

The Green Solutions

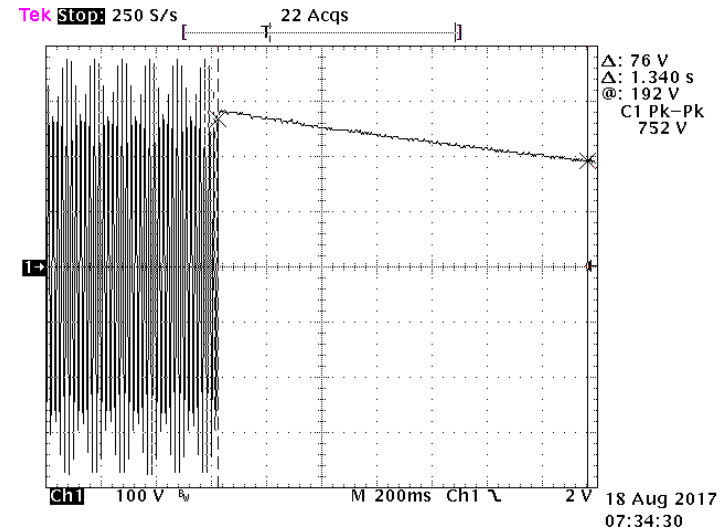
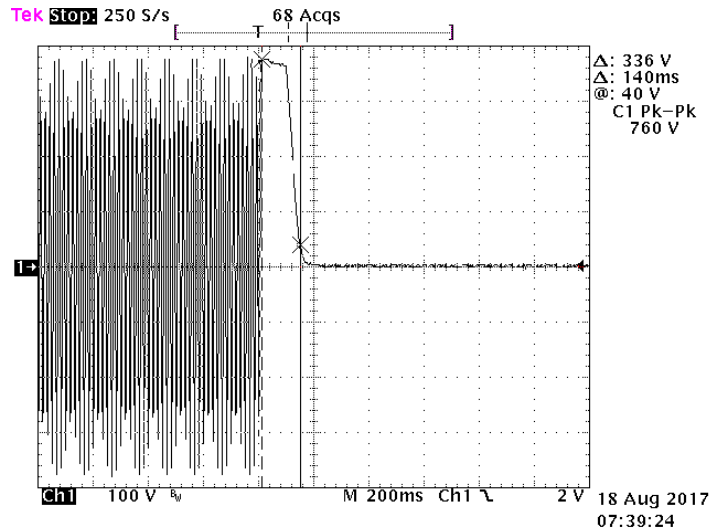


X-Cap Discharge 量測接線方式

SE-Ming / FAE: Teng
20190709

Failure Symptom

» Unstable Discharge Time Under Single Pole Switch (SPST) Condition

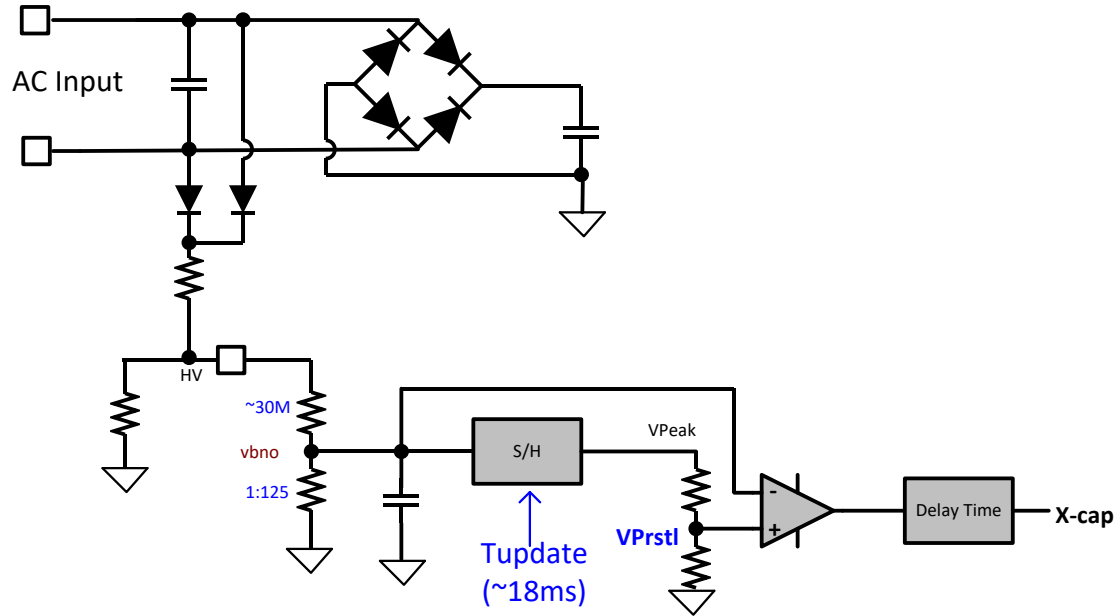


<FG Open Condition>

- Fast discharge when power off at the point of peak voltage.
- Slowly discharged when power off at the point of Non peak voltage.

