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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

David J. Kappas

Director of the United States Patent and Trademark Office





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(12) **United States Patent**
Fran et al.

(10) **Patent No.:** **US 8,305,735 B2**
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(54) **STACKED SOLID ELECTROLYTIC CAPACITOR WITH MULTI-PIN STRUCTURE**

(58) **Field of Classification Search** 361/523, 361/541, 303, 301.4, 306.1, 306.3, 540
See application file for complete search history.

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(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 296 days.

(57) **ABSTRACT**

A stacked solid electrolytic capacitor with positive multi-pin structure includes a plurality of capacitor units, a substrate unit and a package unit. The positive electrode of each capacitor unit has a positive pin extended outwards therefrom. The positive pins are divided into a plurality of positive pin units that are separated from each other and electrically stacked onto each other. The negative electrode of each capacitor unit has a negative pin extended outwards therefrom. The negative pins are divided into a plurality of negative pin units. The negative pin units are separated from each other and the negative pins of each negative pin unit are electrically stacked onto each other. The substrate unit has a positive guiding substrate electrically connected to the positive pins and a negative guiding substrate electrically connected to the negative pins. The package unit covers the capacitor units and one part of the substrate unit.

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(52) **U.S. Cl.** 361/540; 361/523; 361/541; 361/306.1

10 Claims, 8 Drawing Sheets

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If the application for this patent was filed on or after December 12, 1980, maintenance fees are due three years and six months, seven years and six months, and eleven years and six months after the date of this grant, or within a grace period of six months thereafter upon payment of a surcharge as provided by law. The amount, number and timing of the maintenance fees required may be changed by law or regulation. Unless payment of the applicable maintenance fee is received in the United States Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period.

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If this application was filed prior to June 8, 1995, the term of this patent begins on the date on which this patent issues and ends on the later of seventeen years from the date of the grant of this patent or the twenty-year term set forth above for patents resulting from applications filed on or after June 8, 1995, subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b) and any extension as provided by 35 U.S.C. 156 or any disclaimer under 35 U.S.C. 253.

