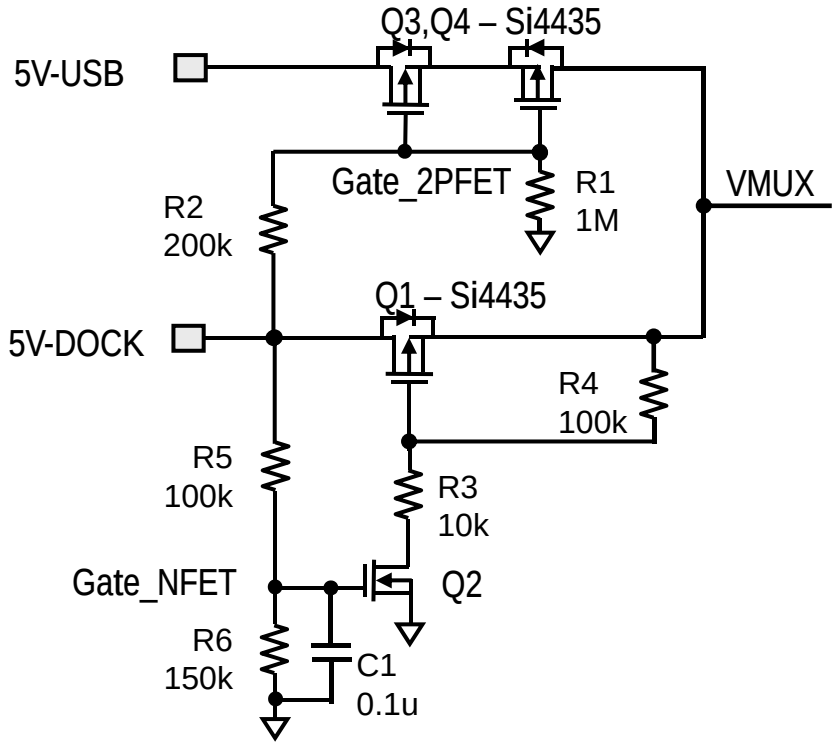
Dual Input Scheme and Test Results

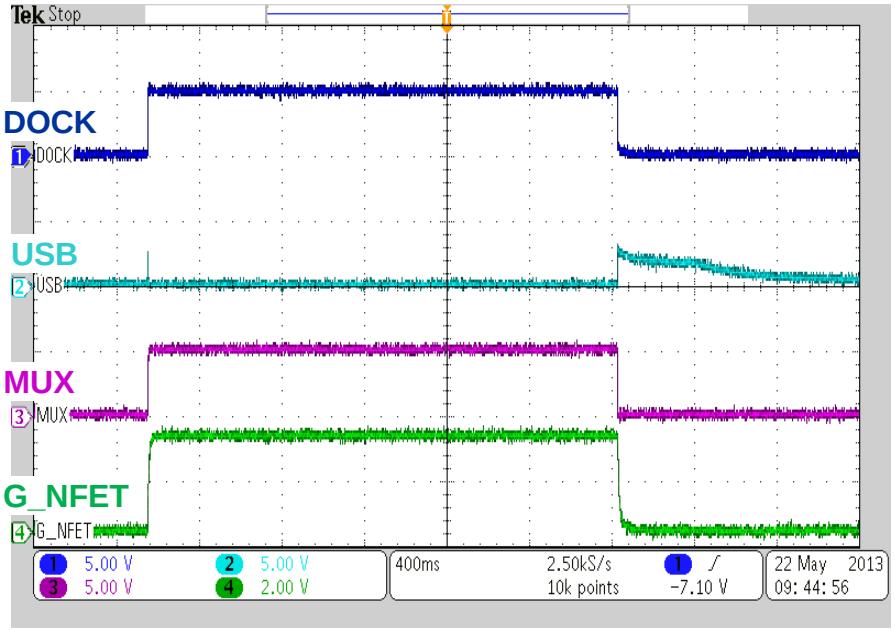
HPC (High Power Charging)
Texas Instruments