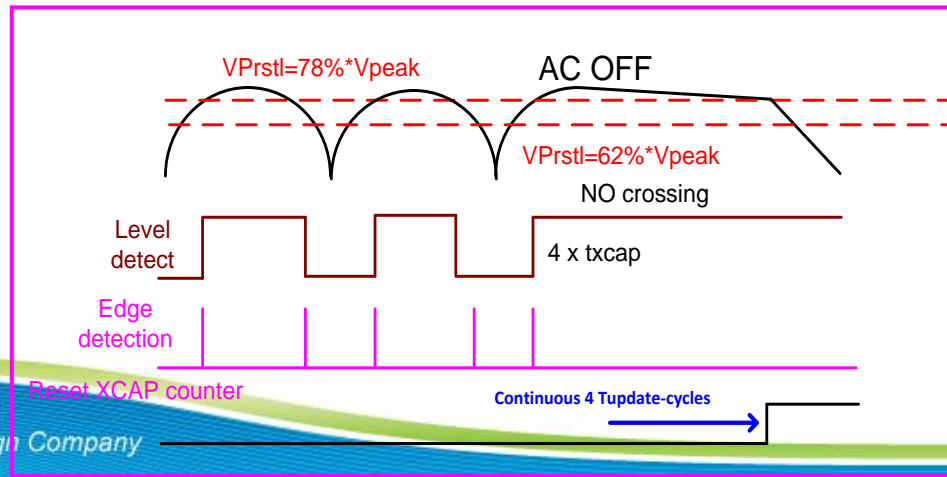
X Cap Discharge Function of LD5760

» Operating of X Cap Discharge



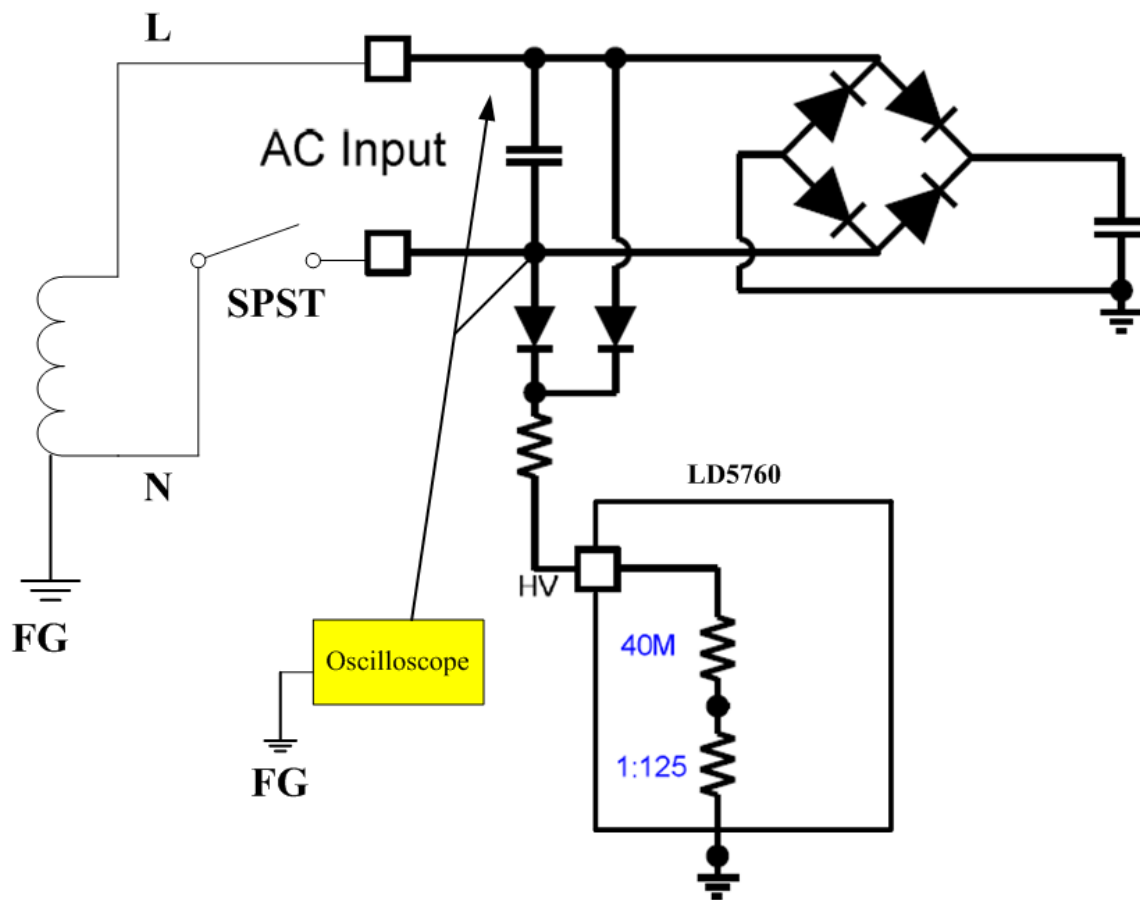
AC Plug-out

Vprstl 會隨這Vpeak 變動



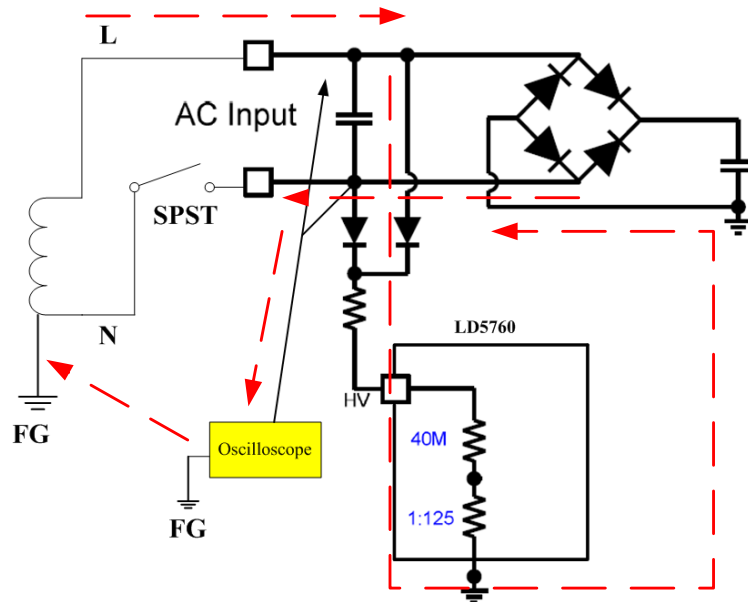
