```
ρ@yCU = ρ@yQU = {{0, 0}, {ϵ, 0}}; ρ@aCU = ρ@aQU = {{γ, 0}, {0, 0}};

ρ@xCU = {{0, γ}, {0, 0}}; ρ@xQU = {{0, (1 - ℯ^(-γ ϵ ħ))/(ϵ ħ)}, {0, 0}};

ρ[ℯ^ℰ_] := MatrixExp[ρ[ℰ]];

ρ[ℰ_] :=
  (ℰ /. T2t /. t → γ ϵ /.
    (U : CU | QU)[u___] :> Fold[Dot, {{1, 0}, {0, 1}}, ρ /@ U /@ {u}])
```