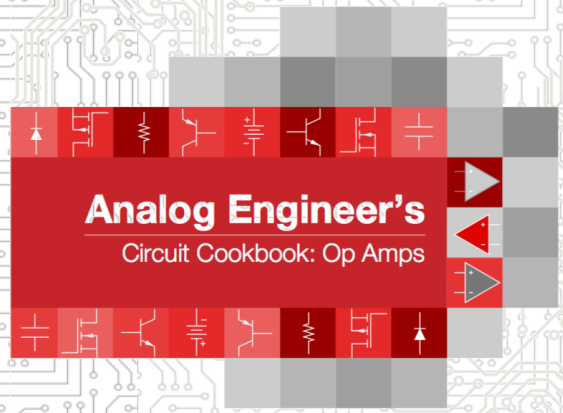
How to Design
Full-wave rectifier circuit



General Purpose Amplifiers

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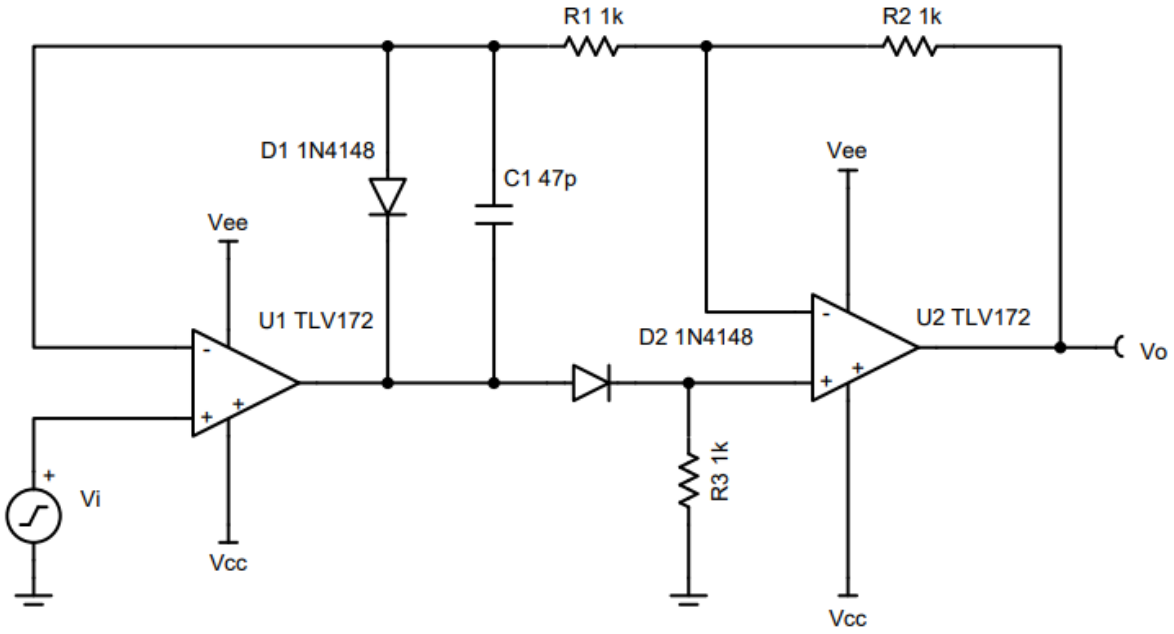
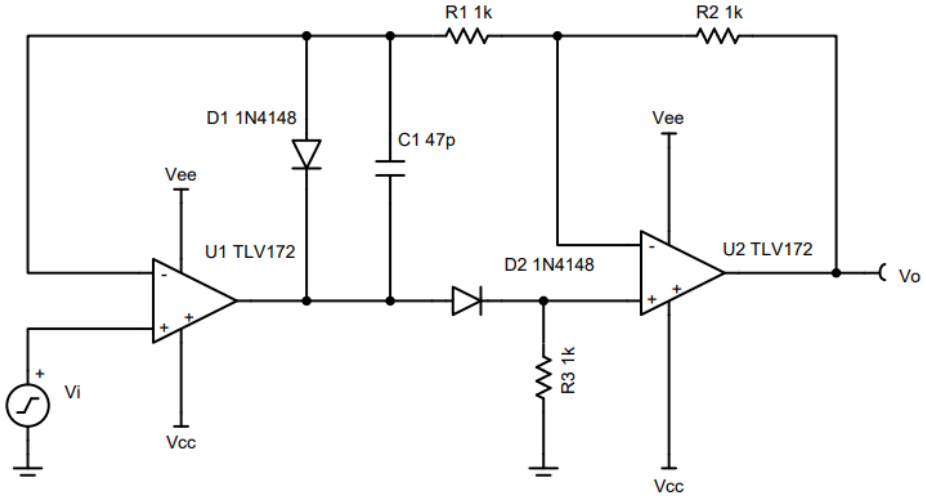
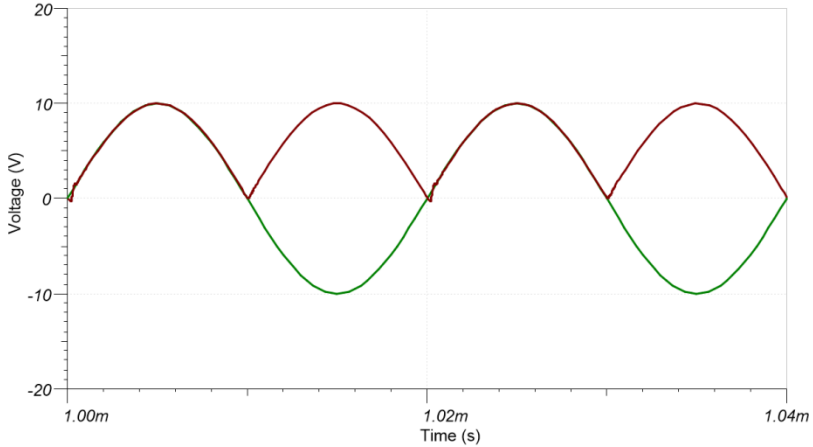
Circuit Description