Root Cause Analysis

» Equivalent Circuit with SPST and Oscilloscope (FG Open)

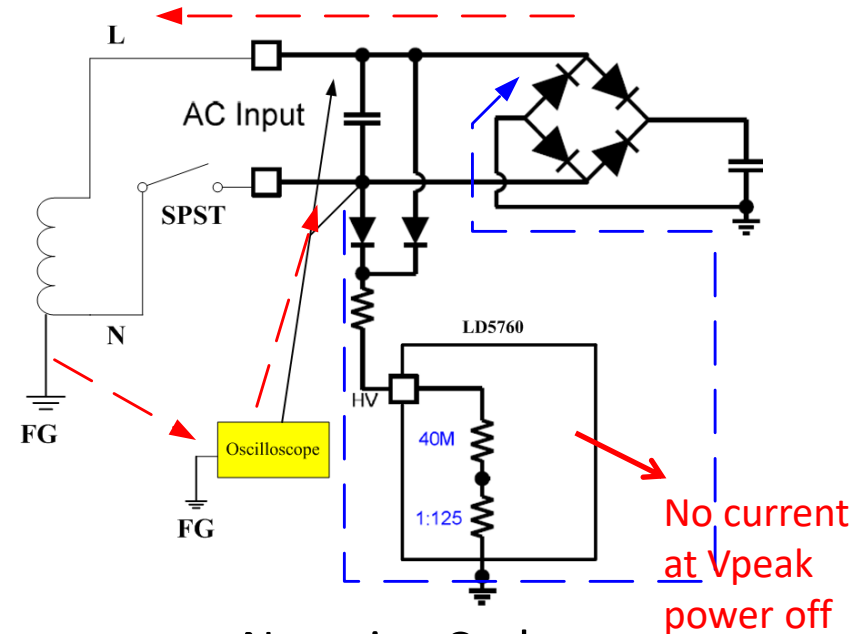


Root Cause Analysis

» Circuit Operation with SPST and Oscilloscope (FG Open)



