R1580 Calculator Tool
Instruction Document

AP-1605250008

Version: 1.00

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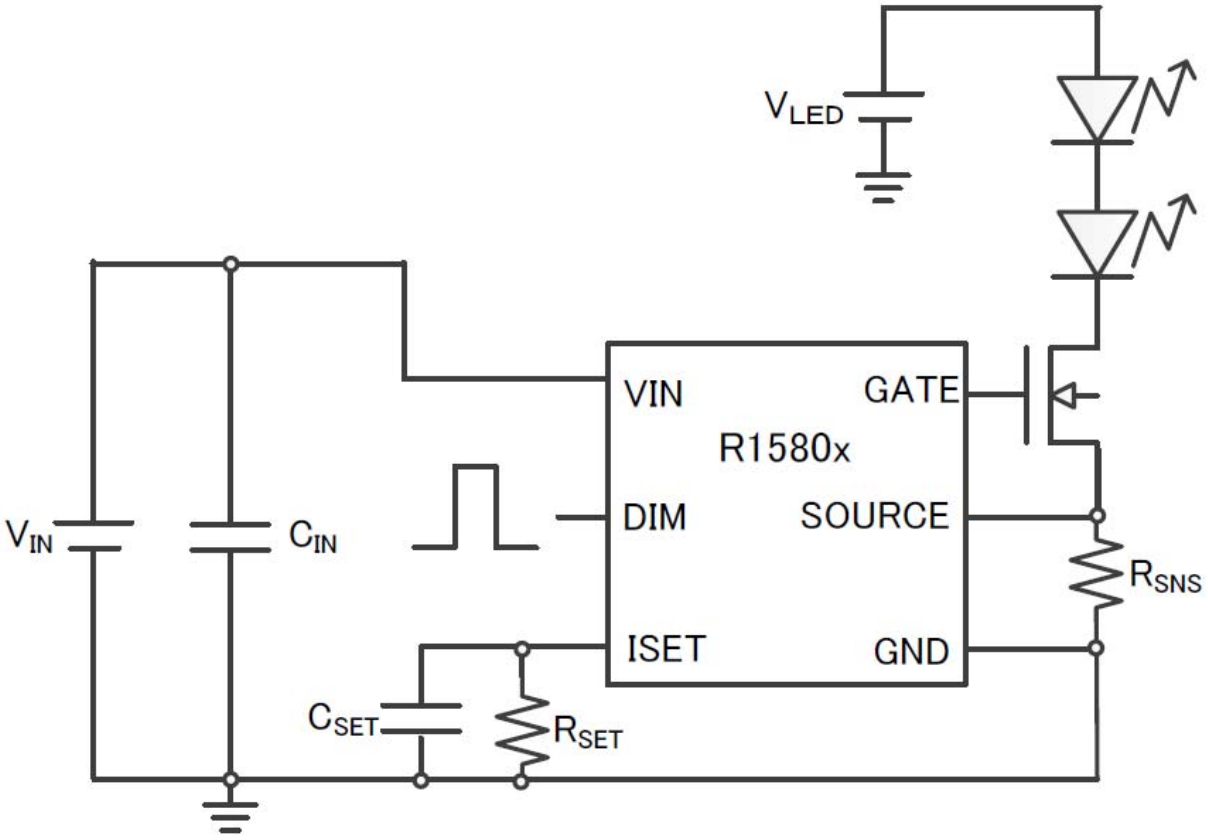
R1580 is a powerful dimming control for LED lighting marketing. To use R1580, we should do tuning for some discrete component in other to achieve our request.

There 3 parameter need to set：

1. Rset
2. Rsns
3. Cset

The schematic of R1580 as below:



