HDSC 华大半导体 HUADA SEMICONDUCTOR

32 -bit microcontroller

XTL Layout Instructions for **HC32L110** Series

Applicable object

series	Product number
HC32L110	HC32L110C6UA HC32L110C6PA HC32L110C4UA HC32L110C4PA HC32L110B6PA HC32L110B4PA

content

1 Summary

This application note mainly introduces the relevant guidance and instructions for the XTL Layout of the external low-speed crystal oscillator of the HC32L110 series.

This application note mainly includes:

ÿ Distance

ÿ Power and ground

ÿ Isolation

ÿ External coating

ÿ Reduce interference with other signals

Notice:

- This application note is a supplementary material for the application of the HC32L110 series and cannot replace the user manual, specific functions and registers

  Please refer to the user manual for related matters such as operation.

2 Introduction

The HC32L110 series MCU can be connected to an external crystal oscillator with a frequency of 32.768KHz, which can provide RTC and ultra-low

The clock source signal of the working module in power mode. Users need to pay attention to the following matters when making PCB boards.

3 Layout Considerations

3.1 Distance

The external crystal unit and load capacitor should be placed as close to the chip as possible to minimize stray inductance and capacitance. large parasitic or miscellaneous

The scattered inductance and capacitance will cause the oscillation to have harmonics or spurious frequencies, and will also increase the load of the crystal oscillator, which will affect the start-up and oscillation stability.

sex. Long traces of external crystal signal lines can also interfere with other signal lines, causing EMI problems.

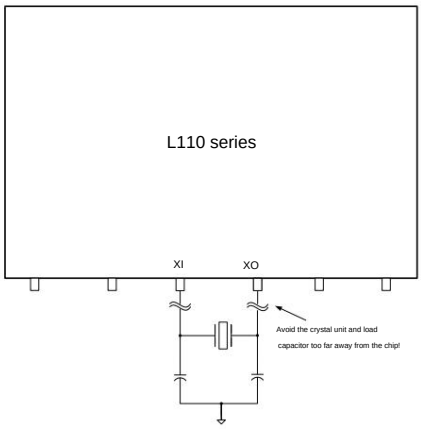

Figure 1. Schematic diagram of long-distance wiring between crystal oscillator circuit and chip

3.2 Power and Ground

The ground of the external crystal oscillator should be drawn from the ground of the reference power supply separately, and each external crystal oscillator should have a separate ground. external

The connection of the ground wire of the crystal oscillator should be wide enough to avoid using a very thin wire for a long distance to prevent antenna effects.

In addition, the power supply of the external crystal oscillator should be as clean as possible, the system power supply should be strong enough, and have a large enough decoupling capacitor to avoid

Noise propagates in the power system.

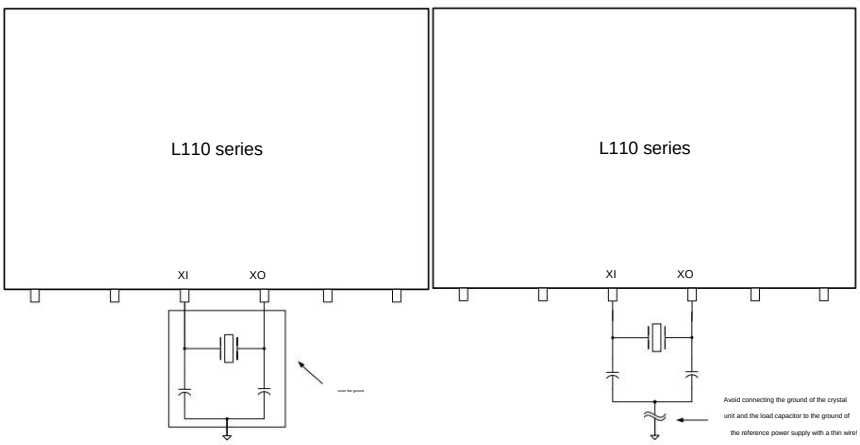

Figure 2. Schematic diagram of the ground cover of the crystal oscillator circuitFigure 3. Schematic diagram of the poor connection of the ground of the crystal oscillator circuit

3.3 Isolation

A ground wire should be used as a guard ring around the external crystal oscillator to reduce the distance between the external crystal oscillator signal and other signals of mutual interference.

