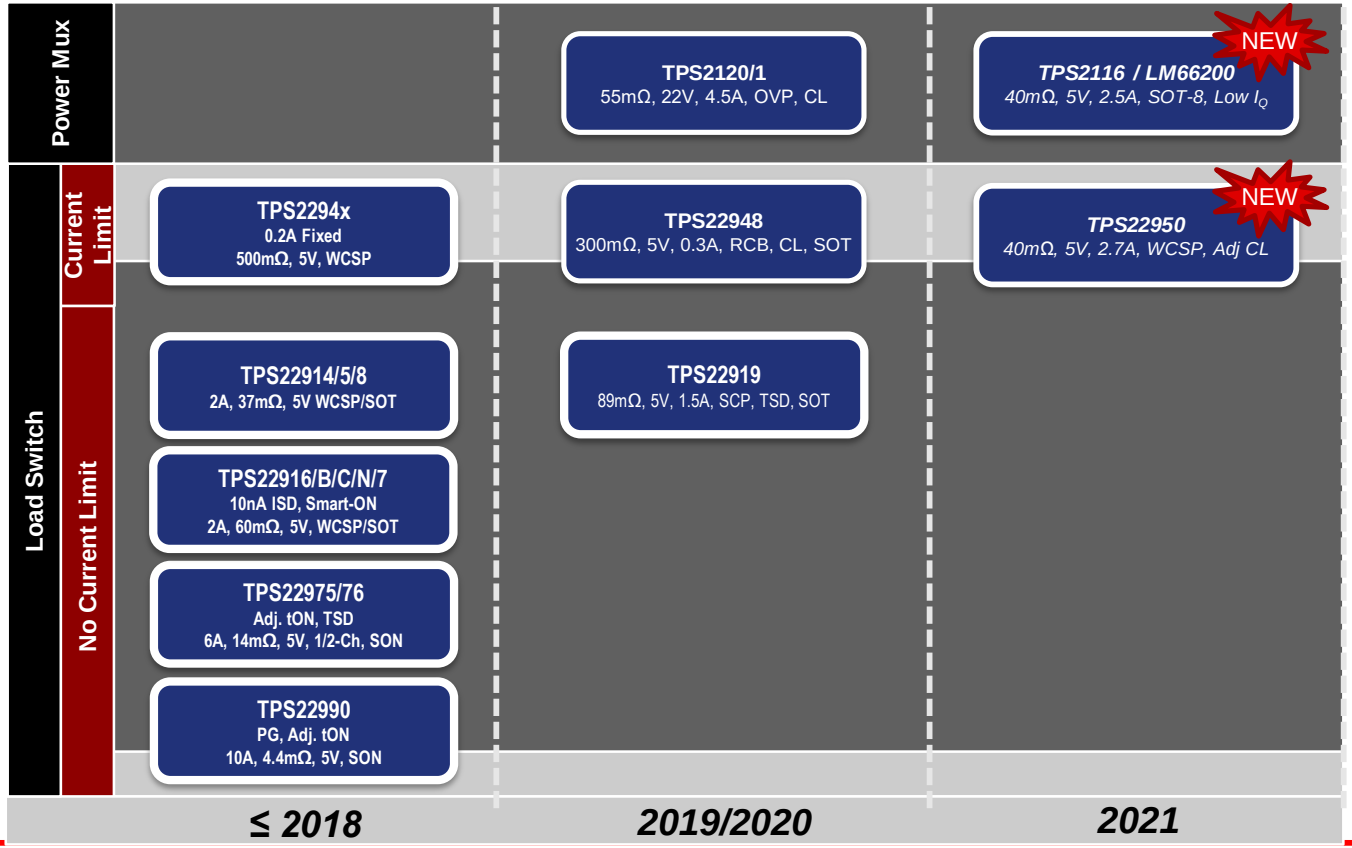
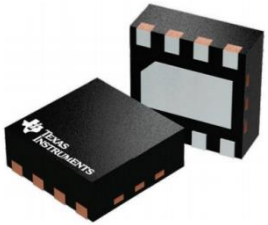
# Load Switch and Power Mux Roadmap

Status: Production | Development | Definition | Creative Backlog



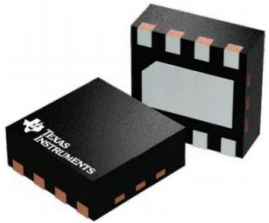
# What makes TPS22992 so special?

- By implementing new hot rod QFN technology, TPS22992 is able to achieve 6 A though a single pin.
  - Reduces the solution size (1.56mm2)
  - Allows for more features to be intergraded.
    - Power Good signal
    - Adjustable output discharge
    - Adjustable soft start
    - Low voltage operating range (0.1V to 5.5V)



TPS22965

Lower Vin
Lower Quiescent current



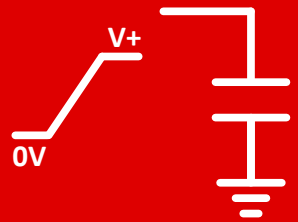
TPS22975

Lower Vin
Lower Quiescent current
Lower ON Resistance
Smaller Size

TPS22992

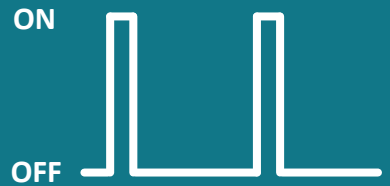
# TPS22992 | applications

## Inrush Current Control



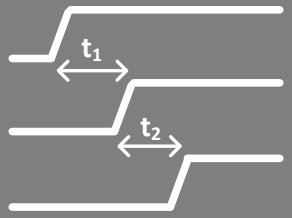

*Optical Modules*
Slows voltage ramp when modules are connected to the main board.

## Reduced Power Consumption




*Notebook, SSD, IPC, Camera*
Turns off modules when not in use to save power.

## Power Rail Sequencing




*Notebook, SSD, IPC, MFP*
Turns on/off processor rails for proper operation.



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