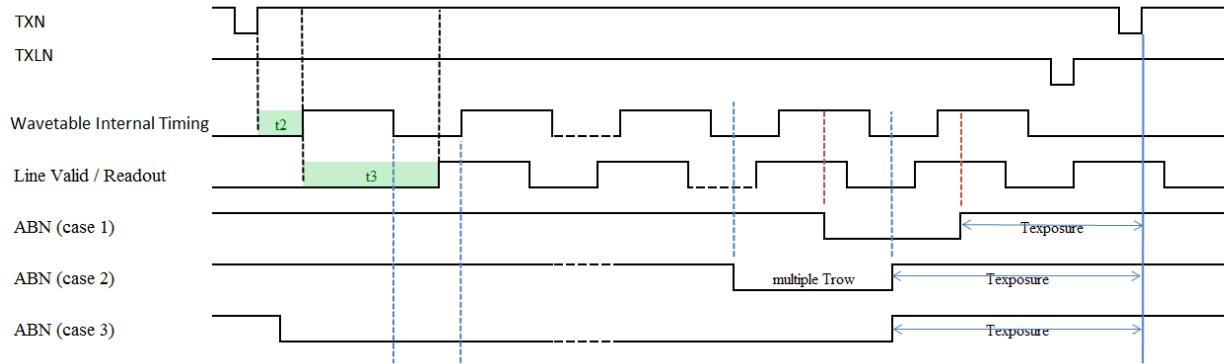


LUX2100V2 Global Control Pulses

There are three active low global pulses that control the sensors: ABN, TXN, and TXLN. This section will go in details the operation of each pulse.



$$t2 = \text{sof_delay}(\text{reg}0x30[15:8]) + 3$$

$$t3 = \text{rdout_dly}(\text{reg}0x34) + \text{lv_delay}(\text{reg}0x5B) + 7$$

- a) ABN pulse - Active Low Global Photodiode Reset
This pulse clears the charges from the photodiode when it goes low.

There are several ways to operate this pulse.

- Case 1: One short ABN pulse. ABN's edges overlap with wavetable timing.
In this case, ABN rising edge or ABN falling edge will overlap with the internal wavetable sampling. This will cause the horizontal shuttle line in the rows that the edges that ABN overlap with the wavetable timing. This case is not recommended.
- Case 2: One short ABN pulse. ABN's edges don't overlap with wavetable timing.
In this case, both ABN's rising edge and falling edge fall within the duration that wavetable timing goes low. The width of ABN pulse, in this case, should be multiple of Trow. This case can be used with normal to long exposure. For example, 500us or 1000us exposure at 1000 FPS.
- Case 3: One long ABN pulse. ABN's edges don't overlap with wavetable timing.
In this case, ABN's falling edge is pulsed before the first wavetable timing pulse. The width of ABN pulse in this case should also be multiple of Trow. This case can be used in all exposure duration from long to very short. For example, 10us at 1000 FPS. Luxima recommends implementing this case.

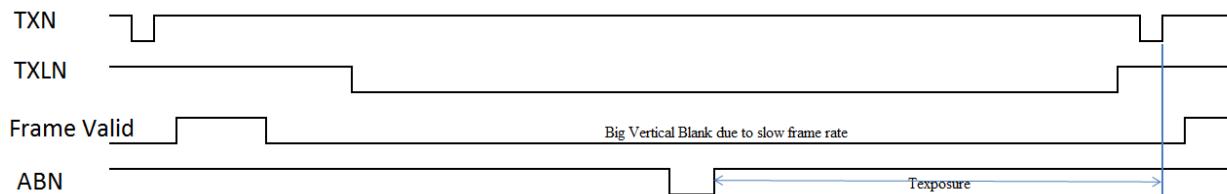
- b) TXN pulse - Active Low Global Photodiode Transfer
This pulse transfers signal charges from the photodiode to the pixel storage node. TXN's rising edge triggers the frame readout.

In a normal case, the TXN pulse should be positioned during vertical blank.

However, if the user wants to push the frame rate limit, TXN can be placed after the last wavetable timing or during the last row readout like the diagram above. In this case, the vertical blank will be small to allow more frame rate.

- c) TXLN pulse - Active Low Global Photodiode Transfer Clearing. TXLN should be pulsed before TXN. Please allow some distance between TXLN and TXN.
In a normal case, the TXLN pulse should be positioned during vertical blank.

However, if the user wants to push the frame rate limit, TXLN can be placed after the last wavetable timing or during the last row readout like the diagram above. In this case, the vertical blank will be small to allow higher frame rate.



When the sensor is operated at a low frame rate, dark current will accumulate in the storage node and fill the images with white pixels. In this case, the user needs to pulse TXLN twice or make TXLN pulse long enough to clear the storage node. The diagram above shows the position of TXLN pulses in the case of low frame rate. The users should adjust the width of TXLN to find the best settings for their application.