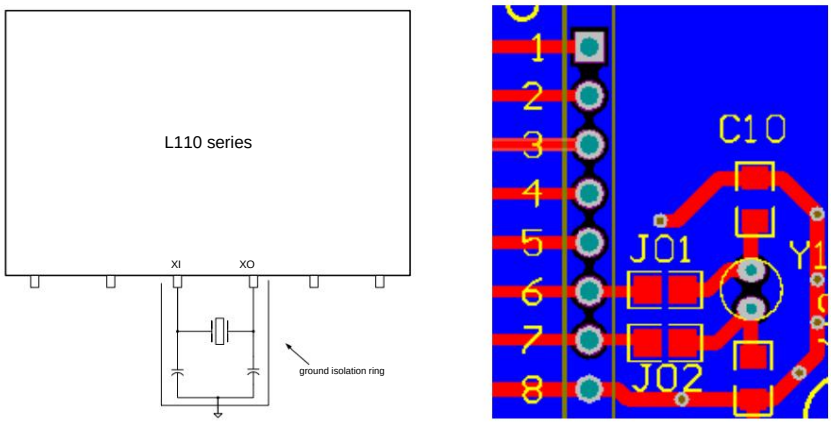

Figure 4/5. Crystal circuit ground wire isolation ring (Ground guard ring schematic diagram)

3.4 External coating

In harsh application environments, such as humid environments, in order to reduce the start-up problem caused by leakage, it is necessary to use an external crystal Add a coating, such as conformal paint, to the PCB board in the vibration area.

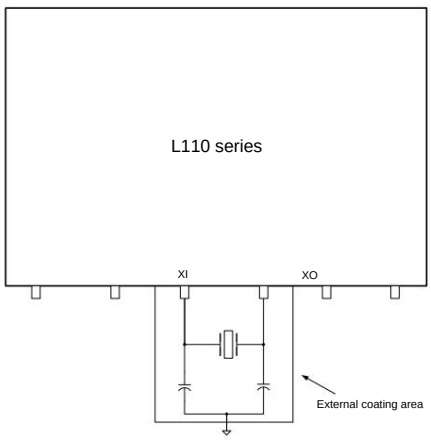

Figure 6. Schematic diagram of the external coating of the crystal oscillator circuit

3.5 Reduce interference with other signals

Avoid routing other signals, especially high-frequency or high-current signals, on the upper and lower layers of the external crystal oscillator, or in parallel in a very close position

To avoid mutual interference between the external crystal oscillator signal and other signals.

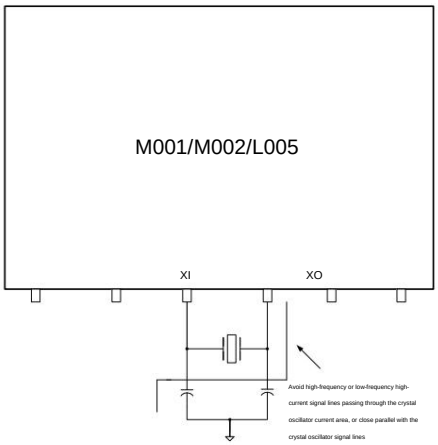

Figure 7. Schematic diagram of interference caused by crystal oscillator circuit and other signal traces

4 Summary

The above chapters briefly introduce the descriptions and precautions of HC32L110 series XTL Layout.

During the process, if you need to know more about the usage and operation of the crystal oscillator, you should refer to the corresponding user manual. Book

The instructions and precautions mentioned in this chapter can be used as a reference for the user's actual PCB board, or they can be directly used in actual development.

application.

5 Additional information

Technical support information: www.hdsc.com.cn

6 Version Information & Contact Information

date	Version revision record
2018/5/31	Rev1.0 initial release

If you have any comments or suggestions in the process of purchasing and using, please feel free to contact us.

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