高速波寬調變驅動控制積體電路之研製

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摘 要

各類的電子產品被廣泛運用於生活上，高效能及低功率消耗已成為研發電子產品的標的， 因此電源管理晶片的研製，已成為產學界所著重的研究方向之一。波寬調變(pulse-width modulation, PWM)控制器能提供系統晶片不同的電壓準位，並具有高效能與抗雜訊的特性，在 電源管理晶片的應用上，有很大的貢獻。 本文將提出一新型波寬調變控制器，其中設計的電壓控制震盪器(voltage controlled oscillator, VCO)有高穩定性和高調諧範圍(tuning range)的表現，並實現一高效能的可變 電壓/可變頻率斜波產生器，將使設計的波寬度調變控制器更能符合工業界應用上的需求。此 設計以全客製(full custom)方式完成，使用台灣積體電路(Taiwan Semiconductor Manufacture Company, TSMC)0.35μm 2P4M的製程，工作電壓3.3V，頻率調諧範圍由300KHz至6MHz，消耗功率 約為1.27mW晶片面積大小為476μm*336μm。

關鍵詞 : 電源管理晶片、波寬調變控制器、電壓控制震盪器、調諧範圍。

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