CONCURRENT LOGICAL AND PHYSICAL CONSTRUCTION OF VOLTAGE ISLANDS FOR MIXED SUPPLY VOLTAGE DESIGNS

ABSTRACT

A semiconductor chip design is partitioned into "bins", which are areas of the design, and may be thought of as voltage islands. The areas may be assigned to various voltage levels. Circuits in the design can be added or removed from the various bins, thereby increasing or decreasing the speed and power of the circuits: speed and power increase if a circuit is placed into a bin assigned a higher voltage, and decrease in a bin of lower voltage. The size and location of bins may also be changed. By iteration optimum power consumption may be met together with speed constraints and other criteria. The invention is applicable to any placement environment, such as an annealing placement tool, performing successive refinement of the circuit locations on the design and in which the placement process may be interrupted to change placement of the logic.

Fig. 1.