

# μA758

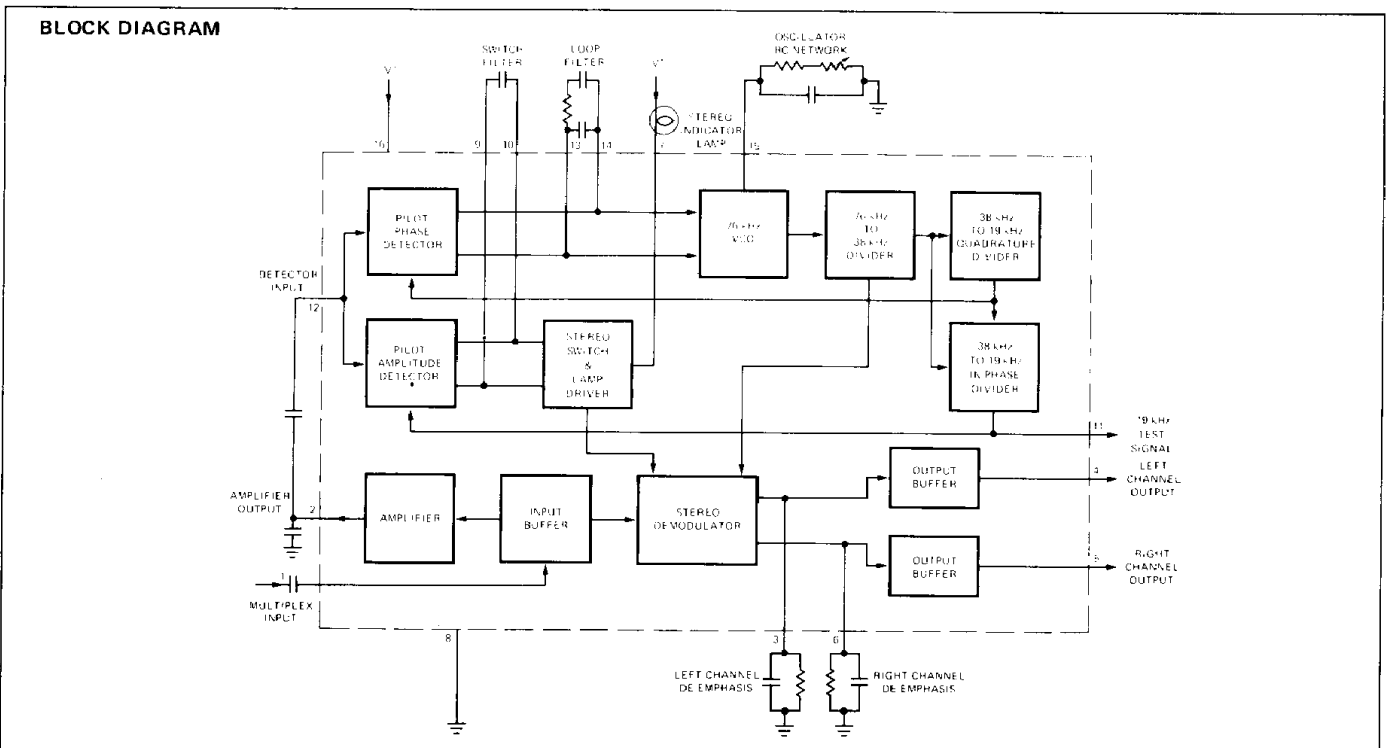
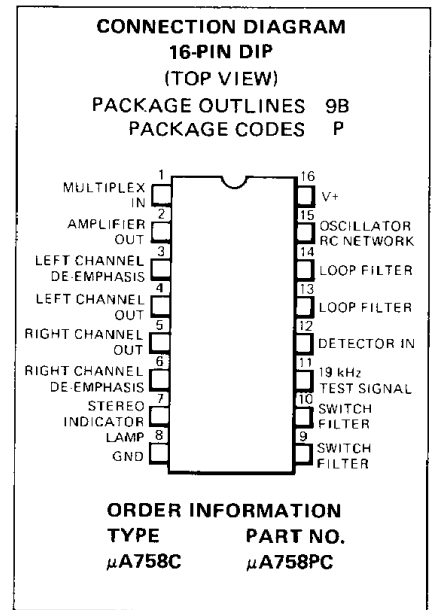
## PHASE LOCKED LOOP FM STEREO MULTIPLEX DECODER

