CONSUMER CIRCUIT SELECTION GUIDE BY FUNCTION

TV

Function	Circuits
AFT	μA3064
Sound IF Amp. Lim. Detector	μA3065
Video Amplifier	TBA970
Chroma Processing NTSC	μA746, μA780, μA781, μA787, μA788
Chroma Processing PAL	TAA630S, TBA510, TBA520, TBA540, TBA560C, TBA990
Chroma Matrix	TBA530
Sync Separator Hor. Oscillator	μA1391, μA1394, TBA920
Audio Output	TBA800, TBA810S
Video Tape Recorders	μA796

AUDIO

Function	Circuits
AM Radio	μA720
AM-FM IF	μA721
IF Amplifiers	μA703, μA753
IF Amp. Lim. Detectors	μA2136, μA3075, μA3089
Stereo Demodulators	μA732, μA758, μA767
Audio Preamplifiers	μA739, μA749, μA7305
Four-Channel Sound	μA1312, μA1314, μA1315
Dolby Noise Reduction	μA7300
Audio Amplifiers	μA706, TBA641, TBA800, TBA810S, TBA810DS
Tape Motor Speed Control	μA7391

μA796

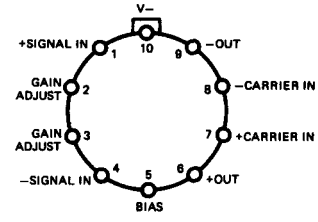
DOUBLE-BALANCED MODULATOR/DEMODULATOR

FAIRCHILD LINEAR INTEGRATED CIRCUIT

GENERAL DESCRIPTION – The μA796 is a monolithic Double-Balanced Modulator/Demodulator using the Fairchild Planar* epitaxial process. This circuit produces an output voltage which is the product of an input voltage (signal) and a switching function (carrier). Communications applications include modulation and demodulation of AM, SSB, DSB, FSK, FM and phase encoded signals. Signal conditioning techniques possible include frequency doubling and halving, linear mixing and chopping, with additional uses as phase detectors in phase locked loops and as differentiators in NRZ and phase encoded digital tape and disk memories.

- **EXCELLENT CARRIER SUPPRESSION**
- **LOW OFFSETS AND DRIFT**
- **FULLY BALANCED INPUTS AND OUTPUT**
- **USEFUL TO 100 MHz**
- **WIDE RANGE OF APPLICATION**

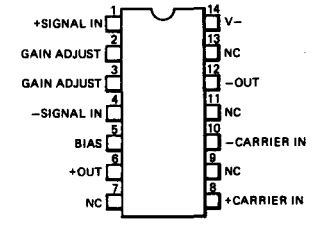
CONNECTION DIAGRAMS
10-LEAD METAL CAN
(TOP VIEW)
PACKAGE OUTLINE 5Q
PACKAGE CODE H



ORDER INFORMATION

TYPE	PART NO.
μA796C	μA796HC

14-LEAD DIP
(TOP VIEW)
PACKAGE OUTLINE 9A
PACKAGE CODE P



ORDER INFORMATION

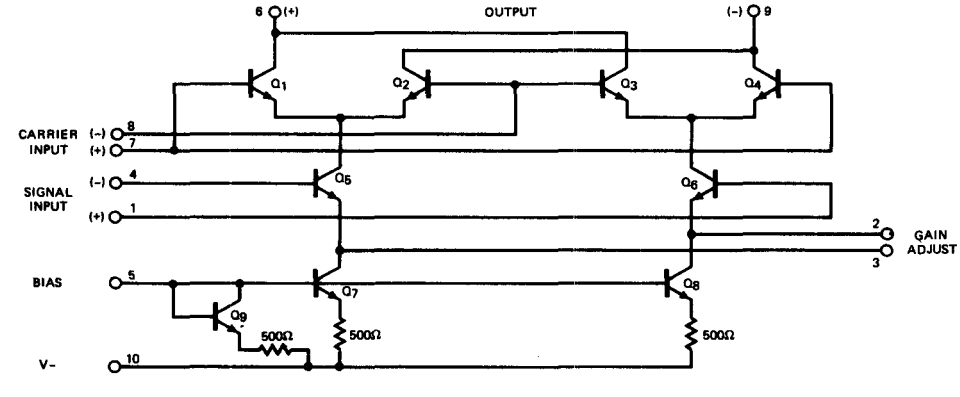
TYPE	PART NO.
μA796C	μA796PC

ABSOLUT MAXIMUM RATINGS

Internal Power Dissipation (Note 1)	500 mW
Applied Voltage (Note 2)	30 V
Differential Input Signal ($V_7 - V_8$)	±5.0 V
Differential Input Signal ($V_4 - V_1$)	±(5 + I_5R_e) V
Input Signal ($V_2 - V_1$, $V_3 - V_4$)	5.0 V
Bias Current (I_5)	12 mA
Storage Temperature Range	–65°C to +150°C
Operating Temperature Range	0°C to +70°C
Lead Temperature (Soldering, 60 s)	300°C

