

Why are new polymer materials needed for capacitor films?

New polymer materials are therefore required to overcome these temperature limitations. Accordingly, a new class of engineering materials, EPN (Ethylene-Propylene-Norbornene), has been developed for capacitor films, combining the advantages of polypropylene and cyclic olefin copolymers.

What is the rated voltage range of polymer capacitors?

The rated voltage range of polymer capacitors has been extended from maximum of about 25 V to 400 V. In combination with a superior DCL performance, the new polymer capacitors have been introduced in high reliability applications such as automotive and space [3,4].

Can polymer Ta capacitors be used in automotive industry?

This would further expand the application of polymer Ta capacitors in automotive and other markets where a harsh operating environment is of concern. The authors acknowledge the great contribution and cooperation of KEMET R&D and Technical Marketing team members across multiple locations.

What is the history of film capacitors?

Over the history of film capacitors, from a material perspective, the major breakthrough started with the move from paper to polymers, and especially to polypropylene, which finally became the dominant dielectric in film capacitors today.

What are the AEC-Q200 requirements for polymer tantalum capacitors?

Amongst all of the AEC-Q200 requirements, the most challenging one for polymer tantalum capacitors with traditional technology is the highly accelerated test under 85°C / 85% relative humidity (RH) with DC bias up to rated voltage for 1000 hours.

Why is conductive polymer the most sensitive part of a capacitor?

The conductive polymer as an organic material is the most sensitive part of the capacitor when exposed to high temperature or harsh conditions like 85°C/85%RH. The sheet resistance of films made from conductive polymer dispersions exhibit an extremely better stability at high temperature or 85°C/85%RH compared to in-situ polymerized films (Fig. 4).

Film stretching and metallization -- To increase the capacitance value of the capacitor, the plastic film is drawn using a special extrusion process of bi-axial stretching in longitudinal and transverse directions, as thin as is technically possible and as allowed by the desired breakdown voltage.

In line with growing sustainability requirements, Stelora™ EPN for capacitor films is mostly based on renewable feedstock. Herein we present some basic polymer features of the EPN system ...

When conductive polymer dispersions are applied, the manufacturing process of polymer capacitors can be significantly simplified compared to in-situ polymerization by a dip and dry ...

situ polymerization process was used to synthesize a composite yarn of CNT/P ANI yarn as a first step and a thin layer of polyvinyl alcohol (PVA)-H₂SO₄ gel electrolyte was coated on

Specifically, this type of tantalum capacitor is manufactured by KEMET Electronics Corporation and utilizes Poly(3,4-ethylenedioxythiophene) (PEDOT) as the cathode material. There are two capacitor varieties based on the polymerization method used for the PEDOT. One uses In-Situ polymerization, and the other uses Pre-Polymerization.

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Download scientific diagram | Capacitance extraction of capacitor on polymerization time of the VPP process. from publication: Vapor Phase Polymerization Deposition of Conducting Polymer/Graphene ...

Download scientific diagram | Shallow-trench-array capacitor. (a) Schematic process flow for shallow-trench-array decoupling capacitor fabrication. (b) 70-degree-angle SEM image of shallow-trench ...

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