### FAIRCHILD LINEAR INTEGRATED CIRCUIT

**GENERAL DESCRIPTION** – The μA758 is a monolithic Phase Locked Loop FM Stereo Multiplex decoder using the Fairchild Planar\* epitaxial process. This integrated circuit decodes an FM Stereo Multiplex Signal into Right and Left audio channels while inherently suppressing SCA information when it is contained in the composite input signal. Internal functions include automatic mono-stereo mode switching and drive for an external lamp to indicate stereo mode operation.

The μA758 operates over a wide supply voltage range and uses a low number of external components. It has only one control to adjust: a potentiometer to set oscillator frequency. No external coils are required. The μA758 is suitable for all line-operated and automotive FM Stereo Receivers.

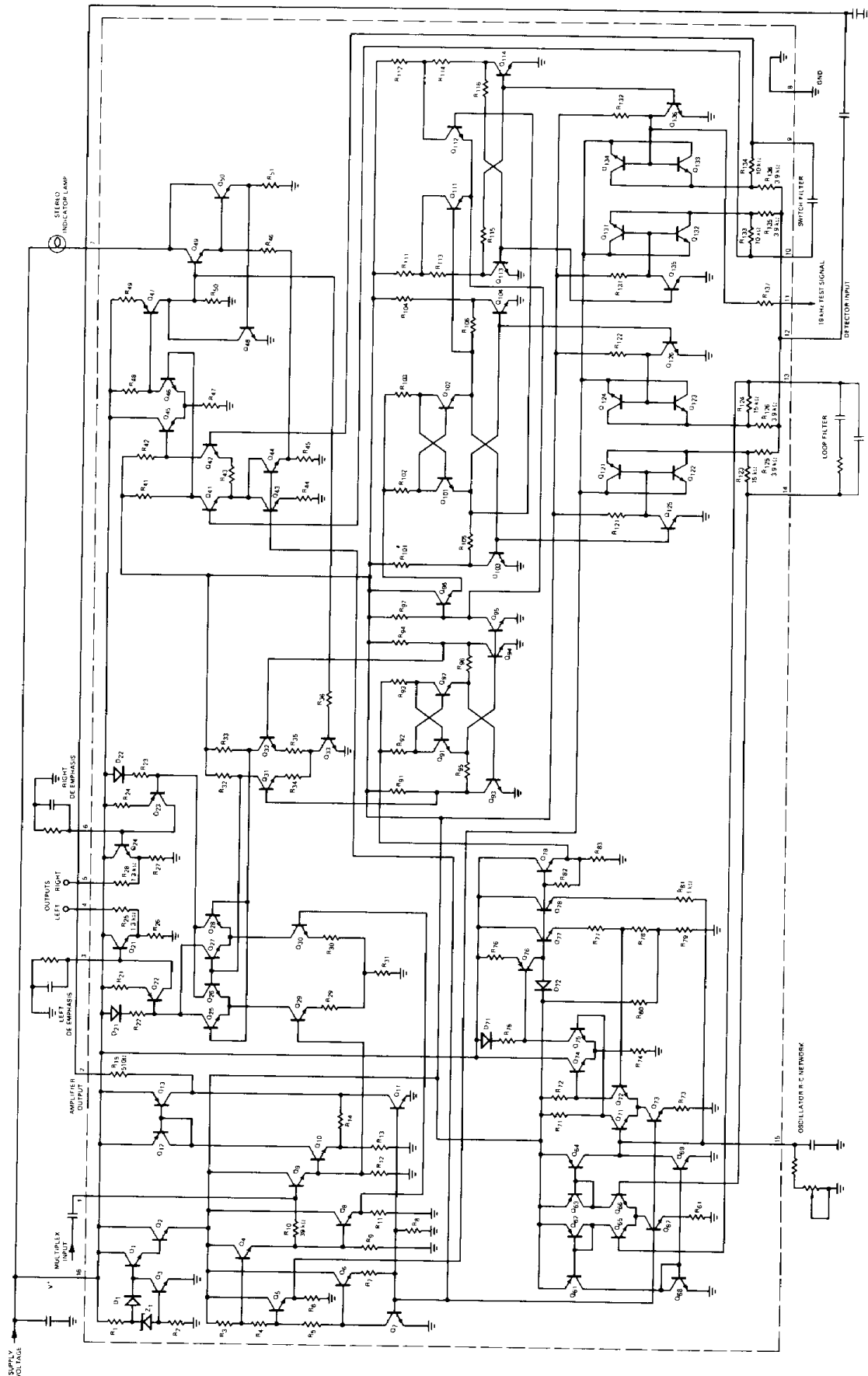
- 45 dB CHANNEL SEPARATION
- AUTOMATIC STEREO/MONO SWITCHING
- STEREO INDICATOR LAMP DRIVER WITH CURRENT LIMITING
- HIGH IMPEDANCE INPUT – LOW IMPEDANCE OUTPUTS
- 70 dB SCA REJECTION
- ONE ADJUSTMENT FOR COMPLETE ALIGNMENT
- LOW NUMBER OF EXTERNAL PARTS – NO COILS
- 10 V TO 16 V SUPPLY VOLTAGE RANGE



