

Charged Board Model ESD Simulation for Printed Wiring Boards

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Charged Board Model (CBM)

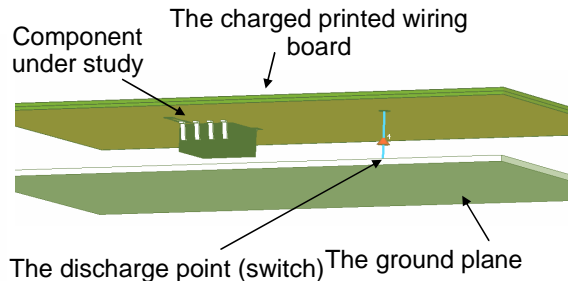
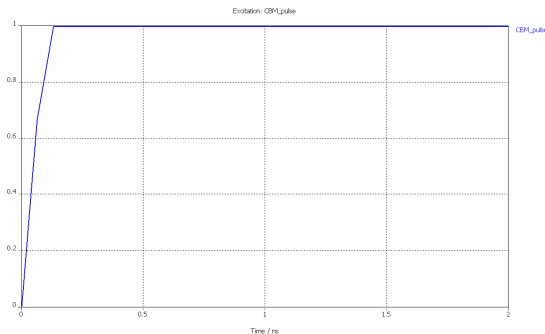
- CBM is a fast electrostatic discharge (ESD) event
- CBM type event occurs, when a charged printed wiring board discharges
- Charging can be caused, for instance, by surrounding plastic cover or a manufacturing line
- CBM differs from the standardized Charged Device Model (CDM), because the whole board is considered
- Therefore, higher currents and energy are possible

About "Exact" Modelling

- 1) Solving the initial conditions (i.e. the static electric field and potentials on the board and nearby environment)
- 2) Letting the discharge probe approach the discharge point (slowly) and correcting the field
- 3) Modeling the possibly non-linear discharge event (e.g. a spark between the probe and the board)

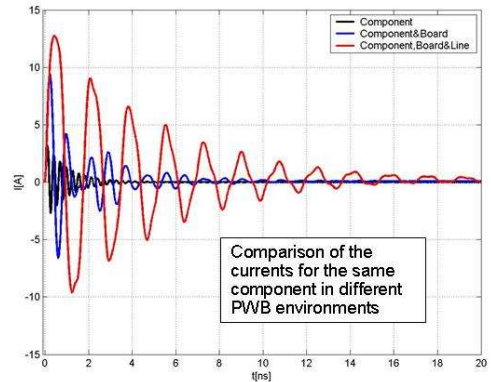
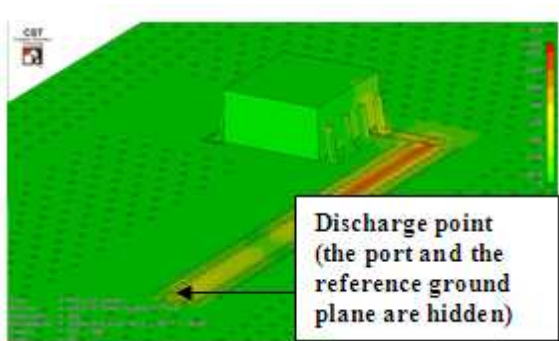
Simplifying the Model

- Only the events after the discharge moment will be simulated (i.e. the probe will not have an effect to the static field)
- The discharge is modeled with a switching signal
- The rise time for the excitation signal is set to about 100ps



CBM simulations with CST MWS

- It can be seen, that the CBM threath varies greatly according to the PWB environment



Discussion & Conclusions

- Model verification results will be presented in EOS/ESD Symposium 2007 (see Reinvuo, Tarvainen, et al.)
- Exact modelling is difficult
- Simplified CST models can be used to evaluate CBM threats