

## Power Integrity Design for High Speed Circuit Packages

With the trend of fast edge rates, high operation frequencies, and low voltage in high-speed or high-frequency circuits, power/ground noise caused by simultaneously switching currents has become one of the major concerns for high-speed or mixed-signal circuit designs. In this talk, the fundamental concept for the power integrity (PI) design is first introduced, including the power distribution network (PDN) and its impedance, the mechanism of the power noise, and the design issues caused by the power noise. Several commercial solutions to suppress the noise, such as SMT capacitors, embedded capacitor, and on-chip capacitors, will be presented. Recently, electromagnetic band gap (EBG) structures are proposed to be an alternative approach for power noise suppression. Several novel electromagnetic bandgap (EBG) structures with efficient noise suppression capability will also be demonstrated in this talk.