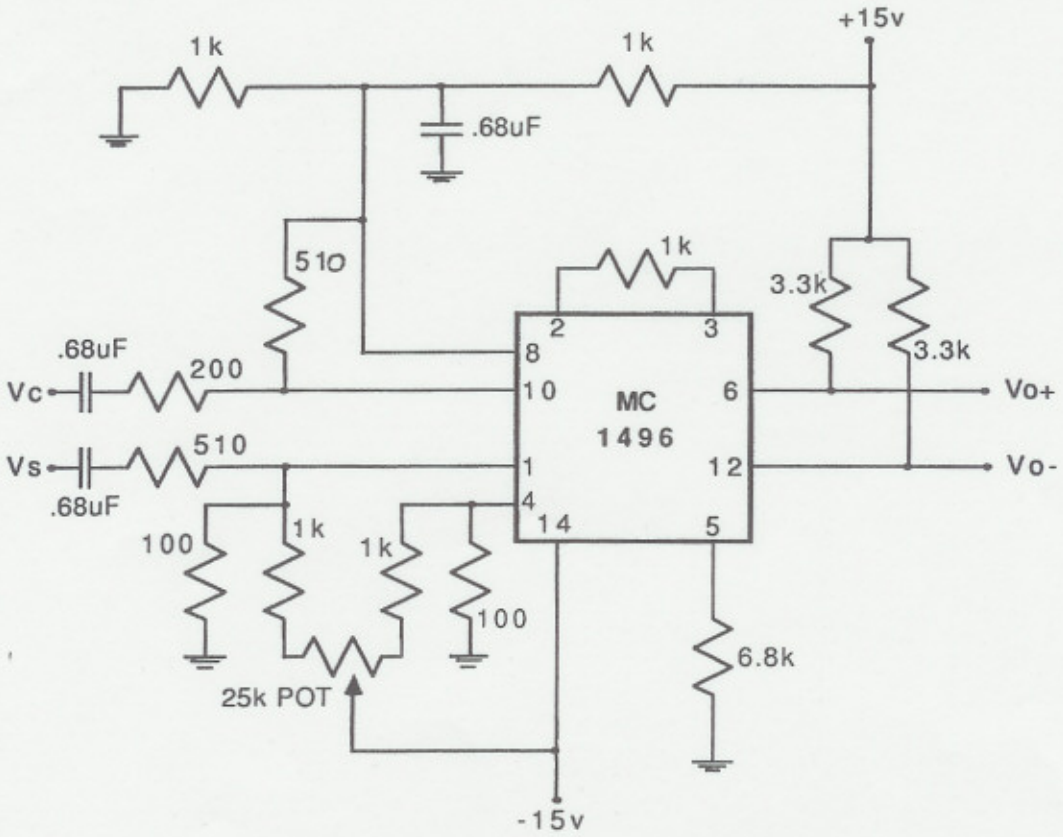


FIGURE 1 : AM modulator circuit using MC 1496

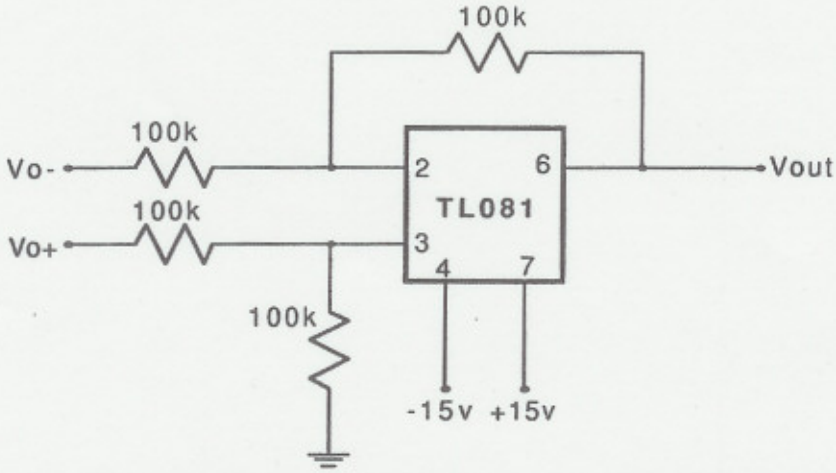


FIGURE 2 : Difference amplifier using TL081 operational amplifier

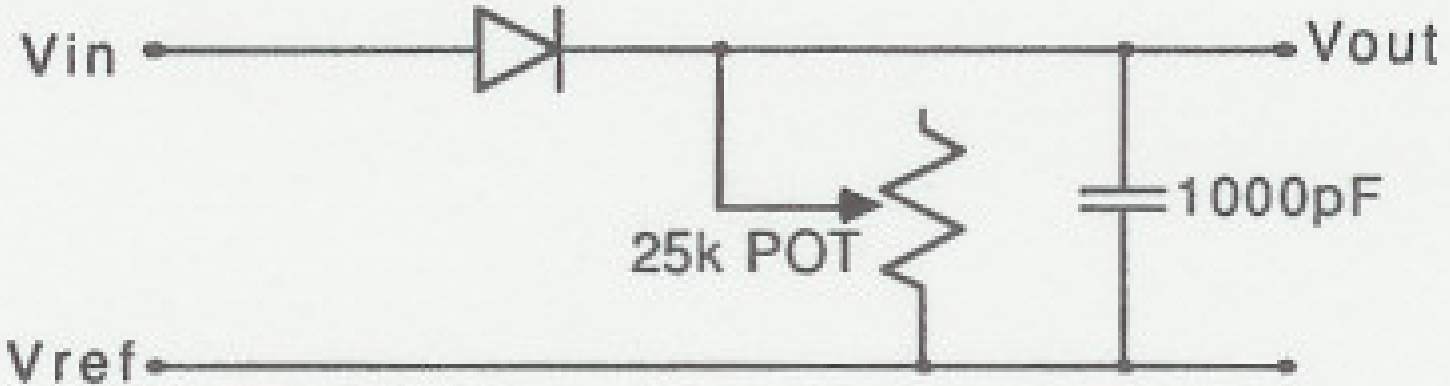


FIGURE 3 : Diode envelope detector

Parts List for Labs 1 & 2

Each Lab kit should contain the following:

Resistors:

1	47	Ohm	(YVBk)
2	100	Ohm	(BnBkBn)
1	200	Ohm	(RBkBn)
1	510	Ohm	(GrBnBn)
5	1	kOhm	(BnBkR)
2	3.3	kOhm	(OOR)
1	6.8	kOhm	(BlGyR)
1	10	kOhm	(BnBkO)
1	22	kOhm	(RRO)
3	47	kOhm	(YVO)
4	100	kOhm	(BnBkY)
1	470	kOhm	(YVY)

Capacitors:

1	300	pF	(300K)
2	470	pF	(470K)
1	1	nF	(.001K)
1	2	nF	(.002M)
3	680	nF	(684M)
4	.1	uF	(.1 Z)

Miscelaneous:

1	MC1496
1	TL081
1	XR2207
1	XR2211
2	25 kOhm Potentiometer
1	.6V Diode

Order this document by MC1496/D

MOTOROLA

MC1496, B

Balanced Modulators/ Demodulators

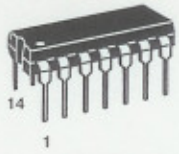
These devices were designed for use where the output voltage is a product of an input voltage (signal) and a switching function (carrier). Typical applications include suppressed carrier and amplitude modulation, synchronous detection, FM detection, phase detection, and chopper applications. See Motorola Application Note AN531 for additional design information.

- Excellent Carrier Suppression –65 dB typ @ 0.5 MHz
  –50 dB typ @ 10 MHz
- Adjustable Gain and Signal Handling
- Balanced Inputs and Outputs
- High Common Mode Rejection –85 dB typical

This device contains 8 active transistors.

