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Graph theoretic reliability analysis for the Boolean n cube networks. (English) Zbl 0656.94027
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It is well known that there are several papers which deal with the Boolean n -cube network and applications. However, no theoretical work has been done in calculating the network reliability of the Boolean n -cube network. In this paper, two graph theoretic results concerning about the problem of the Boolean n -cube network reliability are presented. First, a simple formula for the number of spanning trees of the Boolean n -cube network is derived. As a result, the reliability function for large failure rate can be readily computed. Second, the Boolean n -cube network is proved to have the super line-connectivity (see Definition 6) property. Thus the number of line disconnecting sets (a set of lines whose removal results in a disconnected or trivial graph) of order λ (see Definition 3) for the Boolean n -cube network is equal to 2^n .

MSC:

94C15 Applications of graph theory to circuits and networks

Cited in **16** Documents

Keywords:

maximum line connectivity; network reliability of the Boolean n -cube network; spanning trees; super line-connectivity

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