Design Requirement

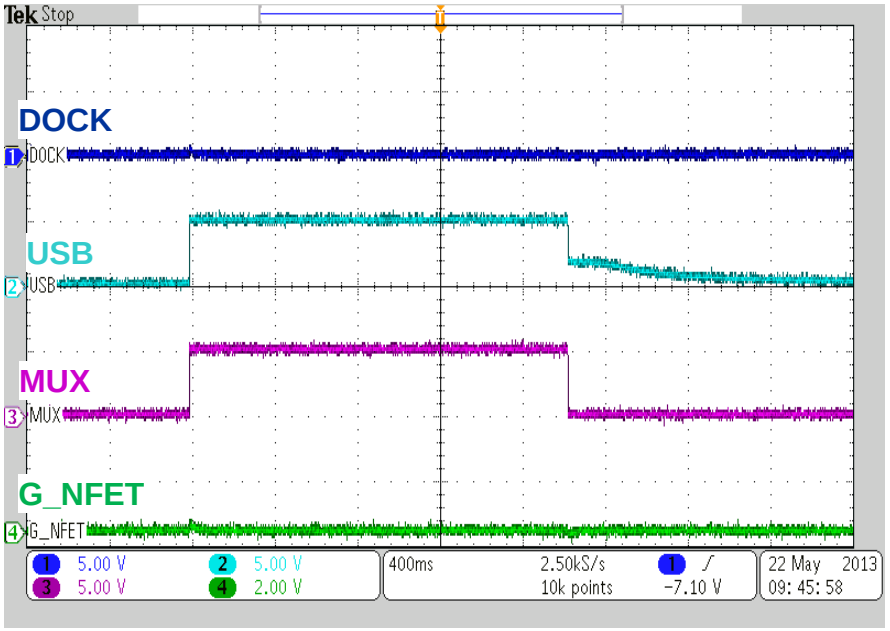
- Customer has two input sources
  - 5V Docking Station
  - 5V USB
- 5V docking station is the preferred power source
  - Always connect to docking station path even if USB is present



