July 28, 2022

NEWS RELEASE

Enhanced Production Capacity for Ultra-Thin Embedded Capacitance Materials and Construction of a BCP Framework

- Doubling the Production Capacity at two manufacturing locations: Malaysia and Japan

Mitsui Mining & Smelting Co., Ltd. (President: NOU Takeshi) announces that it is increasing its production of FaradFlex®, a material used for ultra-thin embedded capacitance manufactured by the Copper Foil Division, and constructing a BCP framework.

FaradFlex® is used to improve power delivery and reduce resonance and noise in printed circuit boards and electronic components. It allows electronics equipment designers to enhance and optimize their designs for next generation electronic equipment which requires higher processing speeds and capabilities. It is often used in the multi-layer printed circuit boards of high-speed transmission routers, servers, supercomputers, and MEMS microphones.

Currently the demand for FaradFlex® is growing based on the recent progress of high-speed communications and adoption increase for smartphones and wireless headsets etc. Taking this circumstance into consideration, we have decided to take two actions to increase our capacity. Firstly, we are increasing the production capacity at our Selangor, Malaysia plant (Mitsui Copper Foil (Malaysia) SDN.BHD.), where FaradFlex® is produced, anticipating the continued growth of the market. Secondly, we are setting up a 2nd manufacturing site installing new production equipment for FaradFlex® production in our Ageo, Japan plant. We will then have two locations, Malaysia and Japan, for the construction of the BCP framework.

Malaysia plant upgrades and process enhancements will be completed by October 2022. Installations of the production equipment at the Ageo, Japan plant will be completed by October 2023. Once completed we will have increased FaradFlex® production capacity by 2.2 times.

We will contribute to the realization of a sustainable society by implementing our vision for 2030, "Building

new businesses －and the future－ with our material intelligence." based on our purpose, "We promote the well-being of the world through a spirit of exploration and diverse technologies."

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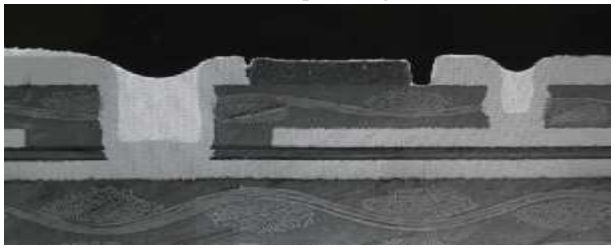
[Reference]

1. Manufacturing FaradFlex®

FaradFlex® is a material that is composed of ultra-thin dielectric layer (thickness range of 3 to 25 um) with a copper foil on both sides (with a typical thickness range of 18 to 70 μm).

FaradFlex® forms a circuit that serves as a capacitor embedded in the PCB.

Cross section of PCB incorporating FaradFlex®

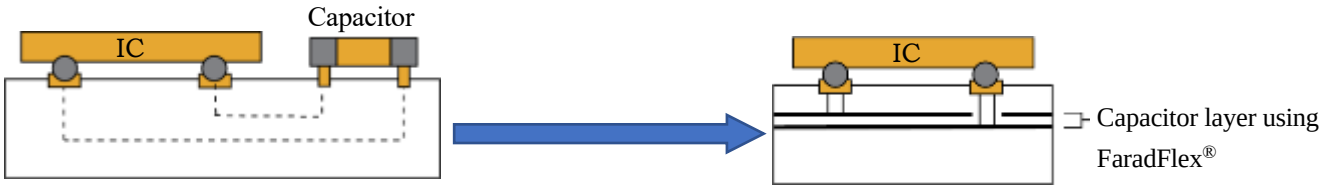


FaradFlex® (Three-layer structure of copper foil, dielectric layer, and copper foil)

2. An example of the simulated use of an embedded capacitor

FaradFlex® allows a capacitor layer to be formed immediately below the IC.

Communication noise can be reduced by shortening the distance between the IC and the capacitor layer.