R1580NxxxA Typical Application Circuit

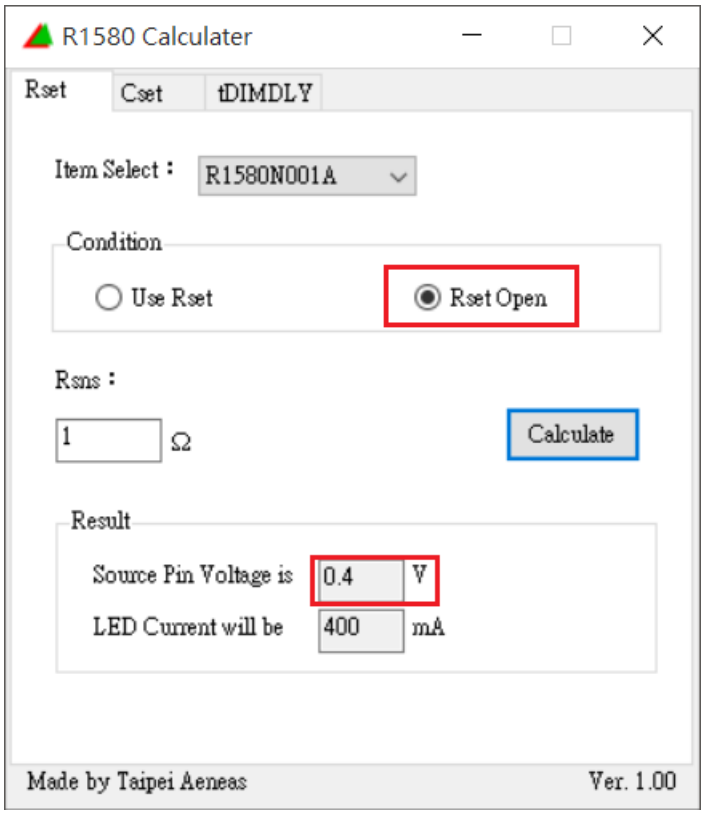
Step1. Rset：

Rset is a component which is used for modify Vsource voltage setting. The Vsource in default is 0.4V and 0.8V depends on version of R1580.

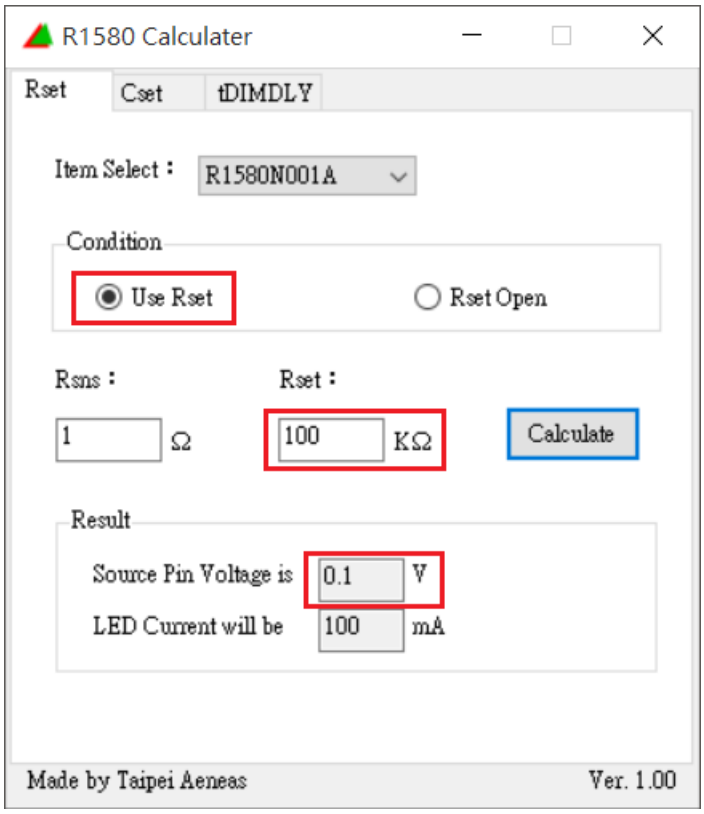
To use Rset, we can decrease the voltage of Vsource.