Plug-in of One Source

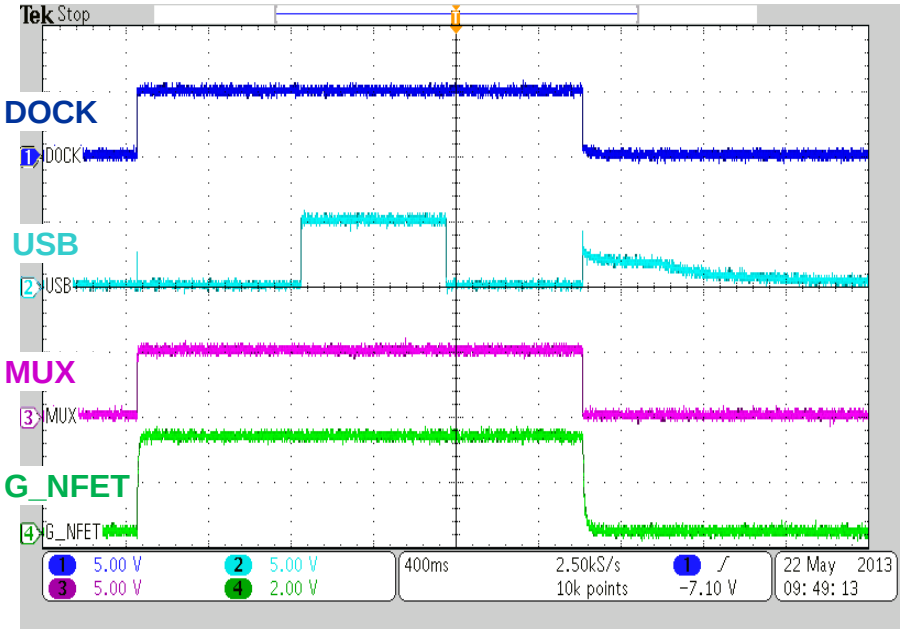


Plug 5V Dock without USB

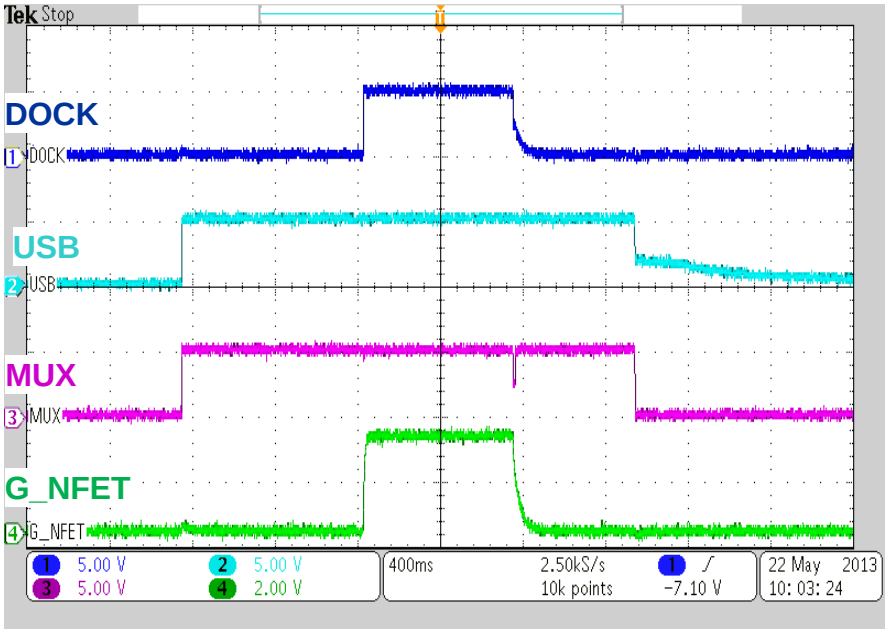


Plug 5V USB without Dock

Plug-in of One Source with the Other Source's Presence



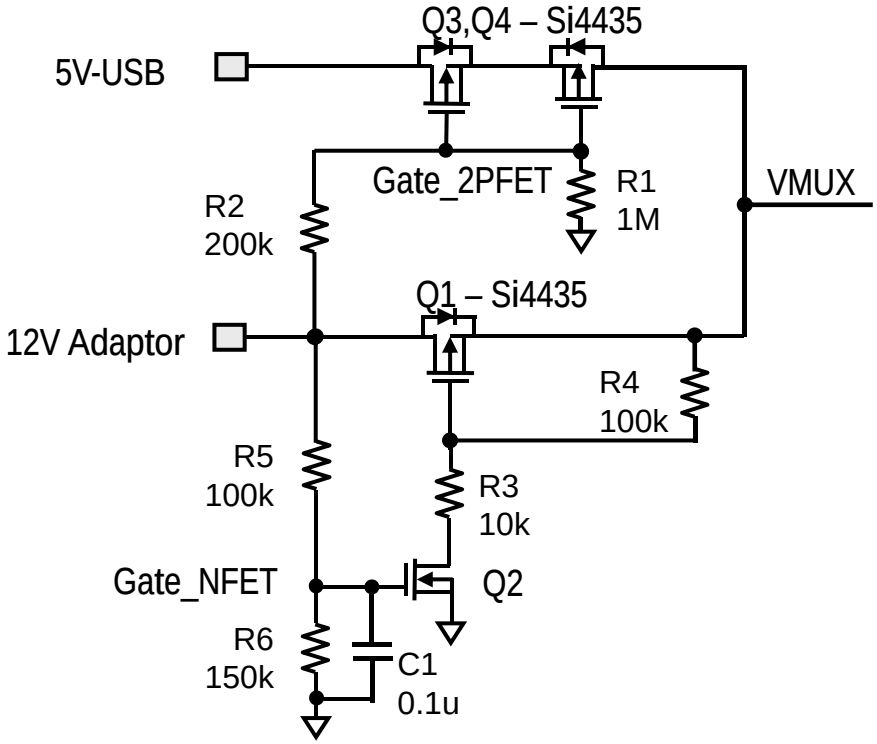
5V Dock in → USB in → USB out →Dock out