Notes on following page.

\*Planar is a patented Fairchild process.

EQUIVALENT CIRCUIT



All resistance values are in ohms  
All capacitance values are in picofarads

**ABSOLUTE MAXIMUM RATINGS**

Supply Voltage	+18 V
Supply Voltage ( $\leq$ 15 Seconds)	+22 V
Voltage at Lamp Driver Terminal (Lamp OFF)	+22 V
Internal Power Dissipation (Note 1)	730 mW
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-55°C to +125°C
Pin Temperature	
Molded DIP (Soldering, 10 seconds)	260°C

$\mu$ A758C

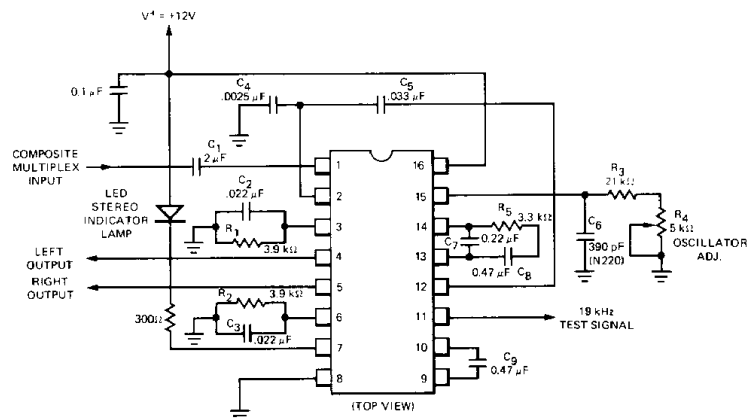
**ELECTRICAL CHARACTERISTICS:**  $T_A = 25^\circ\text{C}$ ,  $V^+ = +12\text{ V}$ , 19 kHz pilot level = 30 mV<sub>RMS</sub>, Multiplex Signal (L = R, pilot OFF) = 300 mV<sub>RMS</sub>, Modulation Frequency = 400 Hz or 1 kHz, Test Circuit 1, unless otherwise specified

CHARACTERISTICS	CONDITION	MIN	TYP	MAX	UNITS
Supply Current	Lamp OFF		26	35	mA
Maximum Available Lamp Current		75	150		mA
Voltage at Lamp Driver Terminal	<sup>1</sup> LAMP = 50 mA		1.3	1.8	V
DC Voltage Shift at Either Output Terminal	Stereo to Mono Operation		30	150	mV
Power Supply Ripple Rejection	200 Hz, 200 mV <sub>RMS</sub>	35	45		dB
Input Resistance		20	35		k $\Omega$
Output Resistance		0.9	1.3	2.0	k $\Omega$
Channel Separation	100 Hz		40		dB
	400 Hz	30	45		dB
	10 kHz		45		dB
Channel Balance			0.3	1.5	dB
Voltage Gain	1 KHz	0.5	0.9	1.4	V/V
Pilot Input Level	Lamp Turn-On		15	20	mV <sub>RMS</sub>
	Lamp Turn-Off	2.0	7.0		mV <sub>RMS</sub>
Pilot Input Level Hysteresis	Lamp Turn-Off to Turn-On	3.0	7.0		dB
Capture Range		2.0	4.0	6.0	%
Total Harmonic Distortion	Multiplex Level = 600 mV <sub>RMS</sub> Pilot OFF		0.4	1.0	%
19 kHz Rejection		25	35		dB
38 kHz Rejection		25	45		dB
SCA Rejection (Note 2)			70		dB
VCO Tuning Resistance (Note 3)		21.0	23.3	25.5	k $\Omega$
VCO Frequency Drift	0°C $\leq$ $T_A$ $\leq$ 25°C		+0.1	$\pm$ 2	%
	25°C $\leq$ $T_A$ $\leq$ +70°C		-0.4	$\pm$ 2	%

