

Future Applications

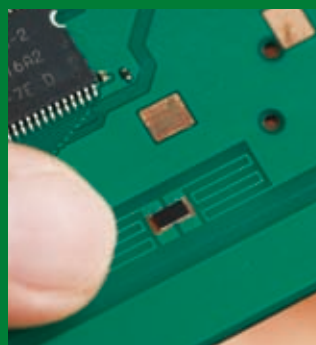
Murata concentrates its strength on technological development for a bright future under the slogan of “Innovator in Electronics®,” contributing to society through electronics and its innovations.



Using high-frequency technology, MAGICSTRAP® expands the range of the possibilities of RFID

Radio-frequency identification (RFID) is used for identification of individuals and objects. This technology enables several sets of information to be transmitted and received simultaneously at a distance. RFID is being put into commercial use in various applications such as logistics and inventory management. It will also ensure traceability of electronic products from manufacture to disposal. In this area, however, the introduction of RFID is still at the beginning stage due to problems associated with mounting space and high-frequency circuits. Murata has met these challenges with our high-frequency technology and low-temperature firing of multilayer ceramics, and has successfully commercialized RFID under the trade name of MAGICSTRAP®.

In common RFID solutions, the antenna is designed to play four roles: ① radiation and reception of radio waves transmitted through space, ② efficient signal transmission between antenna and IC, ③ selection of a center frequency of radio waves for transmission to IC and ④ selection of a bandwidth of radio waves for transmission to IC. MAGICSTRAP® carries out three of these functions (②, ③ and ④). This solution makes it possible to use the ground plane of a PWB, or even a metal structure, as an antenna. This technology facilitates the introduction of RFID to various aspects of daily life.



The development staff of MAGICSTRAP® dream of realizing a ubiquitous computing society. For example, you could install an RFID reader at the entrance of your residence, which would warn you if you have forgotten your commuter rail pass. It is very exciting to think about such future possibilities.



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Ranging from Lifecycle Management of Electronic Products to Overall Logistics Management

Today, electronic products need to be controlled through their entire lifecycle from manufacture to distribution and to disposal. By mounting MAGICSTRAP® tags on PWBs, management of individual units becomes easy. This technology is effective against illegal dumping and facilitates prompt and efficient recall processes. For example, it enables an operator to read information at once from several tens of electronic boards packed in a cardboard box, thereby reducing management time and labor. Furthermore, consistent information control made possible by MAGICSTRAP® in production and distribution processes will eliminate wasteful overproduction and over-distribution, thus contributing to resource savings throughout society.

Change in Thinking: A Microblower has brought a change in cooling

Following the miniaturization and higher-density mounting of electronic products, notably PCs, heat generated inside units has become a serious problem, because heat damages IC and other principal sections of circuitry. The conventional measures in this regard include the installation of a heat sink and fan motors. Problems associated with these devices are that they require a large space in the unit and they are power hungry. First of all, heat sinks and fan motors go against the trend toward miniaturization. The piezoelectric microblower developed by Murata is a precise solution to these problems. A fan motor is an electric fan operating on the same principle, while the microblower operates on the same principle as that of a bellows. Using ultrasonic vibrations, this device generates a high discharge pressure at its precision-machined nozzle. With dimensions of 20 mm × 20 mm × 1.85 mm, substantially small and low-profile compared with motorized fans, the microblower delivers an air discharge pressure of 1.3 kPa or more, several hundred times higher than that of a motorized fan. Its power dissipation is only half or less than that compared to a common motorized fan, plus it produces no electromagnetic noise.



Most members involved in the development of the microblower are in charge of Murata's production equipment. They are excellent at grinding workpieces and molding objects to micrometer-based specifications. The shape of the microblower nozzle is a result of their expertise and pride.

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Contributions to Miniaturization and Long Life, plus to Commercialization of Fuel Cells

The microblower is based on the concept of blowing heat away with air pressure. The device's effectiveness increases with increasing miniaturization of units. Moreover, its simple structure, incorporating no blade, bearings or other parts subject to wear, contributes to extending the service life of electronic equipment. The microblower is promising in applications to small mobile devices as well as to digital video and still cameras. In its initial development stage, it was devised as auxiliary equipment to feed air to compact mobile fuel cells. When it becomes widely used in that area, the microblower will provide substantial benefits to next-generation energy supply.