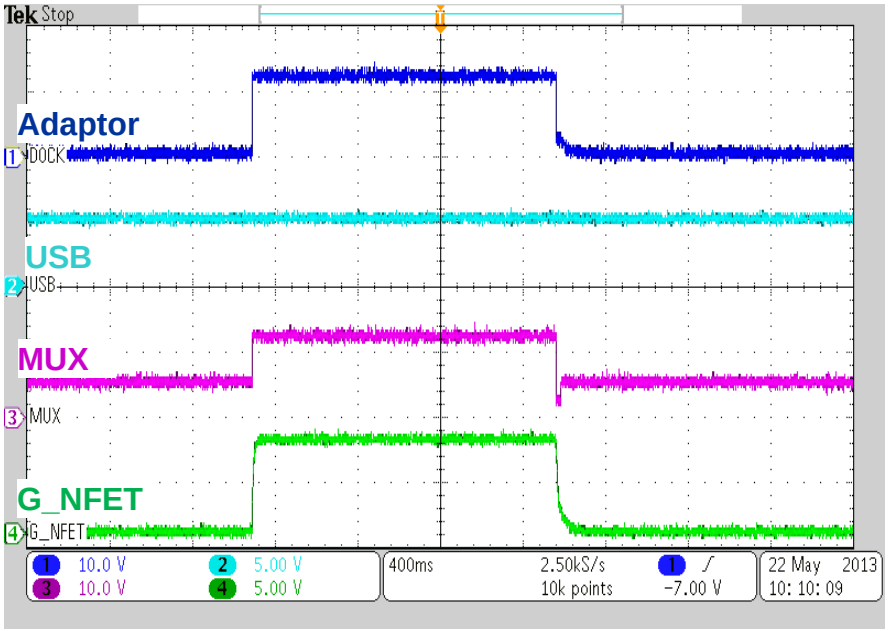
USB in → 5V Dock in → Dock out → USB out

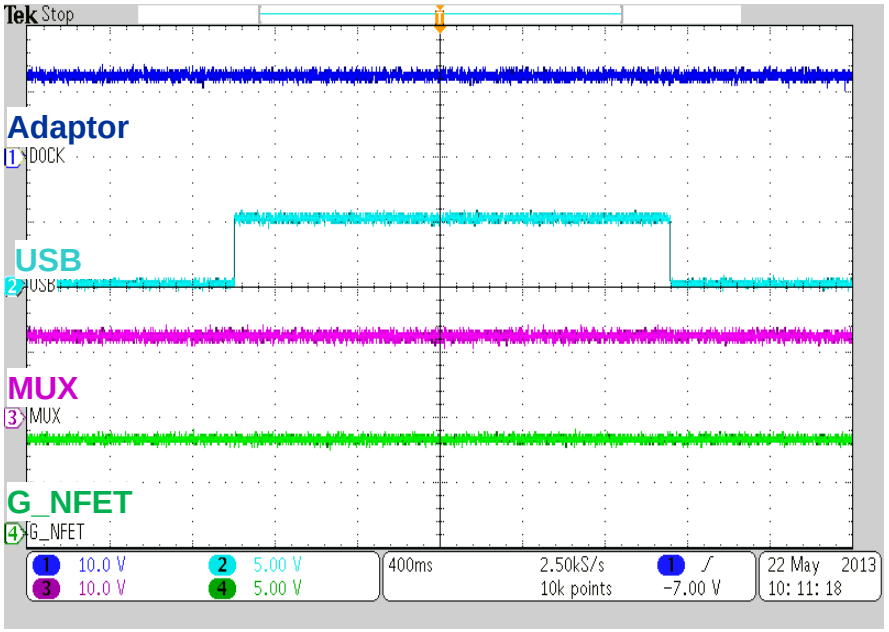
Design Requirement

- Customer has two input sources
  - 12V adaptor
  - 5V USB
- 12V adaptor is the preferred power source
  - Always connect to 12V adaptor path even if USB is present



