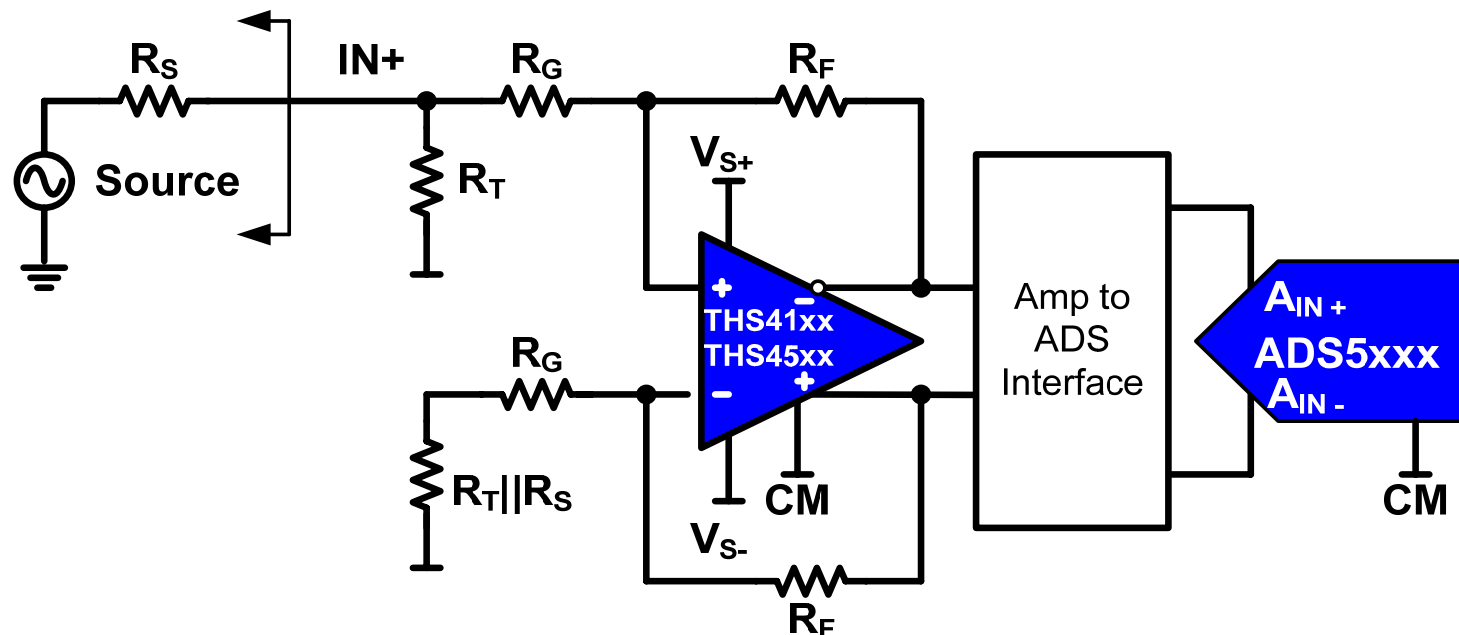


# Topology#3: FDA/ADC Driver for Single-to-Differential Conversion

- Basic circuit, SE input  $\Rightarrow$  Differential output
- Isolation circuit
  - Buffers amplifier output from ADC sample & hold switching.
  - LPF also reduces noise
  - BPF for narrowband signals
- Signal reference can affect device selection & the total parts count.



# High-Speed FDAs

- High-speed devices
  - Low distortion, THD  $\approx$  -75dBc @ 70MHz
  - Low noise,  $V_n \approx 2 \text{ nV}/\sqrt{\text{Hz}}$
- Other features:
  - Unity gain – THS4511, THS4513 can be used as unity gain buffers.
  - Single-ended supply - THS4508, THS4511
    - Enables ground-referenced sources with a minimum parts count.
    - Allows negative input signals while using single  $V_S = +5V$ .

Device	Min. Gain	Internal Level Shift?	Common Mode Range of Input (@ $V_S=5V$ )
THS4508	6 dB	Yes	-0.3V to 2.3V
THS4509	6 dB	No	0.75V to 4.25V
THS4511	0 dB	Yes	-0.3V to 2.3V
THS4513	0 dB	No	0.75V to 4.25V

**Example: LPF with gain using the THs4511/4513**