**NOTES:**

- (1) Rating applied for ambient temperatures to 70°C. Derate at 9.1 mW/°C from 70°C to 85°C.
- (2) Measured with a stereo composite signal consistency of 80% stereo, 10% pilot and 10% SCA as defined in the FCC Rules on Broadcasting.
- (3) Total resistance from pin 15 to ground, in test circuit 1, required to set reference frequency at pin 11 to 19 kHz  $\pm$ 10 Hz.

**TEST CIRCUIT 1 AND TYPICAL APPLICATION**

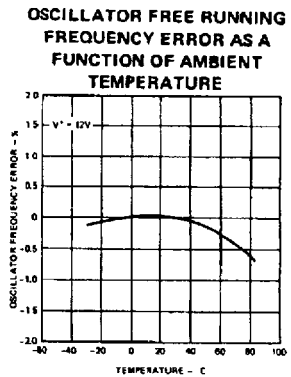
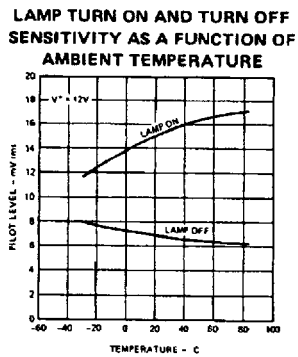
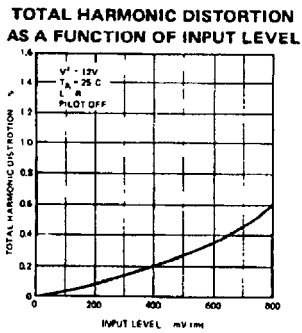
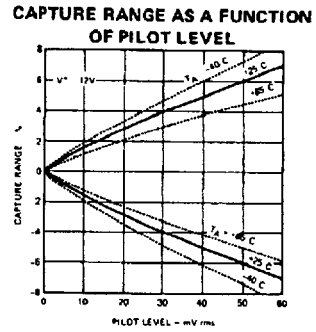
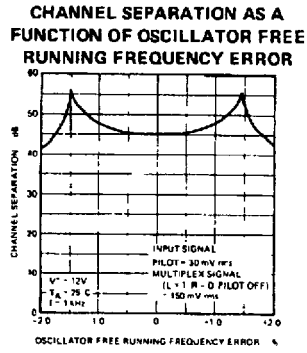
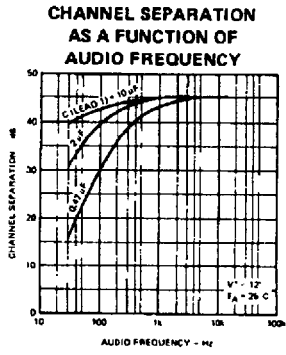


**NOTE:**

Tolerance on resistors is  $\pm$ 5% and tolerance on capacitors is  $\pm$ 20% unless otherwise specified.

- $C_1$  Tolerance = +100%, -20%
- $C_6$  Tolerance =  $\pm$ 1% in test circuit and  $\pm$ 5% in typical application
- $R_3$  Tolerance =  $\pm$ 1%
- $R_4$  Tolerance =  $\pm$ 10%
- $R_1$  and  $R_2$  Tolerances =  $\pm$ 1% in test circuit and  $\pm$ 5% in typical application.

TYPICAL PERFORMANCE CURVES FOR  $\mu A758C$   
(Test Circuit 1 unless Otherwise Specified)



4