Plug-in of One Source with the Other Source's Presence



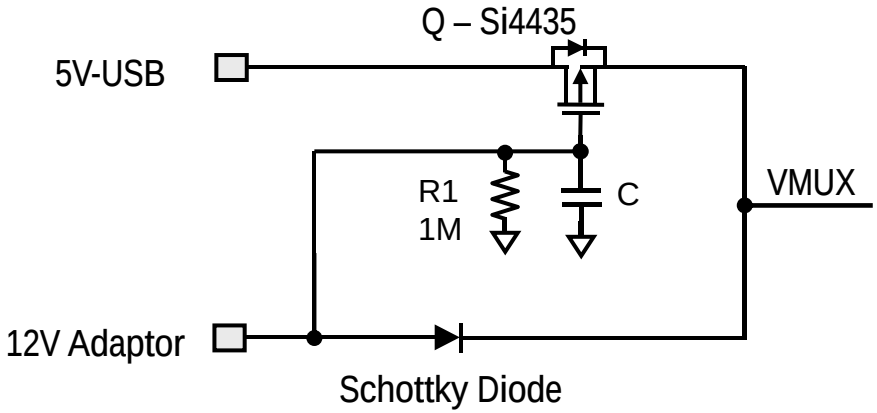


5V USB in → 12V adaptor in → 12V adaptor out

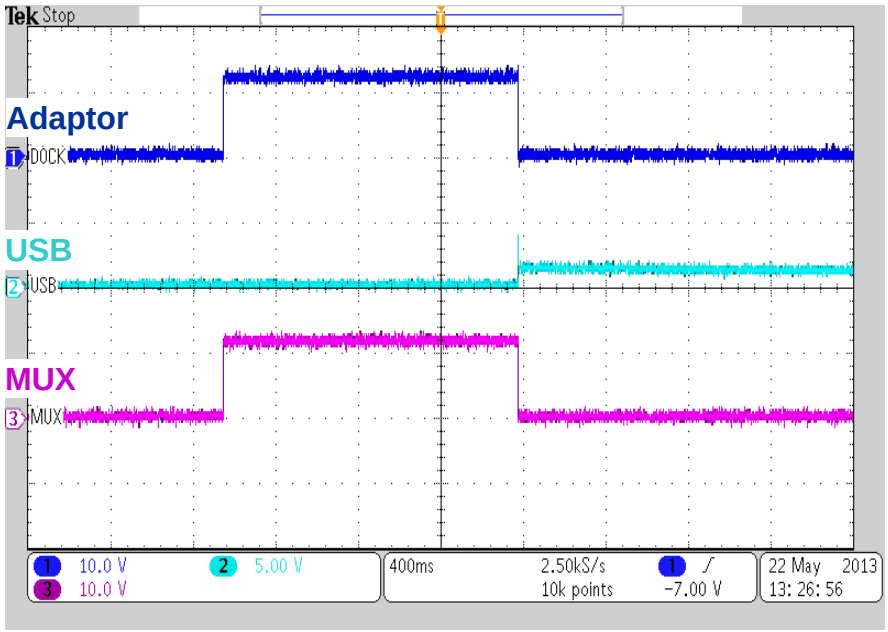
12V adaptor in → 5V USB in → 5V USB out

Simplified Implementation

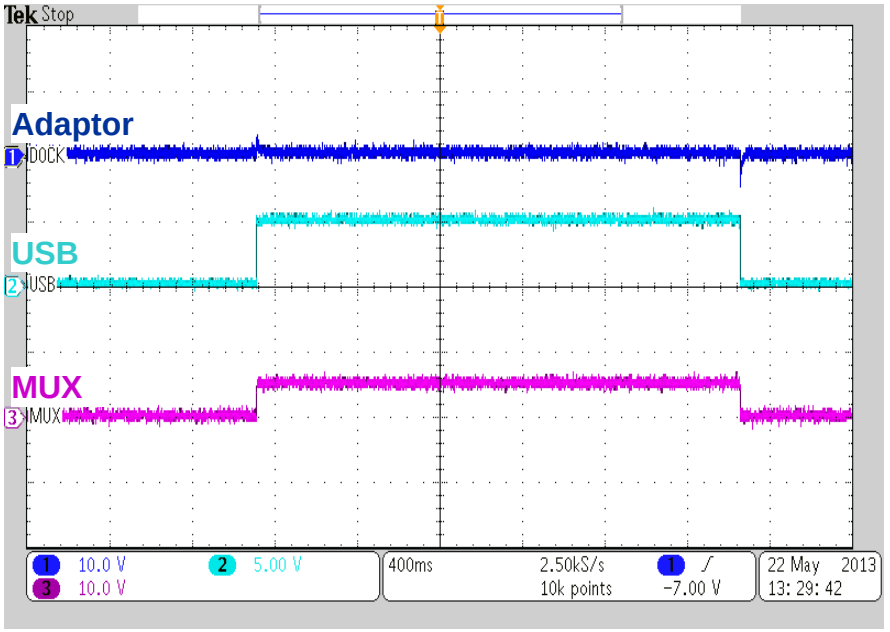
- Customer has two input sources
  - 12V adaptor
  - 5V USB
- 12V adaptor is the preferred power source
  - Always connect to 12V adaptor path even if USB is present
- The voltage drop on a diode is a small percentage, so the 12V path uses a diode to simplify the implementation