EQUIVALENT CIRCUIT

Pin designations apply to 5Q package only

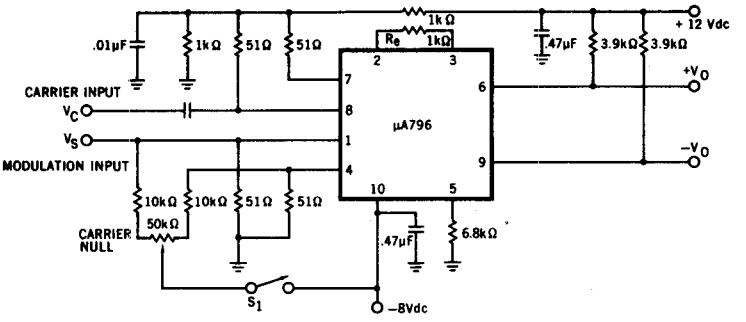


Notes on following pages.

*Planar is a patented Fairchild process.

TYPICAL APPLICATIONS

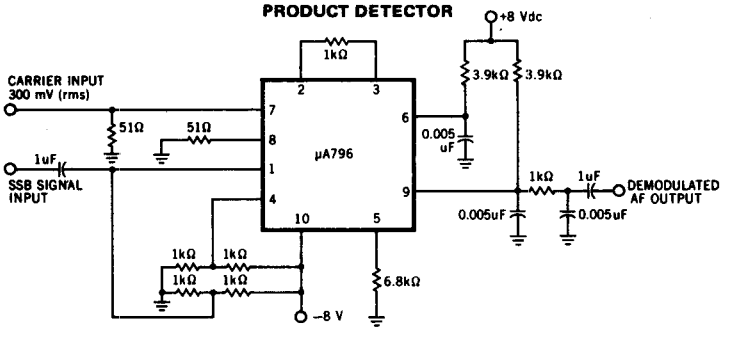
TYPICAL MODULATOR CIRCUIT



Note: S_1 is closed for "adjusted" measurements.

Fig. 1

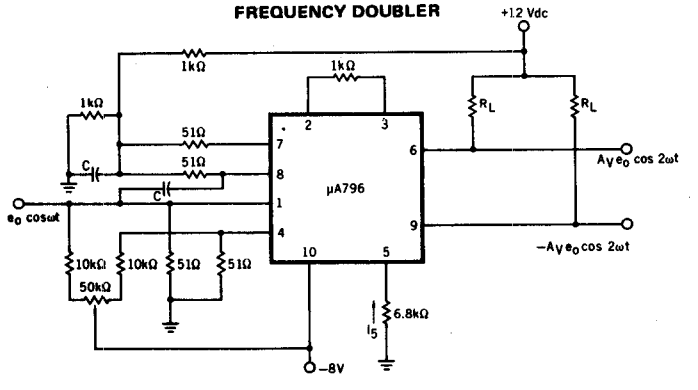
PRODUCT DETECTOR



This figure shows the μA796 used as a single sideband (SSB) suppressed carrier demodulator (product detector). The carrier signal is applied to the carrier input port with sufficient amplitude for switching operation. A carrier input level of 300 mV(rms) is optimum. The composite SSB signal is applied to the signal input port with an amplitude of 5.0 to 500 mV(rms). All output signal components except the desired demodulated audio are filtered out, so that an offset adjustment is not required. This circuit may also be used as an AM detector by applying composite and carrier signals in the same manner as described for product detector operation.

Fig. 2

FREQUENCY DOUBLER



The frequency doubler circuit shown will double low-level signals with low distortion. The value of C should be chosen for low reactance at the operating frequency.

Signal level at the carrier input must be less than 25 mV peak to maintain operation in the linear region of the switching differential amplifier. Levels to 50 mV peak may be used with some distortion of the output waveform. If a larger input signal is available a resistive divider may be used at the carrier input, with full signal applied to the signal input.

Fig. 3