

Oscillator Design Pitfall and Reliability Consideration for IC Designers

Quartz Crystals can be found easily in any electronic products nowadays. They are apparently easy to use but in fact many electronic engineers found difficulties when high precision and high reliability are required. In this seminar the speaker will present the mysteries behind and precautions for properly using a quartz crystal. Topics included:

1. The Structure of Quartz Crystal
2. Major Parameters for Quartz Crystal
3. Design consideration for a crystal oscillator
4. Startup criterion for oscillation
5. Impact on system reliability due to improper Negative Resistance and Drive Power
6. Relationship between Drive Power, ESR and CL in a Pierce Oscillator
7. How matching is done between oscillator and crystal
8. How to measure Negative Resistance, CL and Drive Power
9. Temperature Characteristic of Quartz Crystal
10. What factors affecting Frequency Error Budget
11. What is Sleeping Crystals
12. Crystal reliability consideration
13. Dead crystal, intermittent and sleeping Crystal

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