Plug-in of One Source

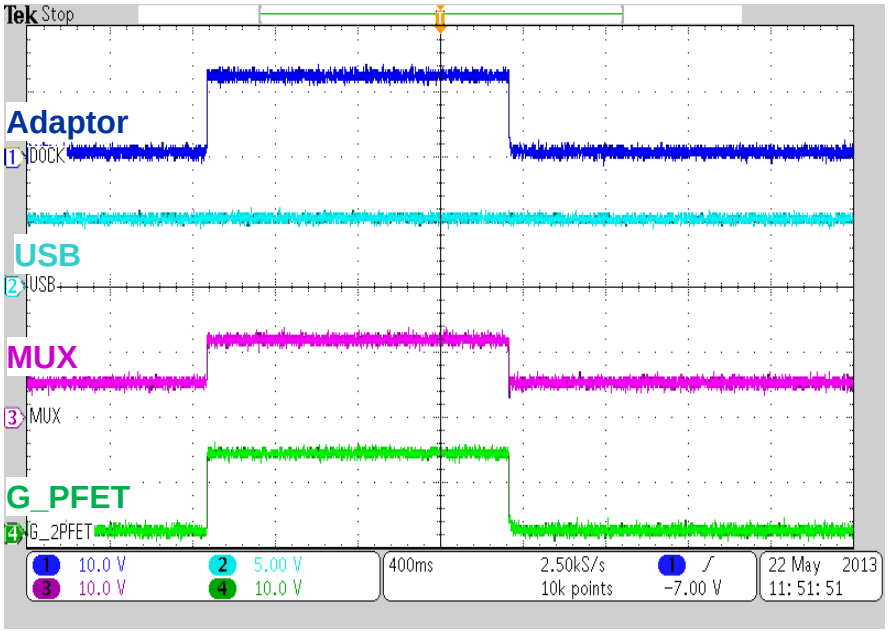


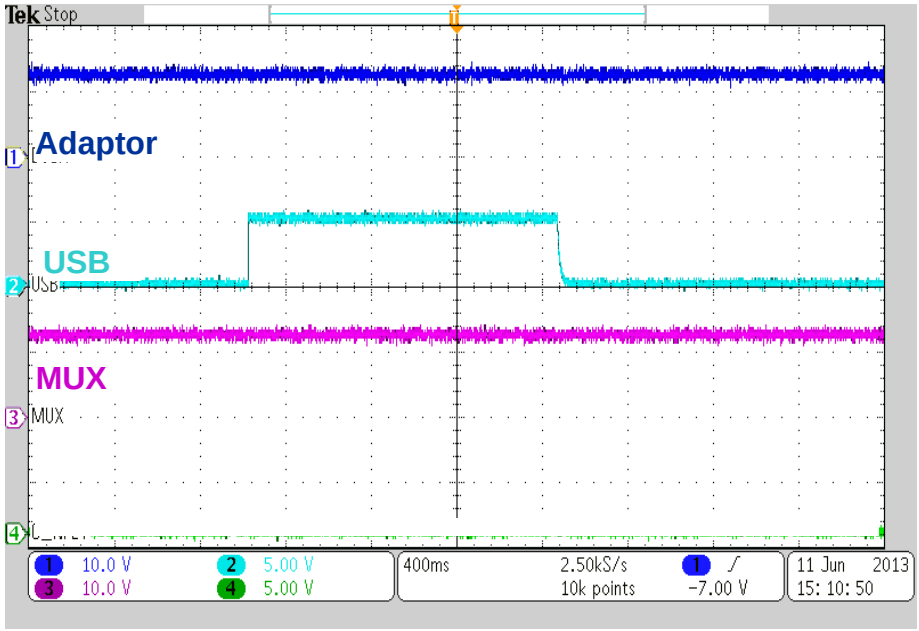
Plug 12V Adaptor without USB



Plug 5V USB without adaptor

The Plug-in of One Source with the Other Source's Presence





5V USB in → 12V adaptor in → 12V adaptor out

12V adaptor in → 5V USB in → 5V USB out