

## **New 3M Material Provides Highest Embedded Capacitance Performance; 3M Embedded Capacitor Material Delivers Superior Decoupling**

An innovative new laminate material from 3M lets designers and manufacturers of high-speed digital printed circuit boards achieve higher speeds while simplifying design tradeoffs.

When used as "power" and "ground" layers in a multilayer PCB, 3M embedded capacitor material effectively becomes a decoupling capacitor inside the board. Embedded capacitance is more effective at decoupling high frequencies than surface mount discrete capacitors. Designers can achieve their decoupling requirements in less time and the reduction in discrete capacitors simplifies the task of board layout.

3M's embedded decoupling approach offers several advantages. It eliminates large numbers of decoupling capacitors, increases useable board area, enables faster signaling, lowers radiated emissions (EMI), and saves engineering time associated with power distribution design and board layout.

The material consists of an ultrathin adhesive layer sandwiched between two layers of copper foil. The patented adhesive formulation incorporates barium titanate particles to achieve a high dielectric constant. The combination of high dielectric constant and thinness delivers a capacitance of 5 nF/in<sup>2</sup>.

3M embedded capacitor material has been the subject of many recent technical papers, including two industry presentations in November. Copies of these papers, along with detailed technical and performance data, are available at [www.3M.com/embeddedcapacitor](http://www.3M.com/embeddedcapacitor). Fabricators also can request a Processing Guide at the site.

Currently, 3M is sampling material for qualification purposes at fabricators and OEMs. For more information, visit the site or contact Bill Balliet, new business development manager, 3M Electronic Solutions Division, at (512) 984-7324.

The 3M Electronic Solutions Division has numerous technologies and provides a wide range of products for the electronics market. It provides flexible and multilayer microinterconnect packaging solutions; copper and fiber connectors, cables and cable/connector assemblies; static control products; tape and reel transport media for passive, semiconductor and electro-mechanical components; IC transport media; and test and burn-in sockets.

### **About 3M -- A Global, Diversified Technology Company**

Every day, 3M people find new ways to make amazing things happen. Wherever they are, whatever they do, the company's customers know they can rely on 3M to help make their lives better. 3M's brands include icons such as Scotch, Post-it, Scotchgard, Thinsulate, Scotch-Brite, Filtrete, Dyneon and O-Cel-O. Serving customers in more than 200 countries around the world, the company's 70,000 people use their expertise, technologies and global strength to lead in major markets including consumer and office; display and graphics; electronics and telecommunications; safety, security and protection services; health care; industrial and transportation. For more information, including the latest product and technology news, visit [www.3M.com](http://www.3M.com).

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