

Selecting the proper Decoupling Capacitor

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mar '18

A Decoupling Capacitor is a **capacitor** that suppresses the frequency noise (AC signal) in power supply signals. All decoupling capacitors should be placed as close as possible to each power supply pin. Knowing this, how do you select the proper decoupling capacitor for your design?

In general, there are some tips for your selection of decoupling capacitor.

- Low frequency noise decoupling generally requires electrolytic capacitors (typically 1 μF to 100 μF) that act as charge reservoirs to low frequency transient currents.
- High frequency power supply noise is best reduced with low inductance, surface-mount ceramic capacitors connected directly to the power supply pins of the IC (typically 0.01 μF to 0.1 μF).
- All decoupling capacitors must connect directly to a low impedance ground plane in order to be effective. Short traces or vias are required for this connection to minimize additional series inductance.

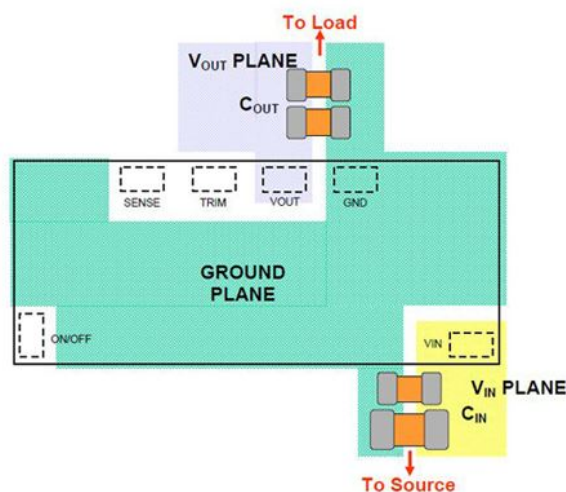


Figure 1: To reduce high-frequency ripple and noise, decoupling ceramic capacitors are placed as closely as possible to the input pin of the POL module.

Please note that most IC data sheets show recommended power supply decoupling circuits in their applications sections and these recommendations should always be followed in order to ensure proper operation of the device.

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