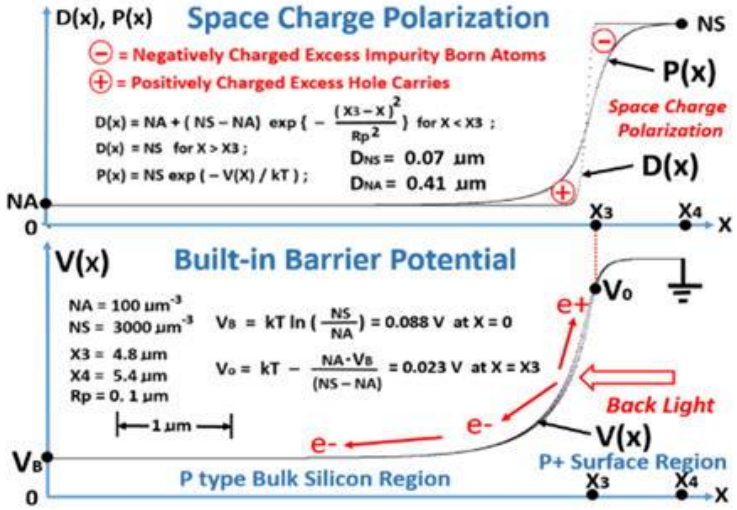

Fig. 4: Exact numerical calculations of Gaussian P+P doping profile D(x), the hole carrier density P(x) and the built-in barrier potential V(x).

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The figure 4 shows the Exact numerical calculations of
Gaussian P+P doping profile D(x),
the hole carrier density P(x) and
the built-in barrier potential V(x).

The typical Gaussian P+P doping profile
with the peak dose density at the surface
and gradually deceasing to
the uniformly doped substrate impurity density
is analyzed by exact numerical calculation.

The difference of the hole carrier density P(x)
and the Gaussian P+P doping profile D(x)
creates the space charge polarization,
which in return creates the surface barrier electric field,
which enhances the electron hole separation at the surface
to achieve the very high quantum efficiency
at the short wave blue light spectrum.