BALANCED MODULATORS/DEMODULATORS

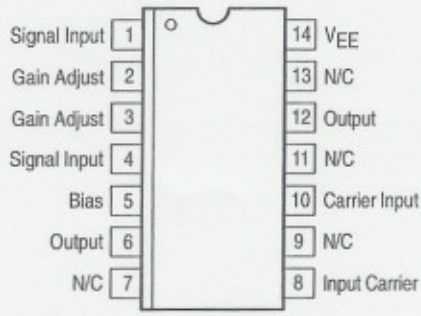
SEMICONDUCTOR TECHNICAL DATA



D SUFFIX
PLASTIC PACKAGE
CASE 751A
(SO–14)

P SUFFIX
PLASTIC PACKAGE
CASE 646

PIN CONNECTIONS



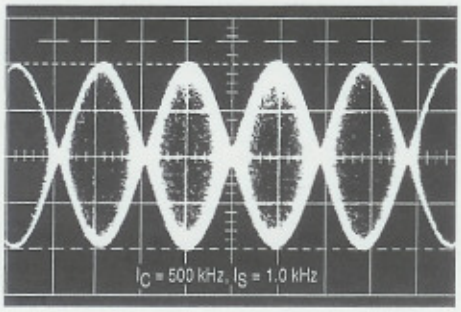


Figure 1. Suppressed Carrier Output Waveform

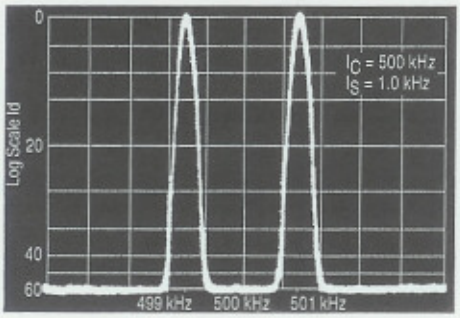


Figure 2. Suppressed Carrier Spectrum

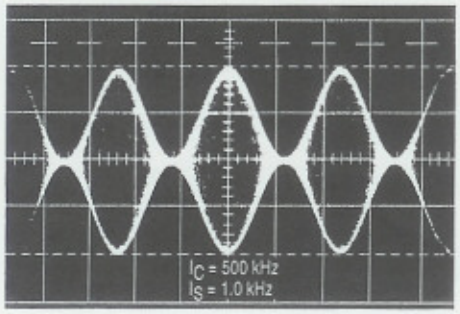
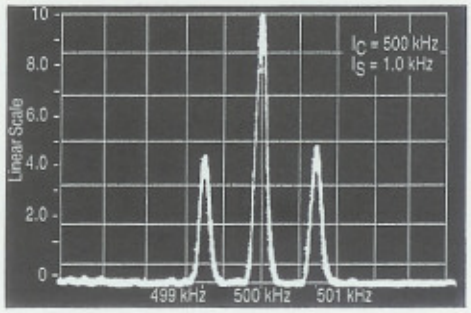


Figure 3. Amplitude Modulation Output Waveform

ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC1496D	T_A = 0°C to +70°C	SO–14
MC1496P		Plastic DIP
MC1496BP	T_A = –40°C to +125°C	Plastic DIP

Figure 4. Amplitude–Modulation Spectrum



MOTOROLA

TL081C,AC
TL082C,AC
TL084C,AC

JFET Input Operational Amplifiers

These low–cost JFET input operational amplifiers combine two state–of–the–art linear technologies on a single monolithic integrated circuit. Each internally compensated operational amplifier has well matched high voltage JFET input devices for low input offset voltage. The BIFET technology provides wide bandwidths and fast slew rates with low input bias currents, input offset currents, and supply currents.

These devices are available in single, dual and quad operational amplifiers which are pin–compatible with the industry standard MC1741, MC1458, and the MC3403/LM324 bipolar products.