For example：

If you don’ t use Rset, please set “Rset open” and you can see Vsource is 0.4 (default setting)



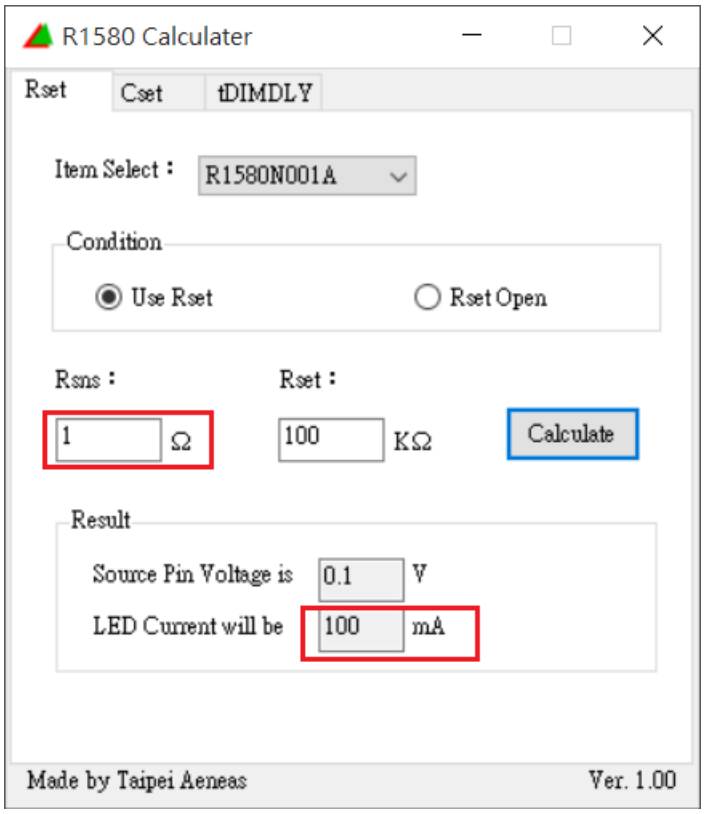
If you would like to change Vsource voltage, please set “Use Rset” and input Rset value as following:



Step 2, Set Rsns：

After decided the Vsource, we can use Rsns to design LED current when dimming is 100%.

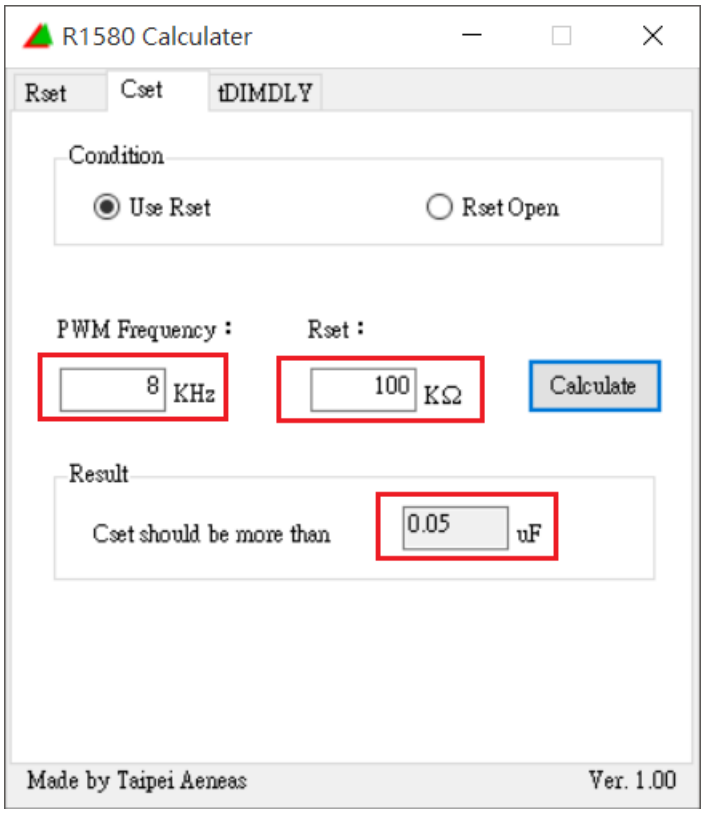
For example：



Step 3. Fine tune the Cset

The PWM frequency on the DIM pin should be set in the range of 500 Hz to 100 kHz. Placing a Cset and a current setting resistor Rset between the ISET pin and GND can attenuate the PWM frequency components in the LED current. After decide Rset and PWM frequency, we can calculate Cset as follow:

For example：PWM is 8KHz, Rset is 100K.



