

$$x'_{\Delta} = \frac{\int_{-x_p}^{x_n} \frac{1}{\tau} \frac{n_i^2 (e^{V_a/V_t} - 1)}{n + p + 2n_i \cosh\left(\frac{E_t - E_i}{kT}\right)} dx}{U_{SHR, \max}}$$