

## Timing generator for 120fps CMOS image sensors on 0.13 $\mu\text{m}$ CMOS technology

### ABSTRACT

Image clarity is an important criterion in digital imaging. However, typical rolling shutter type complementary metal-oxide semiconductor (CMOS) image sensors with frame rate of 30fps which is used for relatively slow speed image capture suffers from image blur phenomena when capturing the fast-moving objects. Therefore, an integrating chip control circuit is needed for a high frame rate shift registers structure readout control circuit to overcome the image blur phenomena suffered by rolling shutter readout scheme. In this paper, a timing generator acts as the control circuit for 120fps CMOS image sensors on 0.13  $\mu\text{m}$  CMOS technology is developed. The design is modeled and analyzed using ModelSim for FPGA verification and post layout validation is successfully demonstrated with Synopsys EDA tool. The on-chip timing generator design block results in total power consumption of 4.0733 W and total design area of 61.64  $\mu\text{m}^2$ .

**Keyword:** CMOS image sensors; Timing generator; Rolling shutter