



US005263049A

# United States Patent [19]

[11] Patent Number: 5,263,049

Wincn et al.

[45] Date of Patent: Nov. 16, 1993

[54] METHOD AND APPARATUS FOR CMOS DIFFERENTIAL DRIVE HAVING A RAPID TURN OFF

4,859,815	8/1989	Irwin et al.	375/19
4,873,673	10/1989	Hori et al.	330/288
4,972,517	11/1990	Kondou et al.	307/475
5,140,194	8/1992	Okitaka	307/270

[75] Inventors: John M. Wincn, Cupertino, Ca.

### FOREIGN PATENT DOCUMENTS

[73] Assignee: Advanced Micro Devices Inc., Sunnyvale, Calif.

2537383	2/1977	Fed. Rep. of Germany
3906927	9/1989	Fed. Rep. of Germany

[21] Appl. No.: 898,871

Primary Examiner—Stephen Chin  
Attorney, Agent, or Firm—Townsend and Townsend  
Khourie and Crew

[22] Filed: Jun. 15, 1992

### [57] ABSTRACT

### Related U.S. Application Data

[62] Division of Ser. No. 480,426, Feb. 15, 1990, Pat. No. 5,164,960.

[51] Int. Cl.<sup>5</sup> ..... H04B 3/00; H04L 27/04

[52] U.S. Cl. .... 375/36; 375/59

[58] Field of Search ..... 375/59, 36; 307/270, 307/443, 475, 495, 455; 330/252, 257, 258

An integrated media attachment unit (MAU) operative for interfacing Digital Terminal Equipment (DTE) on a Local Area Network (LAN) using twisted pair media. The twisted pair function as either a DTE MAU or a repeater MAU. A line driver for the twisted pair differential signal provides a ramped response with low jitter while an improved Attachment Unit Interface (AUI) driver uses CMOS technology and provides simplified End-of-Transmission Delimiter (ETD) control. The twisted pair MAU includes a combined override and status indication of link status and an additional feature to allow automatic polarity reversal of differential signal input lines and polarity status signalling.

### [56] References Cited

#### U.S. PATENT DOCUMENTS

3,824,548	7/1974	Sullivan et al.	455/13.2
4,380,810	4/1983	Canniff	370/15
4,403,320	9/1983	Canniff	370/56

9 Claims, 37 Drawing Sheets

