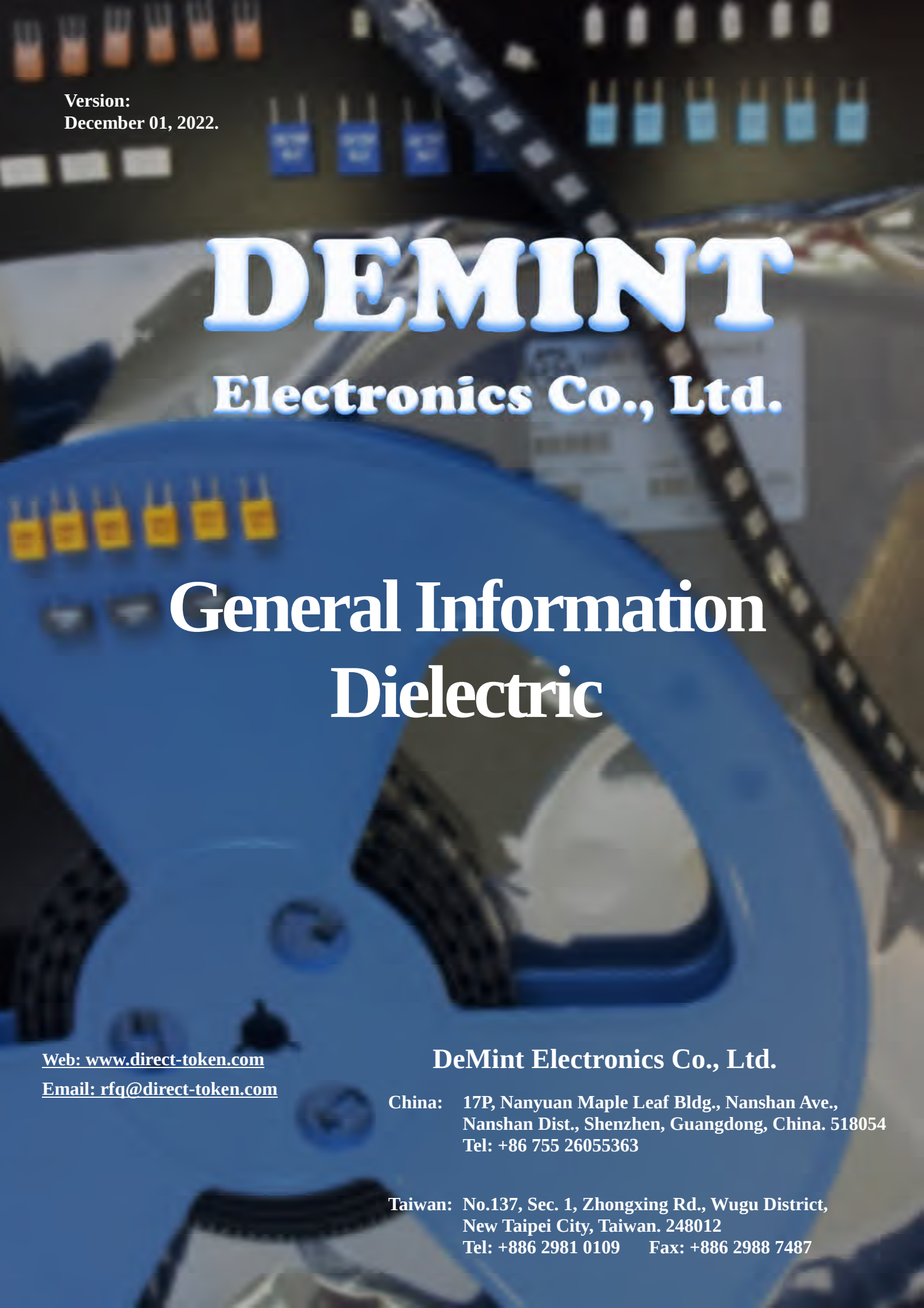

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DEMINT

Electronics Co., Ltd.

General Information
Dielectric

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General Information

Advantage of DeMint's Microwave Dielectric Components

New Microwave Dielectric Materials for Wireless Communication from DeMint Electronics "Everything from the electromagnetic properties to microstructure of the material is important for the final result"

A small ceramic component made from a dielectric material is fundamental to the operation of filters and oscillators in several microwave systems, such as satellite TV receivers, military radar systems, Global Positioning System (GPS) devices, and mobile communications. DeMint Electronics had been able to develop specialized piezoelectric materials which lead to more reliable and clearer microwave communication signals.

In microwave communications, dielectric components are used to discriminate between wanted and unwanted signal frequencies in the transmitted and received signal. When the wanted frequency is extracted and detected it is necessary to maintain a strong signal nevertheless. For clarity it is also critical that the wanted signal frequencies are not affected by seasonal temperature changes.

The resonator materials for practical applications have to have certain key properties. A high relative dielectric constant is needed so that the materials can be miniaturized and a high quality factor (Q) is needed for improved selectivity. Low temperature variation of the material’s resonant frequency is also required so that the microwave circuits remain stable.

Although large numbers of ceramic dielectric materials have been developed, it has proven difficult to satisfy all these requirements in a single material at a reasonable cost. "DeMint takes the advantages of these new materials that they are relatively cheap compared with some of the compounds currently used and in the future they can be improved even further by suitable additives and by optimizing the preparation conditions."

Dielectric Material Composition & Study

The new dielectric materials developed by DeMint, are based on ceramics formed by baking the pressed powdered starting material mixture in a furnace at between 1200 and 1550 degrees Celsius.

DeMint Engineers used X-ray diffraction studies, Raman spectroscopy and scanning electron microscopy to reveal the structure of the ceramics. The materials have the general formula Ce(M1/2Ti1/2)O3.5. Ce is the element cerium, Ti is titanium and O is oxygen. "M" represents any one of the metals magnesium, zinc, calcium, cobalt, manganese, nickel or tungsten. The numbers refer to the proportions of each element in the ceramic.

"Further work is in progress to find the exact composition, internal structure and secondary phases in the ceramics".

DeMint's Service & PDF Catalogue Download

DeMint reliably deliver high-quality microwave dielectric components according to the each customer special needs with respect to performance, costs, and technology modifications.

For marketing discontinuations or sourcing activities concerning dielectric products, you are encouraged to contact our Sales Department so the request can be properly directed within DeMint.