



1) Input noise generators

① computing $\overline{V_{neq}} \Rightarrow$ short input to ground

~~$\overline{i_{on}}$~~ For original circuit, output noise current is

$$\overline{i_{on}} = \overline{i_{nd1}} + \cancel{g_{m1} \overline{V_{ng1}}} \quad \text{--- (A)}$$

For model circuit, output noise current is

$$\overline{i_{on}} = g_{m1} \overline{V_{neq}} \quad \text{--- (B)}$$

\Rightarrow From (A) and (B),

$$\overline{V_{neq}} = \frac{1}{g_{m1}} \overline{i_{nd1}} + \overline{V_{ng1}}$$

② computing $\overline{i_{neq}} \Rightarrow$ open input node

For original circuit,

$$\overline{i_{on}} = \overline{i_{nd2}} + g_{m2} \overline{V_{ng2}} \quad \text{--- (A)}$$

For model circuit,

$$\overline{i_{on}} = \overline{i_{neq}} \quad \text{--- (B)}$$

\Rightarrow From (A) and (B)

$$\overline{i_{neq}} = \overline{i_{nd2}} + g_{m2} \overline{V_{ng2}}$$