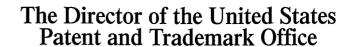
# The United States of America



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.

June Start Ken

Acting Director of the United States Patent and Trademark Office

# MAINTENANCE FEE NOTICE

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.

# PATENT TERM NOTICE

If the application for this patent was filed on or after June 8, 1995, the term of this patent begins on the date on which this patent issues and ends twenty years from the filing date of the application or, if the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121, or 365(c), twenty years from the filing date of the earliest such application ("the twenty-year term"), 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. 154(b) or 156 or any disclaimer under 35 U.S.C. *253*.

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.



# (12) United States Patent Lin et al.

(10) **Patent No.:** 

US 8,373,972 B2

(45) Date of Patent:

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### SOLID ELECTROLYTIC CAPACITOR HAVING A PROTECTIVE STRUCTURE AND METHOD FOR MANUFACTURING THE SAME

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Subject to any disclaimer, the term of this (\*) Notice: patent is extended or adjusted under 35 U.S.C. 154(b) by 255 days.

(21) Appl. No.: 12/908,129

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(51) Int. Cl. H01G 9/00

(2006.01)

**U.S. Cl.** ....... **361/523**; 361/525; 361/528; 361/529; 361/517: 361/519

Field of Classification Search 361/523, 361/516-519, 525, 528-529, 535-541; 29/25.01.

See application file for complete search history.

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### ABSTRACT

A solid electrolytic capacitor with a protective structure, which includes stacked capacitor elements electrically connected to the positive and negative terminal. A packaging material such as synthetic resin is used to encapsulate the capacitor elements, the positive terminal, and the negative terminal. Before packaging, a protective layer is formed by a colloid material, which covers the main body of the capacitor that includes the capacitor elements, the positive terminal, and the negative terminal. The protective layer provides a better seal and relieves the external pressure exerting on the capacitor during the packaging process. The protection prevents structural damage to the capacitor's main body while reducing the risk of short-circuits and excessive current leak-

### 9 Claims, 7 Drawing Sheets

