

Introduction

Recently all manufacturers of GaP based UV photodiodes discontinued the production. SiC UV photodiodes, as manufactured by sglux, can act as a replacement for some applications.

Analysis

Figure 1 compares the spectral responsivity of a SiC photodiode and a GaP photodiode.

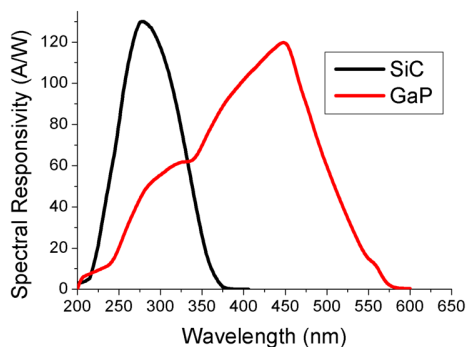


Fig. 1 comparison of a SiC and a GaP photodiode

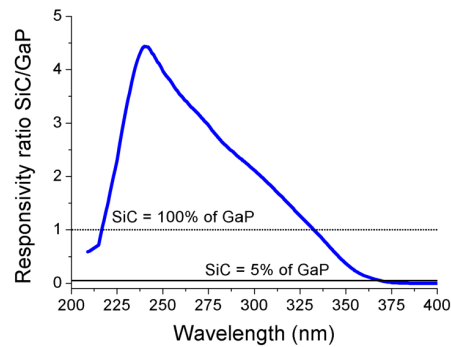


Fig. 2 responsivity ratio SiC/GaP

Figure 1 shows that there is a considerable difference of spectral responsivity. Figure 2 shows the ratio of the SiC spectral responsivity compared with the GaP responsivity. At wavelengths between 218nm and 332nm the SiC responsivity is higher than the GaP responsivity. From 210nm to 218nm and from 332nm to 346nm the SiC responsivity is 50% or higher compared with GaP. From 346nm the SiC responsivity is 50% or less and falls down to 0 at approx. 380nm.

Conclusion

For measurement applications with a peak radiation between 210nm and 346nm (e.g. UV sterilization lamp or combustion flame control) a SiC UV photodiode can replace a GaP photodiode without restrictions – it will even output a higher photocurrent. A SiC device irradiated with a peak radiation from 346 to 380 nm will output a lower photocurrent compared with GaP (at same active area). However, if the radiation intensity is high, e.g. curing applications at 365nm the SiC's current output will remain at a usable level.