Active Termination Device For High-Speed Bus Applications

California Micro Devices Corporation (CAMD introduced a non-linear terminator integrated circuit, PAC&#153NLT101, specifically designed to minimize noise and reflections in high frequency digital electronics systems. Reflections on high-speed data lines lead to voltage overshoot disturbances, which will result in noise and possible data loss or improper system operation.
With the growing need for electronic systems to operate at higher frequencies and lower voltages, proper termination of the transmission lines is crucial to preserve signal integrity. Optimization of signal integrity provides many benefits to the system, including ringing reduction on the transmission lines, cross talk minimization between lines, and EMI/RFI radiation reduction.
The PACNLT101 employs a fundamentally different technology as compared to the traditional methods of using resistors or Schottky diodes for data bus termination. This device overcomes many of the shortfalls that the current solutions are faced with. For example, resistive terminations are normally used to match the characteristic impedance of the transmission line on the printed circuit board. These methods require impedance control on the printed circuit board, increase power consumption, and degrade output levels, resulting in reduced noise immunity. And traditional Schottky diodes are ineffective when the supply voltages drop below 3.3 volts. The PACNLT101 provides effective termination performance under variable loading and supply conditions. The device supports up to 16 terminated lines per package. A typical application may use 4 devices to replace 64 conventional Schottky diode pairs; improving the termination characteristics, providing significant reductions in component and assembly costs, improving n manufacturing efficiency and reliability, and saving board area for space-critical designs.
The PACNLT101 could find effective use on memory buses where the loading of the transmission lines varies as a function of the number of memory modules inserted.

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