Complex combination EMI and thermal solution

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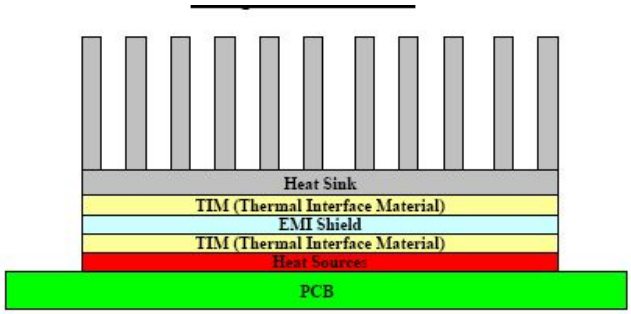

Figure 1: Thermal Model Layout

In this application, Riaz developed a custom solution shown in Figure 1 consisting of a printed circuit board with a heat source and an EMI shield consisting of a metal plate that also serves as a heat spreader. The heat source is separated from the EMI shield by a layer of thermal interface material. A heat sink is mounted to the EMI shield and separated from it by another layer of thermal interface material. The complexity of the design results increases the number of design parameters which in turn exponentially increases the number of design alternatives that must be considered to deliver an optimized solution.

The traditional approach to resolving this challenge would have been to use intuition and hand calculations to develop the initial design concept. Then a prototype would have been built and tested to evaluate temperatures at key points. Chances are the first design would not have met requirements so it would have been necessary to embark upon an iterative process of modifying and testing the prototype until the design requirements were met. The difficulty of this process would have been increased by the number of design parameters. Using this method, it could have taken months to find an acceptable solution and years to find the optimal solution.