ECS Inc. International

BOARD CHARACTERIZATION TESTING PROCESS

Lead times can vary depending on backlog and complexity, but are typically 6-8 weeks.

Many things need to be considered when designing and laying out the circuitry for a printed circuit board. If a few good engineering rules are followed, one can achieve high signal quality and performance while limiting electromagnetic interference and other proximity problems.

ECS Inc. offers a board characterization service that gives design engineers peace of mind that the timing for their circuit is optimized for the best performance. This is done by actively measuring the oscillator loop dynamics to determine circuit performance.

Understanding the reactive impedance of the oscillator loop capacitors, in combination with current limiting resistors, will determine the drive level and frequency accuracy of the oscillator loop design.

Being able to characterize the oscillation loop enables one to understand the circuit performance and offers potential changes that will improve loop performance. ECS Inc. board characterization provides the data that is needed to have a robust oscillator feedback loop.

For more information on good engineering practices for printed circuit board layouts, follow this link.

The tests performed will cover:

1. **Under load crystal frequency measurement –** Real-time measurement of crystal frequency in a circuit.
2. **Measure negative resistance (-RX) –** Negative resistance is incorporated in oscillator circuits to maintain oscillation.
3. **Measure crystal drive level –** Crystal drive level is the amount of power dissipated in a crystal.
4. **Crystal matching –** The matching test is to ensure that the crystal specification and its in-circuit specifications allow for optimum performance.
5. **Determine optimum loading capacitor values (C1 & C2) –** Load capacitance is the amount of external circuit capacitance in, including stray capacitance, parallel with the crystal itself. Testing will determine the optimum value.
6. **Suggest crystal specifications and values –** Based on testing results, suggested crystal parameters and circuit component values will be offered.
7. **Optimize current limiting resistance –** A current limiting resistor regulates and reduces the current in a circuit.

Follow the links below to view test equipment used during testing

Agilent N9340B Spectrum Analyzer

Saunders & Associates Network analyzer 250B system

Agilent Technologies DSO-X3102A

Tektronix Current Probe CT2

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