$$p(\boldsymbol{x};\theta) = \underbrace{p_{\mathbf{u}}\left(g(\boldsymbol{x};\theta)\right) \prod_{g_i \in \mathcal{S}_n} \left|\det\left(\mathbf{J}_{g_i}(\boldsymbol{x}_{i-1};\theta)\right)\right|}_{\text{Unnormalized Density}} \underbrace{\prod_{g_i \in \mathcal{S}_l} \left|\det(\mathbf{J}_{g_i}(\theta))\right|}_{\text{Norm. Const.}}$$

$$\triangleq \underbrace{\exp\left(-E(\boldsymbol{x};\theta)\right)}_{\text{Unnormalized Density}} \underbrace{Z^{-1}(\theta)}_{\text{Norm. Const.}}$$