MC14576A
MC14577A

Advance Information

Dual Video Amplifiers

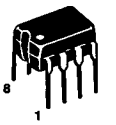
CMOS

Each of these devices contains two amplifiers realized in CMOS. Each amp also employs two lateral NPN bipolar transistors.

The MC14576A contains two internally-compensated operational amplifiers. On-chip gain-setting resistors result in a noninverting voltage gain of 6.0 dB ±1.0 dB at 4.43 MHz for each amp. Each noninverting input of the MC14576A appears as a mostly-capacitive load of about 10 pF.

The MC14577A also contains two internally-compensated operational amplifiers. However, the gain for each amp is adjustable with external components. (The value of the closed-loop voltage gain with a 150 Ω load should not exceed 10 dB at 5 MHz and 6 dB at 10 MHz.) All inputs of the MC14577A appear as mostly-capacitive loads of about 10 pF.

- Direct Drive of 150 Ω Loads
- Maximum Supply Current: 40 mA per Package
- Operating Voltage Range — P Suffix: 5.0 to 12 V Relative to V_{SS}
  F Suffix: 5.0 to 10 V Relative to V_{SS}
- May be used with Single or Dual Supplies
- Operating Temperature Range — P Suffix: –20 to 70°C
  F Suffix: –20 to 50°C
- Excellent Differential Gain: 3% Maximum @ 4.43 MHz
- Excellent Differential Phase: 3° Maximum @ 4.43 MHz
- Guaranteed Bandwidth: 10 MHz
- Minimal External Components Required



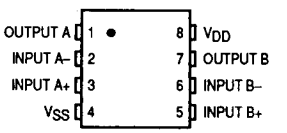
P SUFFIX
PLASTIC DIP
CASE 626

F SUFFIX
SOG PACKAGE
CASE TBD

ORDERING INFORMATION

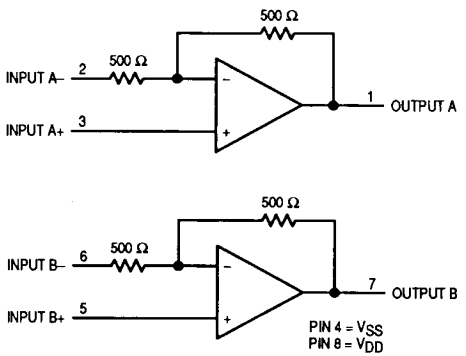
MC14576AP, MC14577AP	Plastic DIP
MC14576AF, MC14577AF	SOG Package

PIN ASSIGNMENT

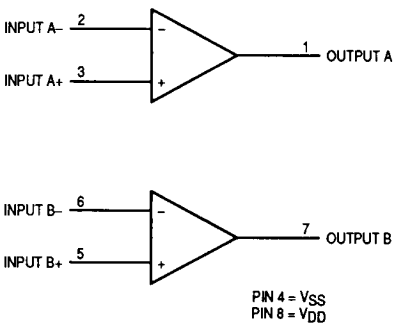


SYMBOLIC REPRESENTATIONS

MC14576A



MC14577A



NOTE: Resistors are shown above with nominal values.

This document contains information on a new product. Specifications and information herein are subject to change without notice.

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{DD}	DC Supply Voltage (Referenced to V_{SS})	–0.5 to +14	V
V_{in}	DC Input Voltage	V_{SS}–0.5 to V_{DD}+0.5	V
V_{out}	DC Output Voltage	V_{SS}–0.5 to V_{DD}+0.5	V
T_{stg}	Storage Temperature	–65 to +150	°C
T_L	Lead Temperature (10-Second Soldering)	260	°C

* Maximum Ratings are those values beyond which damage to the device may occur.

This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high-impedance circuit. For proper operation, V_{in} and V_{out} should be constrained to the range $V_{SS} \le (V_{in}$ or $V_{out}) \le V_{DD}$.

Unused inputs must always be tied to an appropriate voltage level (e.g., either V_{SS} or V_{DD}). Unused outputs must be left open.

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ELECTRICAL CHARACTERISTICS (T_A=25°C, Reference Figures 1 and 2, R_L=150 Ω Unless Otherwise Indicated)