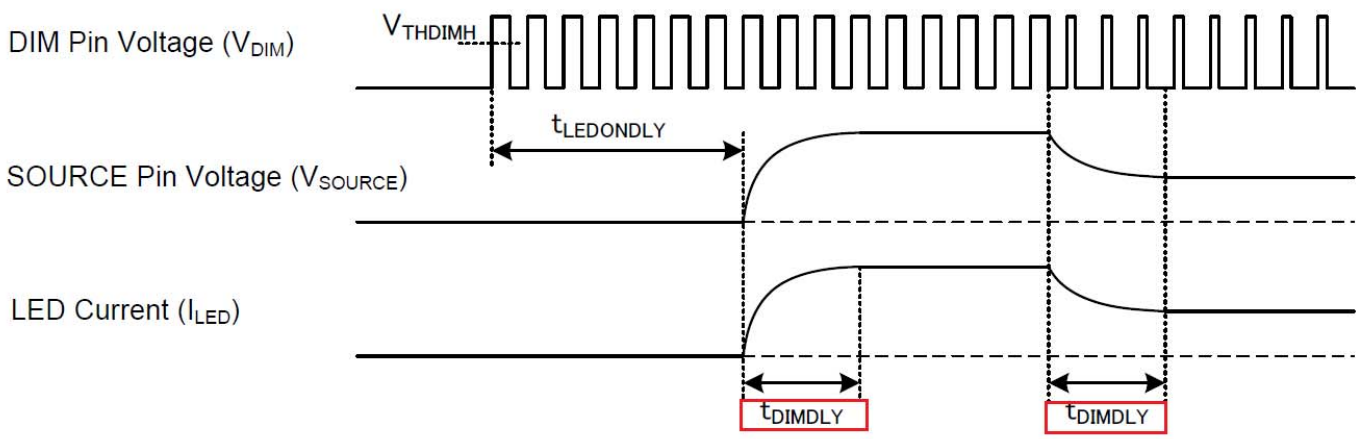
As a result, Cset value should be higher than 0.05uF.

Please Note, if the calculated result is less than 0.01uF, at least use Cset as 0.01uF.

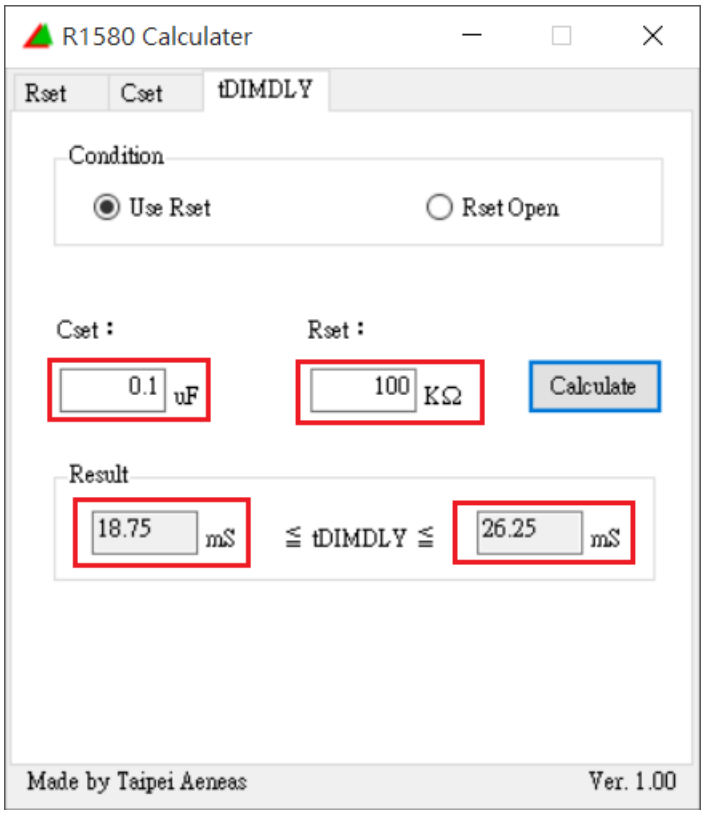
The application also remind this point as following：

Step 4. Get suitable tDIMDLY.

When the LEDON signal becomes high, the ISET pin voltage gradually goes up along with the SOURCE pin voltage. After the PWM signal response time (tDIMDLY)



After you set Cset and Rset, you can calculate tDIMDLY as below:



When you finish all of the setting, you have completed R1580 design.