

# 考慮串音問題的無格線通道繞線器

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## 摘要

隨著半導體製程技術的日益精進，VLSI晶片系統工作頻率越來越快且電路中連接線間相互距離也越來越小，這使得電路中的串音(crosstalk)干擾日益嚴重。由於串音的增加影響了電路的效率和良率，因此，在電路繞線時考慮如何降低此種干擾已日顯重要。在傳統上，使用格子化(gridded)通道繞線器時，線路擺放的位置被限制在軌道(track)上，而軌道間等距的限制使得繞線空間無法有效利用，因此不利於降低串音干擾。在此篇論文中我們提出一個能有效降低串音干擾的無格線(gridless)通道繞線器。此繞線器所產生之相鄰網列(net)線段之間的距離是可變動的，其主要是利用權重限制關聯圖(weighted constraint graph)做為網列線路擺放的依據，利用權重表示兩網列間的距離，針對所建之權重限制關聯圖，計算各網列的串音值，當考慮降低某網列之串音干擾時，則可增加其與相鄰網列間之距離，亦即增加其相對邊權重的方式來達成。經由實驗結果得知，在給定的繞線參數下，所提出之考慮串音干擾的無格線通道繞線器可使繞線後每一網列的串音干擾值均小於其串音限制；而在通道高度方面，所得之結果與未考慮串音干擾時亦相去不遠。

關鍵詞：串音；無格線通道繞線；權重限制關聯圖

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