Symbol	Parameter	Test Condition	V_{DD} V	V_{SS} V	Guaranteed Limit	Unit
V_{DD}	Power Supply Voltage Range (Referenced to V_{SS}) P Suffix F Suffix		— —	— —	5.0 to 12 5.0 to 10	V
I_{DD}	Maximum Power Supply Current (Per Package)	V_{in} = 0 V, R_L = ∞ (open)	+5.0	–5.0	40	mA
N	Maximum Output Noise	V_{in} = 0 V, BW = 30 Hz to 25 MHz	+5.0	–5.0	250	μV RMS
A_V	Closed-Loop Voltage Gain	V_{in} = 2.0 V p-p, f = 4.43 MHz	+5.0	–5.0	5.0 to 7.0	dB
BW	Bandwidth	V_{in} = 2.0 V p-p, A_V within ±3.0 dB of the gain at 4.43 MHz	+5.0	–5.0	10	MHz
V_{out}	Minimum Output Voltage Swing	V_{in} = 4.0 V p-p, f = 10 MHz	+5.0	–5.0	3.5	V p-p
		V_{in} = 1.5 V p-p, f = 5.0 MHz	+2.5	–2.5	2.0	
—	Maximum Differential Gain	V_{in} = 300 mV p-p biased from –0.5 to +0.5 V, f = 4.43 MHz	+5.0	–5.0	3.0	%
—	Maximum Differential Phase	V_{in} = 300 mV p-p biased from –0.5 to +0.5 V, f = 4.43 MHz	+5.0	–5.0	3.0	Degrees
PSRR	Minimum Power Supply Rejection Ratio, V_{DD} or V_{SS} pins	V_{in} = 0 V, ΔV_{DD} or ΔV_{SS} = 400 mV p-p @ 100 kHz	+5.0	–5.0	43	dB
—	Minimum Channel Separation	V_{in} = 1.0 V p-p, f = 4.43 MHz	+5.0	–5.0	40	dB
C_{in}	Maximum Input Capacitance	V_{in} = 1.0 V p-p, f = 4.43 MHz	+5.0	–5.0	TBD	pF
R_{in}	Minimum Input Resistance, all Inputs except Input A– and Input B– of the MC14576A		+5.0	–5.0	10^{7}**	Ω

**Typical value only; not guaranteed.

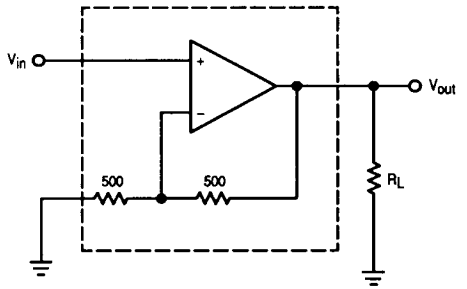

Figure 1. MC14576A Test Circuit

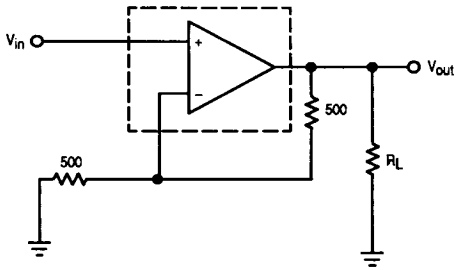

Figure 2. MC14577A Test Circuit

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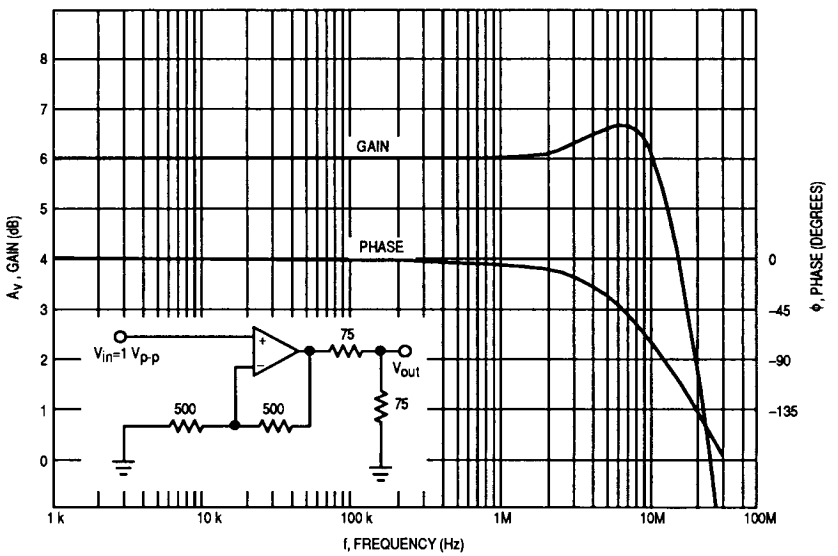

Figure 3. Typical Gain/Phase-Frequency Response (Not Guaranteed)