Design Goals

Input		Output		Supply		
V_{iMin}	V_{iMax}	V_{oMin}	V_{oMax}	V_{cc}	V_{ee}	V_{ref}
±25 mV	±10 V	25mV	10V	15V	-15V	0V





$$Vo = |Vi|$$

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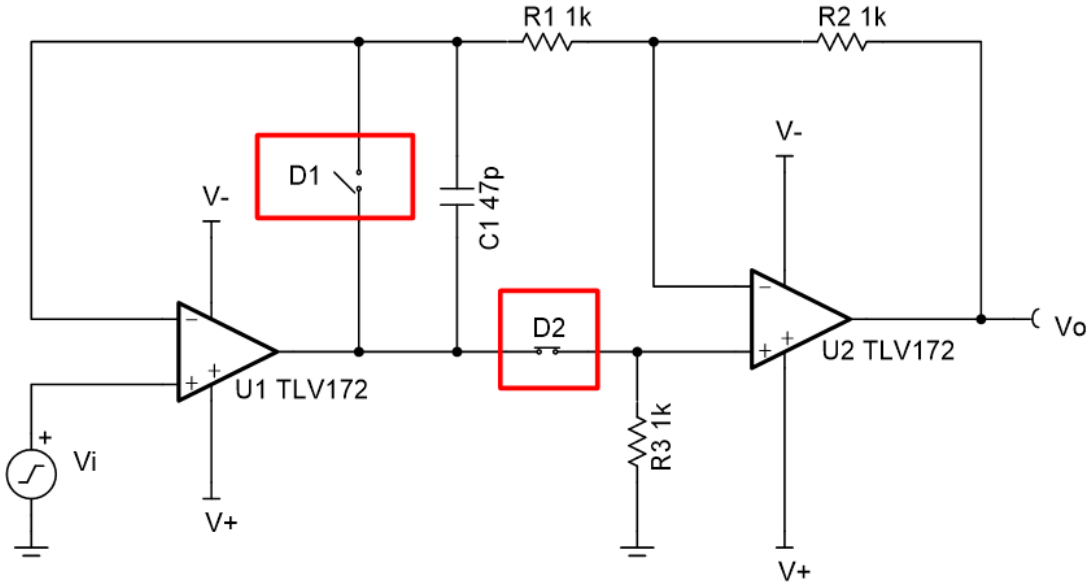
Design Steps