Positive Cycle

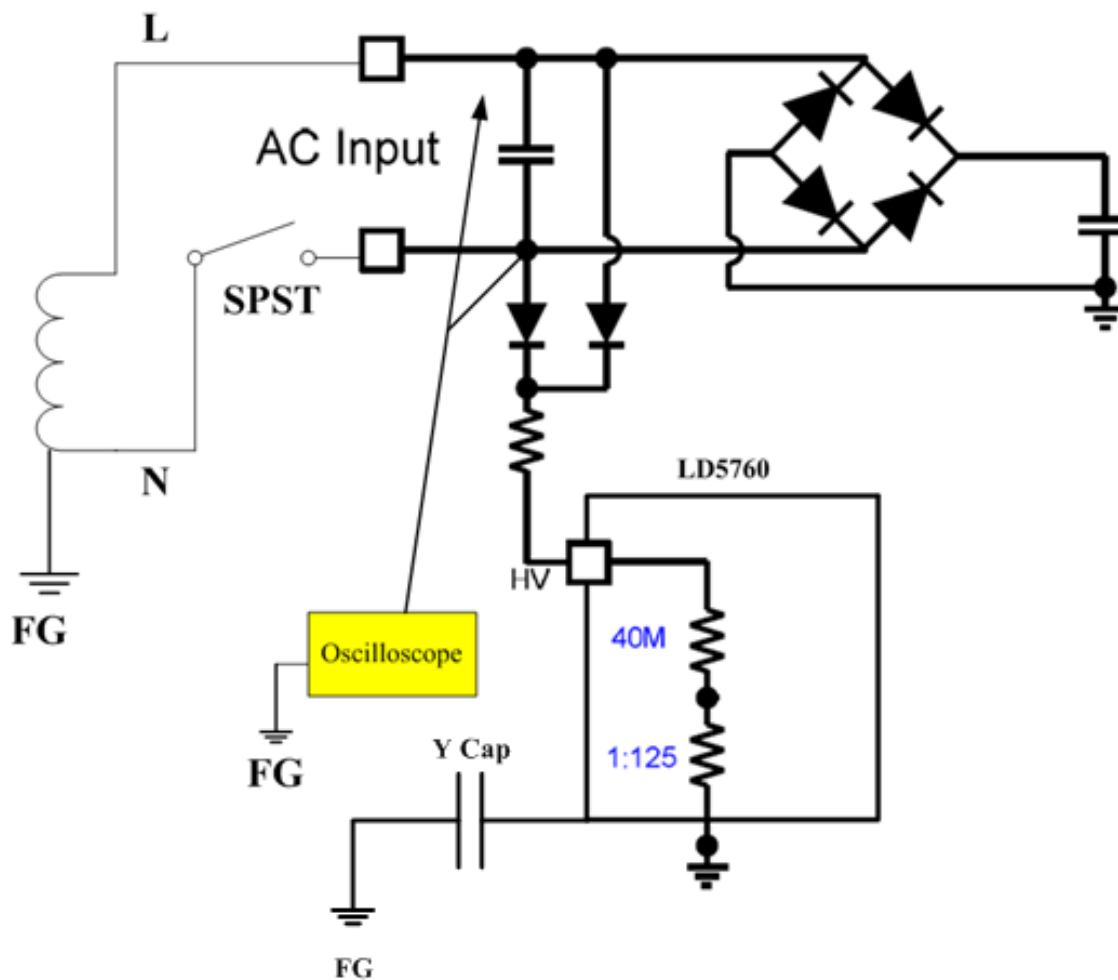


Negative Cycle

- ① 從上圖我們可以看出, 由於交流電源關閉的SPST, 它將導致電流環路在FG開路狀態下通過HV引腳. 因此, 可能不會觸發x-cap discharge電功能並導致放電時間緩慢.
- ② 在峰值電壓點斷電時, 由於X電容電壓高, 電流環斷開, x-cap discharge功能正常工作.

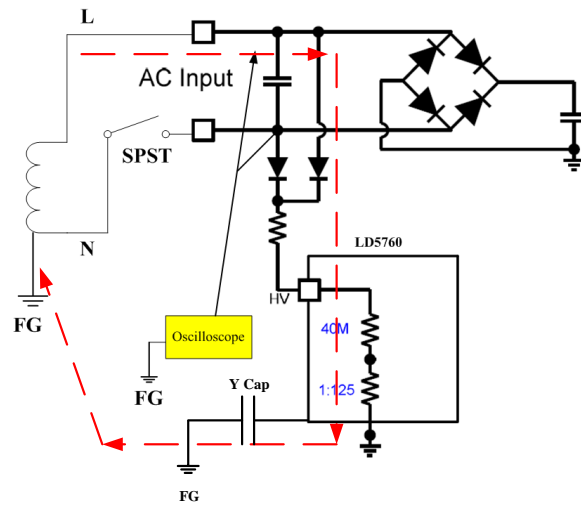
Root Cause Analysis

» Equivalent Circuit with SPST and Oscilloscope (FG Connected)

