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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**  
**Hofman**

(10) **Patent No.:** **US 7,812,617 B2**  
(45) **Date of Patent:** **Oct. 12, 2010**

(54) **SYSTEM AND METHOD FOR DETECTING AND LOCATING FAULTS IN ELECTRONIC COMMUNICATION BUS SYSTEMS**

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**FOREIGN PATENT DOCUMENTS**

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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 303 days.

\* cited by examiner

(21) Appl. No.: **11/822,583**

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(65) **Prior Publication Data**

(57) **ABSTRACT**

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**Related U.S. Application Data**

System and method for detecting a fault in a faulty network element of a bus network comprising two or more transmitters. The method comprises transmitting from one of the transmitter a signal of predetermined parameters to the bus network; receiving the signal; and determining if the first signal is followed by a tail that is an echo indicative of a faulty network element. The location of the faulty network element can be determined by transmitting from a second transmitter a second signal of predetermined parameters to the bus network; the second signal and, determining if the second signal is followed by a second tail that is an echo indicative of the faulty network element; and if tails are detected, determining by an algorithm executor the location of the faulty network element by triangulation.

(60) Provisional application No. 60/818,774, filed on Jul. 7, 2006.

(51) **Int. Cl.**  
**G01R 27/04** (2006.01)

(52) **U.S. Cl.** ..... **324/639; 324/533; 370/242; 702/59**

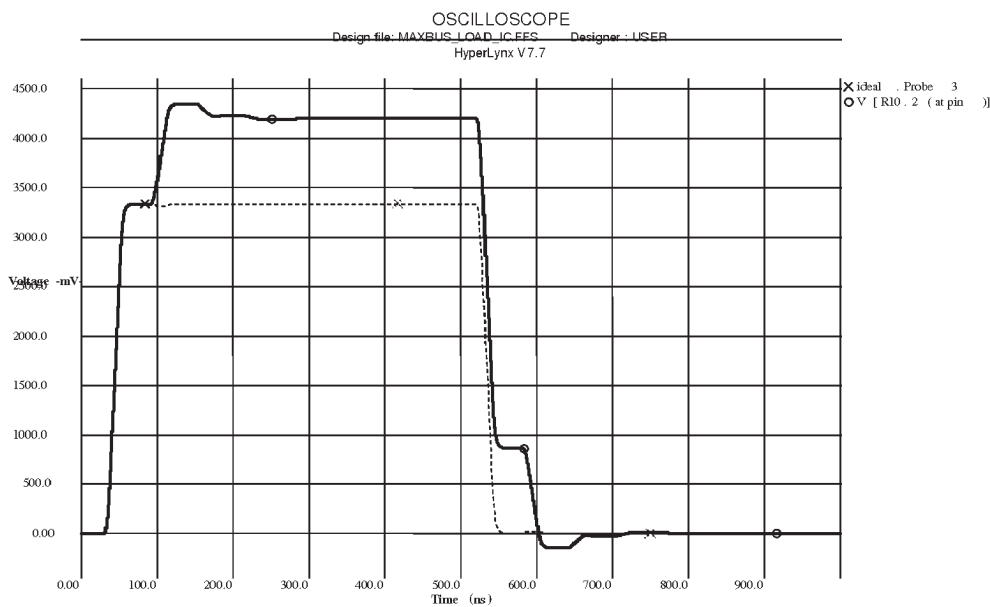
(58) **Field of Classification Search** ..... **324/639**  
See application file for complete search history.

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**9 Claims, 13 Drawing Sheets**



Date: Thursday May 25, 2006 Time: 12:44:33  
Cursor 1, Voltage = 101.2mV, Time = 547.0ns  
Cursor 2, Voltage = -99.6mV, Time = 596.4ns  
Delta Voltage = 200.8mV, Delta Time = 49.4ns  
Show Latest Waveform = YES, Show Saved Waveform = YES