Input		Output		Supply		
V_{iMin}	V_{iMax}	V_{oMin}	V_{oMax}	V_{cc}	V_{ee}	V_{ref}
±25 mV	±10 V	25mV	10V	15V	-15V	0V



$$Vo = Vi$$

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Design Steps

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V_{iMin}	V_{iMax}	V_{oMin}	V_{oMax}	V_{cc}	V_{ee}	V_{ref}
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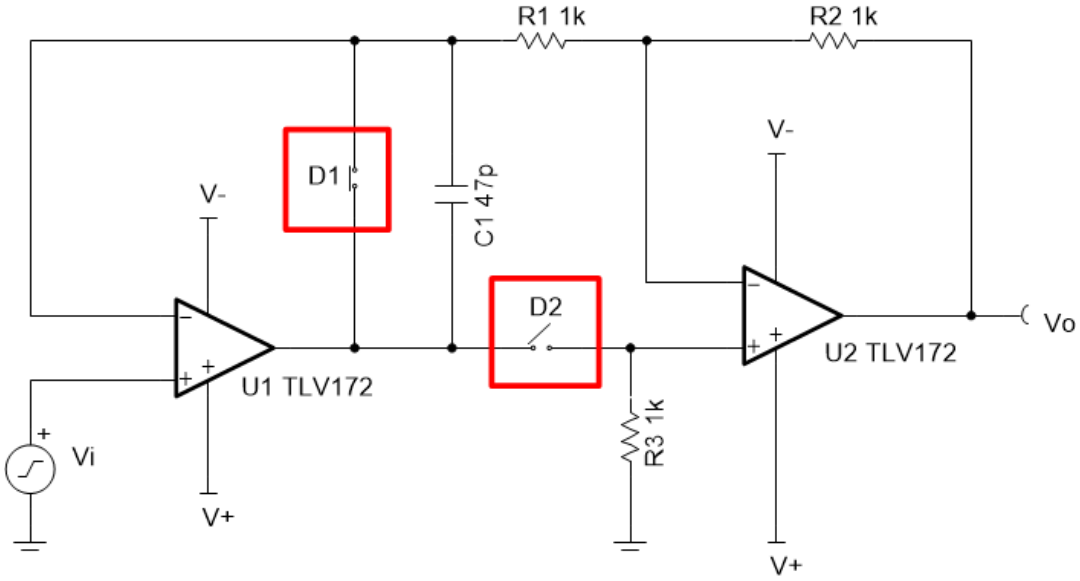