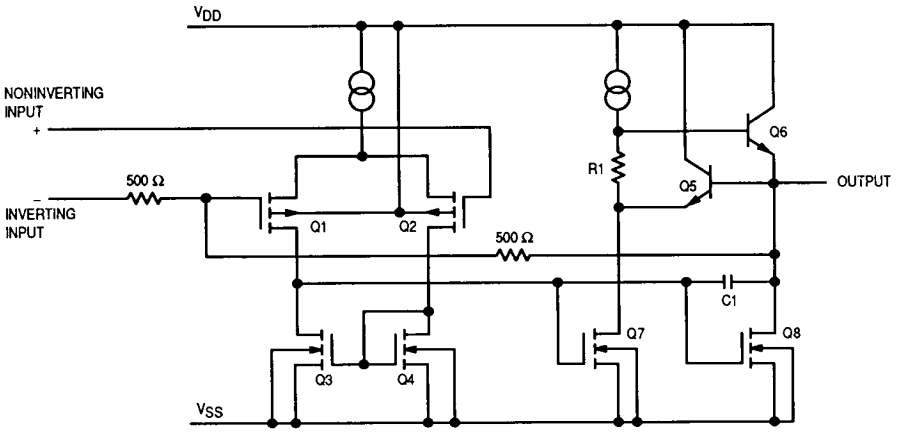

Figure 4. MC14576A Schematic

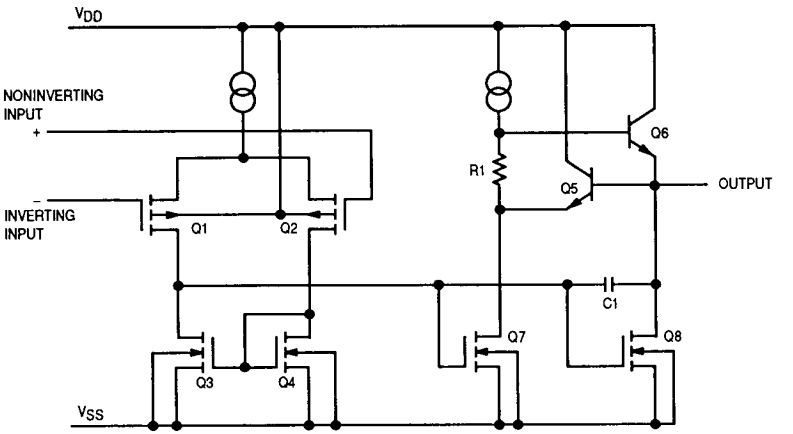

Figure 5. MC14577A Schematic

APPLICATIONS

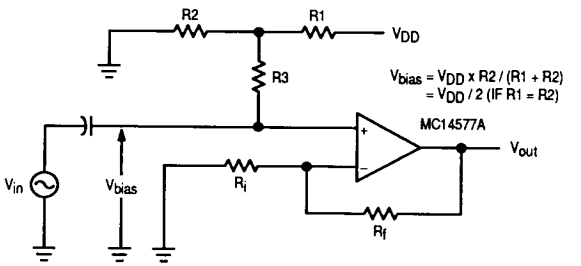

Figure 6. AC-Coupled Noninverting Amplifier with Single-Supply Operation

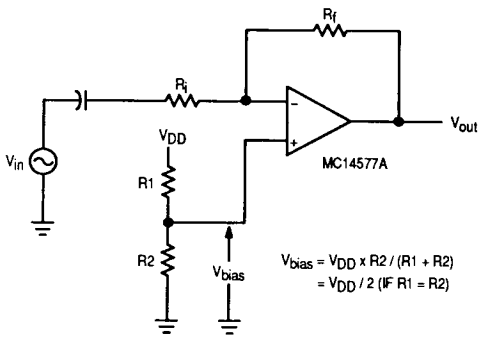

Figure 7. AC-Coupled Inverting Amplifier with Single-Supply Operation

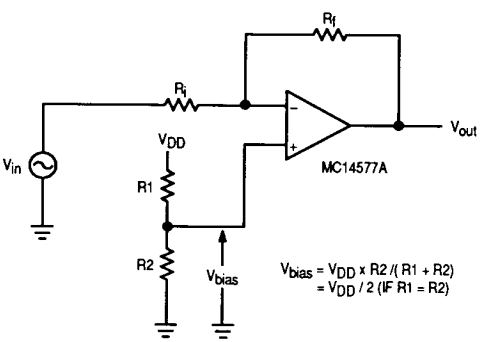

Figure 8. DC-Coupled Inverting Amplifier with Single-Supply Operation

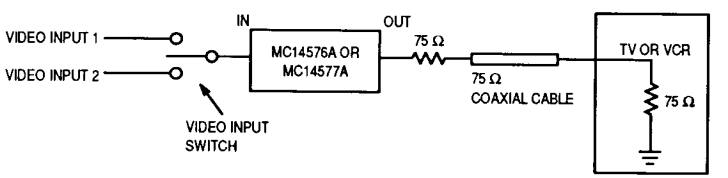

Figure 9. Typical Application of MC14576/77A

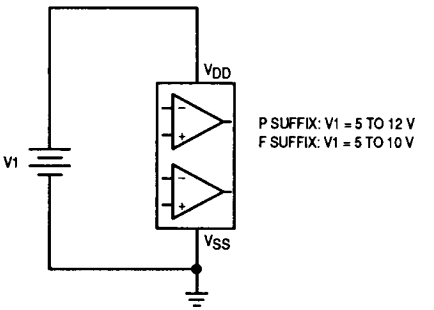

Figure 10. Single-Supply Operation

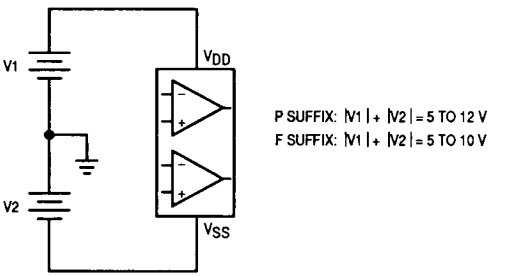

Figure 11. Dual- or Split-Supply Operation