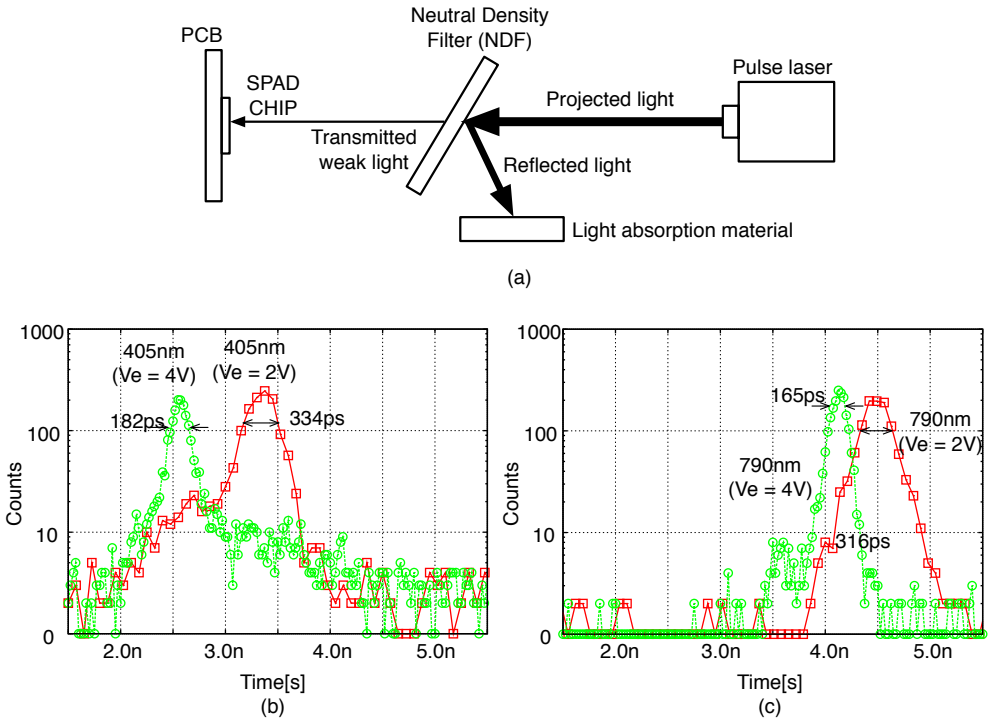

Fig. 6. Timing response: (a) Measurement setup. (b) Timing response for a 405nm of wavelength. (c) Timing response for a 790nm of wavelength.

4. Conclusion

A wide spectral range single-photon avalanche diode (SPAD) implemented in an advanced 180nm CMOS has been simulated, fabricated, and demonstrated. The SPAD achieves 20% PDP from 440nm to 820nm at 4V excess bias. 30% PDP is achieved over wavelengths ranging from 520nm to 720nm. Dark count rates of two SPADs are lower than 30Hz/μm^2 at 4V excess bias. Temperature effects for DCR, afterpulsing probability, and timing jitter measurement also have been characterised.

Acknowledgments

The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/ 2007-2013) under Grant Agreement n°256984.