Influence of boron doping profile on emitter and metal contact recombination for *n* - PERT silicon solar cells

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Highlights

• The effects of the doping profile on the quality of Boron-doped emitters and the quality of screen-printed Ag/Al metal contacts on these emitters were investigated.

• The impact of three distinct emitter profiles was investigated on the overall device performance of n-type passivated emitter, rear totally-diffused silicon solar cells without selective doping.

• Reducing Boron concentration within the emitter led to a decrease in carrier recombination in the non-contacted region of the emitter while causing an increase in metal recombination and contact resistance values.

• The Quokka-3simulations indicated that reducing the metal recombination would yield

greater benefits than reducing the emitter recombination and potentially that implementing floating busbars would improve efficiency further.

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