

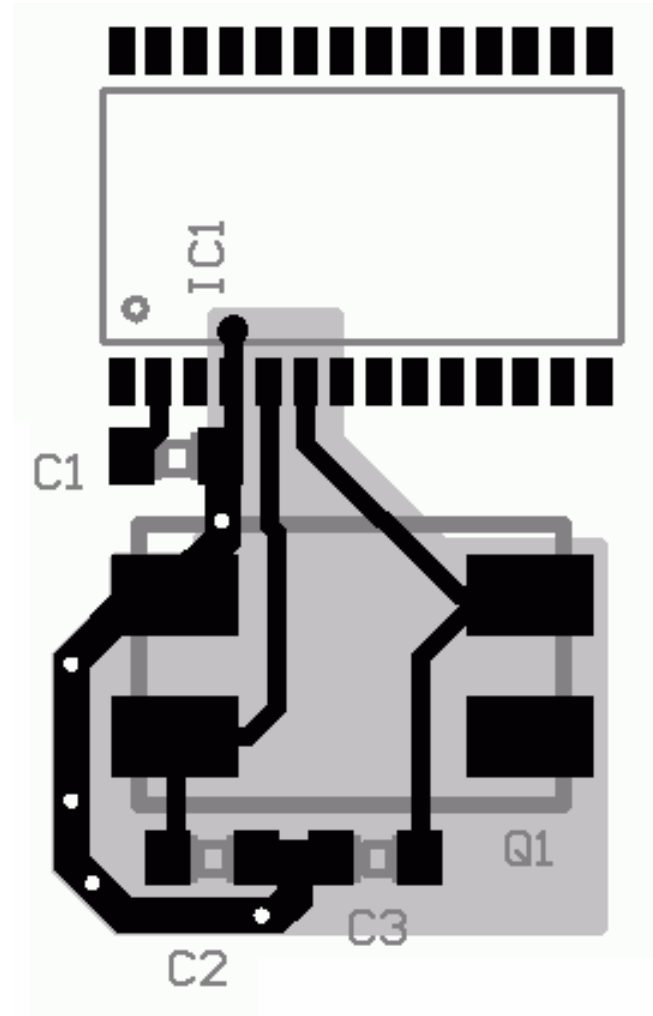
Crystal Layout Checklist

- ❑ Minimize the distance between the oscillator pins and the crystal terminals
- ❑ Place the capacitors, if required, as close as possible to the oscillator pins of the MSP430
- ❑ The ground of the load capacitors should be connected as close as possible to the Vss pin of the MSP430
- ❑ GND ring around crystal traces if possible - protects against static voltages and capacitive coupling from switching signals

- ❑ Keep capacitive coupling as low as possible
 - Keep away switching signals
- ❑ Keep inductive coupling as low as possible
 - Keep the loop areas of switching signals as small as possible
 - Keep the loop area of the oscillator signals as small as possible

Recommended Crystal Layout - 28 Pin Devices

- ❑ Crystal as close as possible to XIN/XOUT terminals.
- ❑ GND below the crystal and load capacitors connected to the Vss terminal.
- ❑ Load capacitors grounded



Recommended Crystal Layout - F41x

- ❑ Same principles
- ❑ Use the NC pins beside XIN/XOUT for GND ring

