$$\begin{array}{c} \xrightarrow{x_t} \\ \hline \\ r_t \odot h_{t-1} \\ \hline \\ thh \\ \hline \\ z_t \odot \tanh(\tilde{h}_t) \\ \hline \\ z_t \odot \tanh(\tilde{h}_t) \\ \hline \\ b_t & \xrightarrow{thh } \\ \hline \\ h_t = (1-z_t) \odot r_t \odot h_{t-1} + z_t \odot \tanh(\tilde{h}_t) \\ \hline \\ b_t & \xrightarrow{h_{t-1}} \\ \hline \\ y_t = \sigma(h_t) \\ \hline \\ \tilde{h}_t & \xrightarrow{\tilde{h}_t} \\ \hline \\ h_t = \underbrace{\tanh(W_{\tilde{h}}x_t + W_h h_{t-1} + b_{\tilde{h}})}_{y_t} \\ \hline \\ h_t = \sigma(W_y h_t + b_y) \\ \hline \end{array}$$