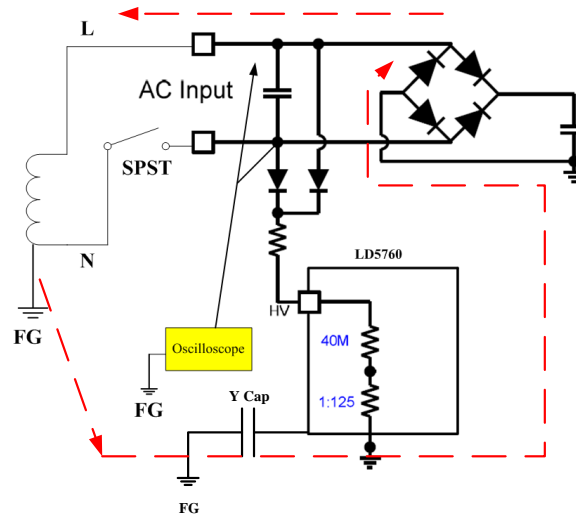


Root Cause Analysis

» Circuit Operation with SPST and Oscilloscope (FG Connected)



Positive Cycle

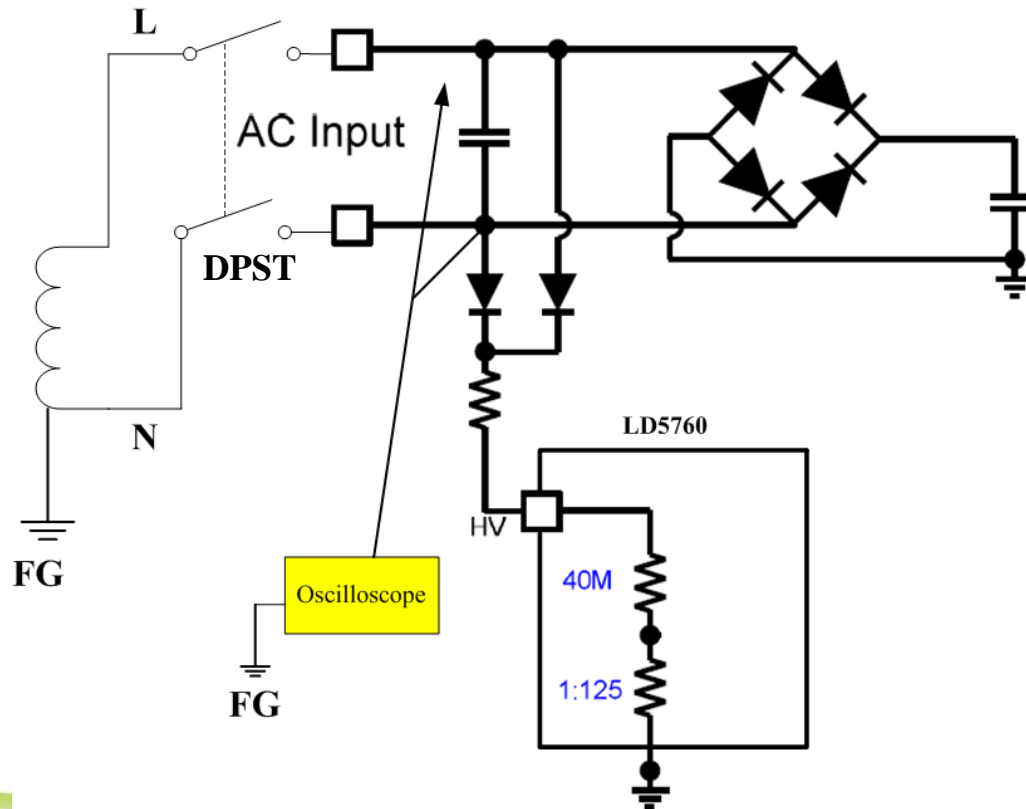


Negative Cycle

- 當與FG連接時, 在負循環期間沒有電流環通過HV引腳. 因此, x-cap discharge能正常工作。

Improve Action

- 放電測試的目的是檢查何時拔出交流電源插頭, 所以儲在初級X電容器中的電流應設計成沒有觸電危險. (沒接示波器)
- 為了克服SPST的影響, 我們的建議是使用雙極開關(DPST)來模擬拔出插頭的狀態以進行放電測試, 如下圖所示.





Thank you.