$$\frac{Vo}{Vi} = -\frac{R2}{R1}$$

$$R1 = R2 = 1\ k\Omega$$

$$R3 = 1\ k\Omega$$

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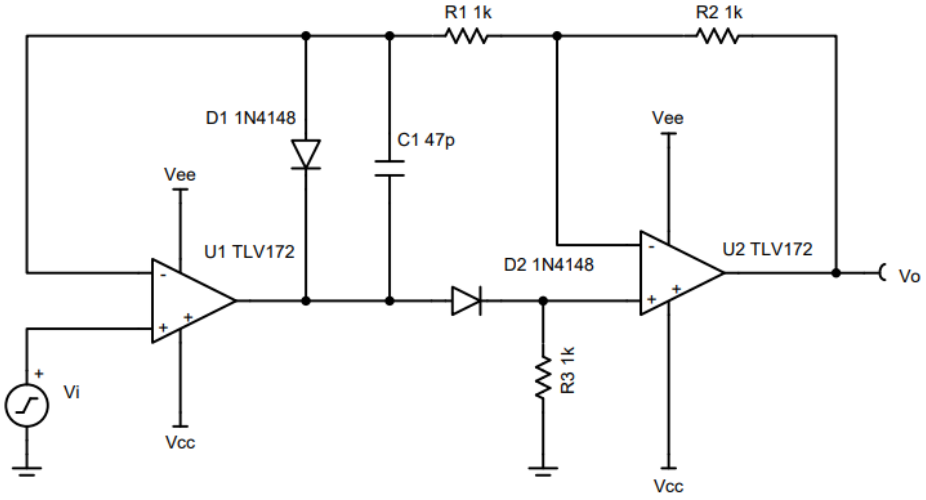
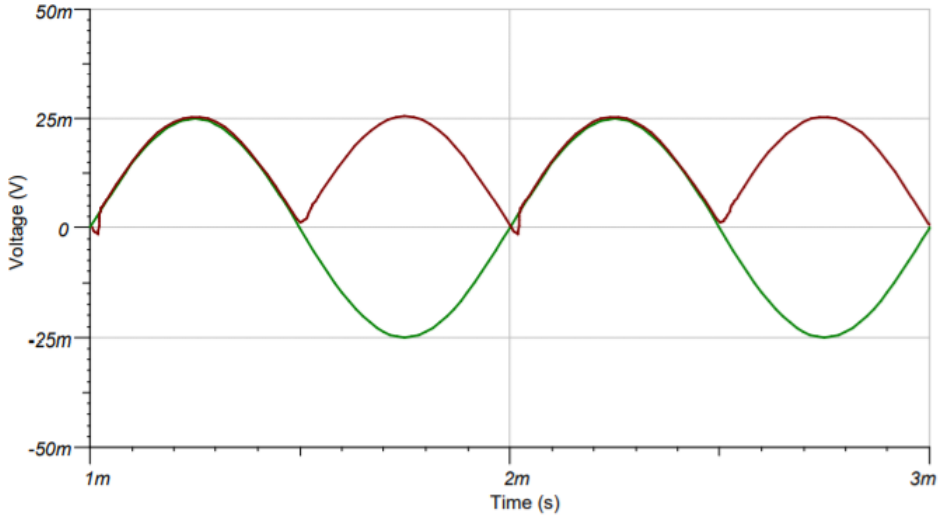
Transient Results

Input		Output		Supply		
V_{iMin}	V_{iMax}	V_{oMin}	V_{oMax}	V_{cc}	V_{ee}	V_{ref}
±25 mV	±10 V	25mV	10V	15V	-15V	0V





Transient Results

Input		Output		Supply		
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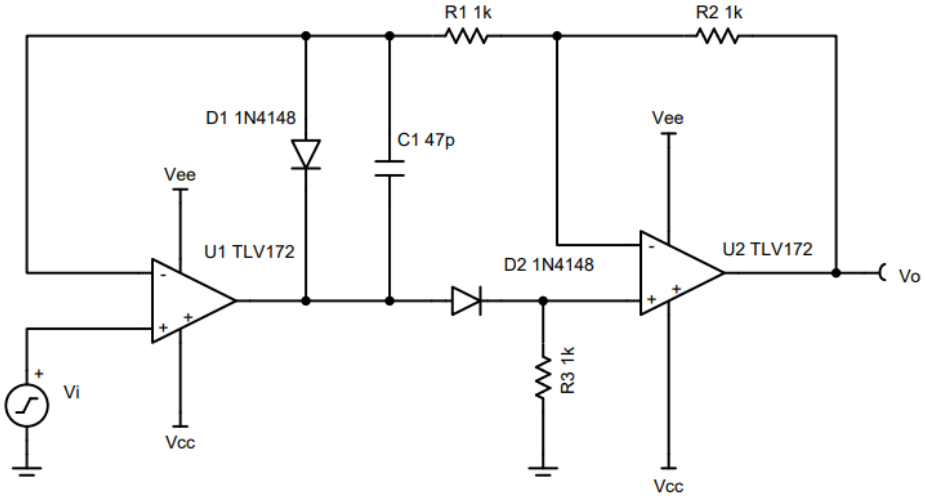
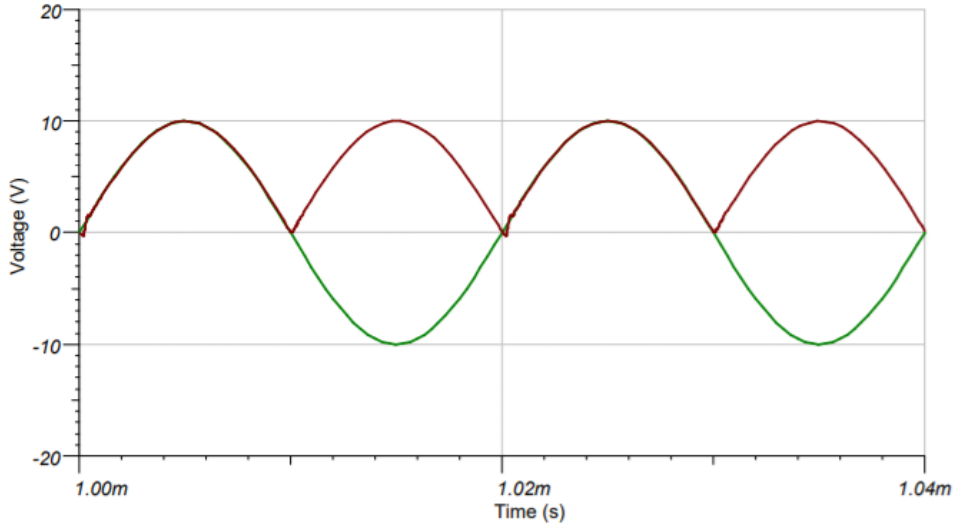
±25 mV	±10 V	25mV	10V	15V	-15V	0V