- Input Offset Voltage Options of 6.0 mV and 15 mV Max
- Low Input Bias Current: 30 pA
- Low Input Offset Current: 5.0 pA
- Wide Gain Bandwidth: 4.0 MHz
- High Slew Rate: 13 V/μs
- Low Supply Current: 1.4 mA per Amplifier
- High Input Impedance: 10^{12} Ω

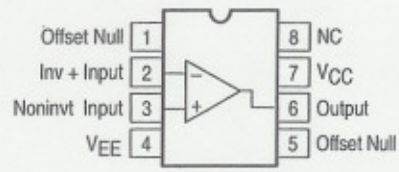
JFET INPUT OPERATIONAL AMPLIFIERS

SEMICONDUCTOR TECHNICAL DATA

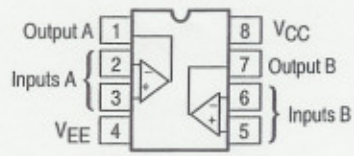
P SUFFIX
PLASTIC PACKAGE
CASE 626

D SUFFIX
PLASTIC PACKAGE
CASE 751
(SO–8)

PIN CONNECTIONS



TL081 (Top View)

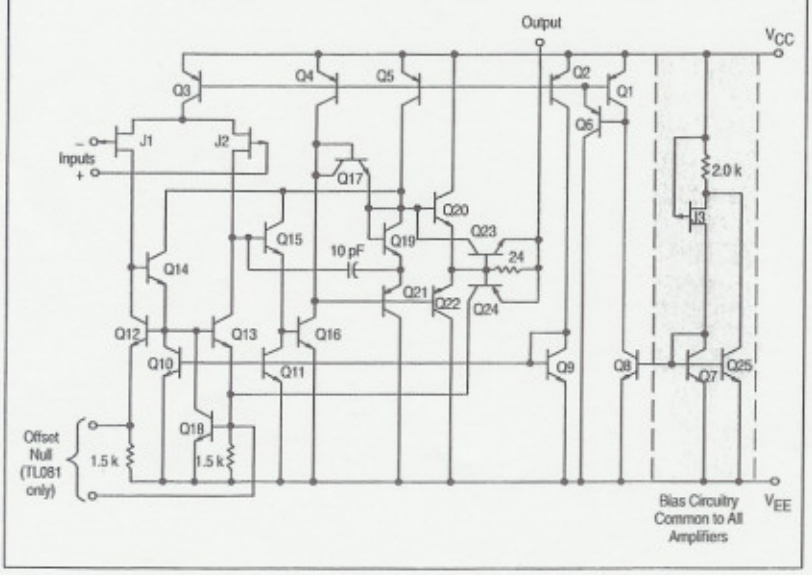


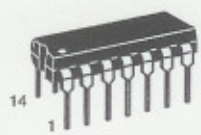
TL082 (Top View)

ORDERING INFORMATION

Op Amp Function	Device	Operating Temperature Range	Package
Single	TL081CD	T_A = 0° to +70°C	SO–8
	TL081ACP		Plastic DIP
Dual	TL082CD	T_A = 0° to +70°C	SO–8
	TL082ACP		Plastic DIP
Quad	TL084CN, ACN	T_A = 0° to +70°C	Plastic DIP

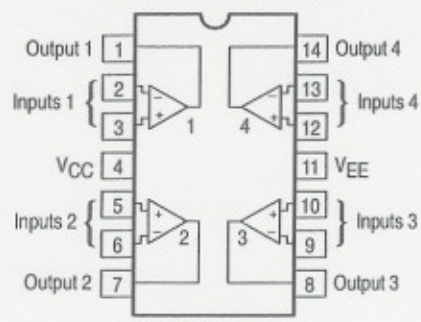
Representative Circuit Schematic (Each Amplifier)





N SUFFIX
PLASTIC PACKAGE
CASE 646

PIN CONNECTIONS



TL084 (Top View)