A 2.5 gb/s GaAs ATM Mux Demux ASIC

This paper describes the design and implementation of a high speed GaAs ATM Mux Demux ASIC (AMDA) which is the key element in a high speed ATM Add-Drop unit. This unit is used in a new distributed ATM multiplexing-demultiplexing architecture for broadband switching systems. The Add-Drop unit provides a cell based interface between networks/systems operating at different data rates, the high speed interface being 2.5 Gb/s and the low speed interface being 155/622 Mb/s. Self-timed FIFOs are used for handling the speed gaps between domains operating at different clock rates, and a Self-Timed At Receiver's Input (STARI) interface is used at all high speed chip-to-chip links to eliminate timing skews. The AMDA demonstrated operation above 4 Gb/s (500 MHz clock frequency) with an associated power dissipation of 5 W.

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