FaradFlex® embedded in a PCB

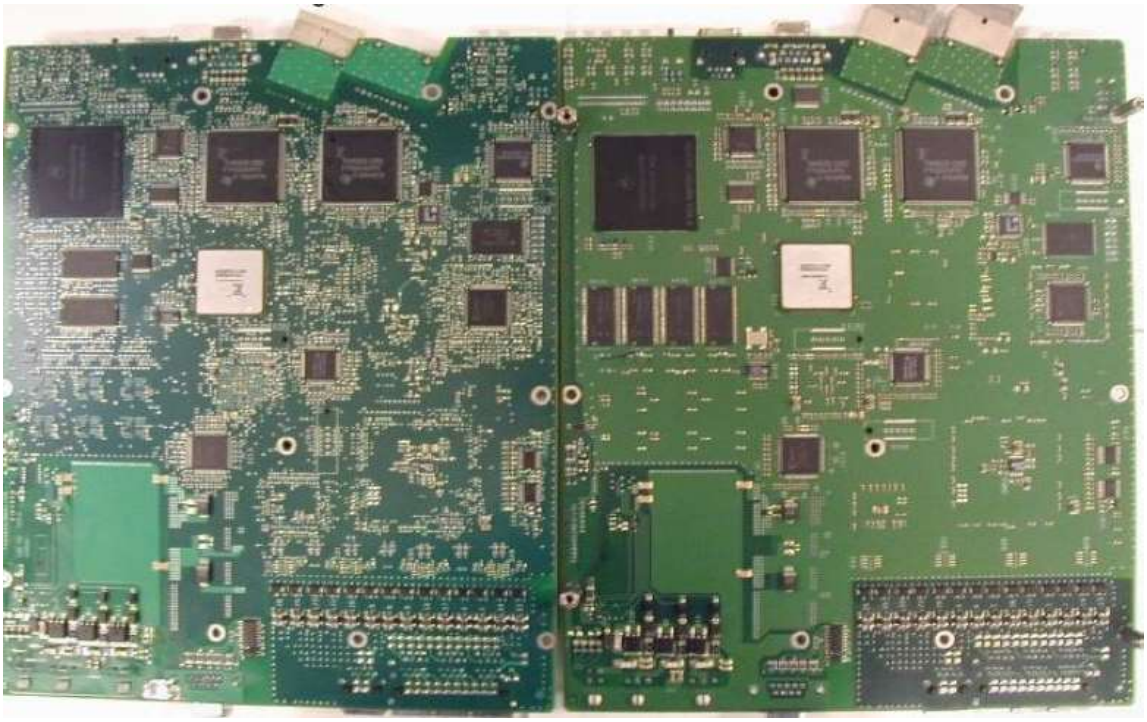
3. An example of the simulated use of embedded capacitor

(PCB incorporating electronic components)

FaradFlex® makes it possible to integrate capacitors into the PCB.

This can reduce the number of components installed on a PCB, leading to a decrease in the density of installed components on the PCB and a smaller PCB. Which makes miniaturization possible.

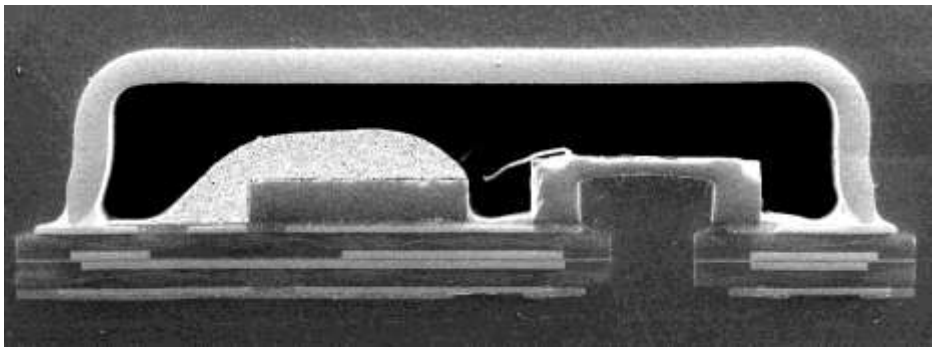
Usual 14-layer PCB without FaradFlex®　　PCB with FaradFlex®



Photographs courtesy of Gary Ferrari, FTG

(MEMS microphone)

FaradFlex® can eliminate chip capacitors, enabling miniaturization.



Capacitor layer using FaradFlex®