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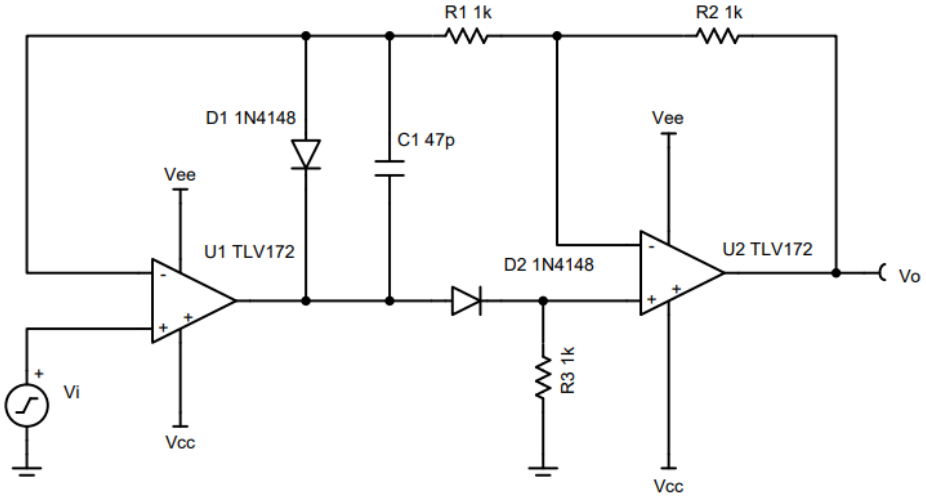
Design Notes

Input		Output		Supply		
V_{iMin}	V_{iMax}	V_{oMin}	V_{oMax}	V_{cc}	V_{ee}	V_{ref}
±25 mV	±10 V	25mV	10V	15V	-15V	0V



Design Notes:

1. For a full-wave rectifier circuit, be sure to use a fast switching diode for D1 and D2.
2. Select an op amp with sufficient bandwidth and slew rate.
3. Use precision resistors to reduce gain error.

Design Resources

EE Cookbook: Op Amp
www.ti.com/circuitcookbooks
Step-by-step circuit design of common op amp building block circuits.

TI Designs
www.TI.com/tidesigns
Ready-to-use reference designs with
theory, calculations, simulations
schematics, PCB files, bench test results

Analog Engineer's Pocket Reference
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A compendium of blog posts on op amp design topics including offset voltage, input bias current, stability, noise and more

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Tips, tricks, and design techniques

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