

Norton & Source Transforms

Electrical Engineering

Thevenin's current-source dual, and the one-line conversion either way.

Thevenin form

- Source V_{Th} in series with R_{Th}
- Found from the open-circuit voltage
- Natural for series loads and dividers
- Open terminals give $V = V_{Th}$, $I = 0$
- Preferred when R_{Th} is small

Norton form

- Source I_N in parallel with R_N
- Found from the short-circuit current
- Natural for parallel branches and nodes
- Shorted terminals give $I = I_N$, $V = 0$
- Preferred when R_N is large

THE DIFFERENCE THAT MATTERS

$R_{Th} = R_N$ and $V_{Th} = I_N R_N$, so either form converts to the other in a single step.

The two are equivalent only at the terminals. Internal dissipation differs, so never use an equivalent to compute source losses.