MC1307

STEREO DEMODULATOR

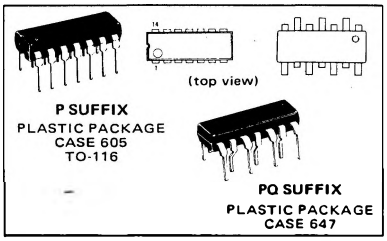
MONOLITHIC FM MULTIPLEX STEREO DEMODULATOR

. . . designed to derive the left and right channel audio information from the detected composite signal.

- Capable of Operation Over a Wide Power Supply Range – 8.0 – 14 Vdc
- Built-in Stereo-Indicator Lamp Driver

FM MULTIPLEX STEREO DEMODULATOR

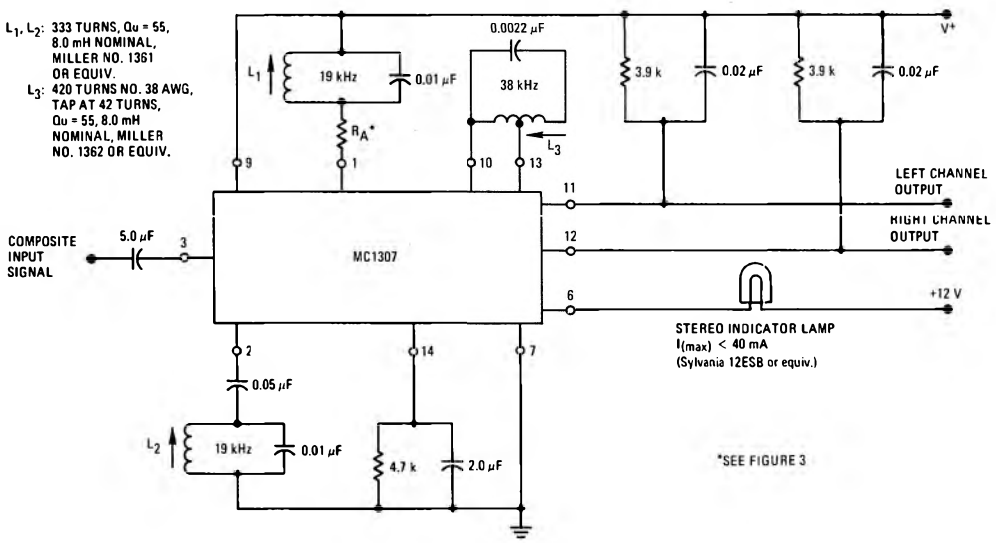
SILICON MONOLITHIC INTEGRATED CIRCUIT



P SUFFIX
PLASTIC PACKAGE
CASE 605
TO-116

PQ SUFFIX
PLASTIC PACKAGE
CASE 647

FIGURE 1 – TYPICAL CIRCUIT CONFIGURATION

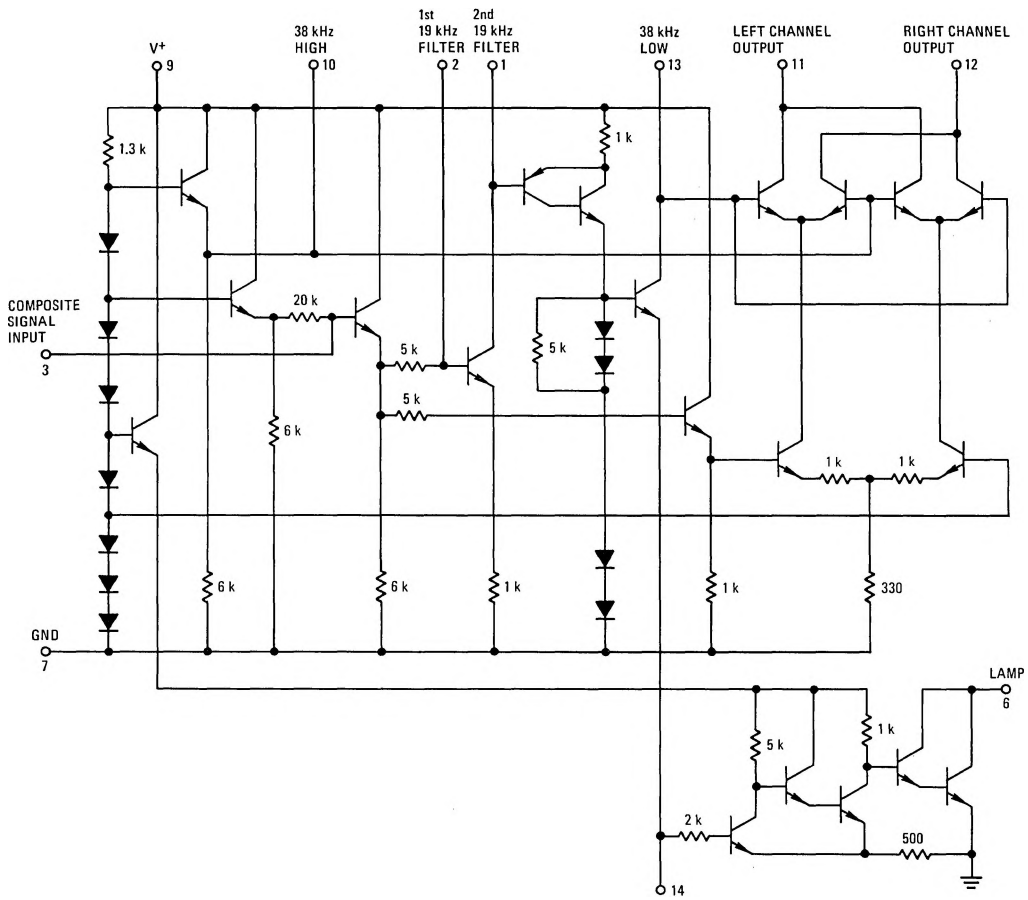


TYPICAL DC VOLTAGES (All measured using a VTVM with respect to Pin 7 (lamp on), R_A = 180 ohms, see Figure 3)

Pin Numbers	1	2	3	4	5	6	7	8	9	10	11	12	13	14
V^+ = 8.5 Vdc	8.5	2.7	3.6	–	–	0.8	0	–	8.5	4.4	6.2	6.2	4.4	1.5
V^+ = 12 Vdc	12	2.9	3.9	–	–	0.9	0	–	12	4.7	9.7	9.7	4.7	1.7

See Packaging Information Section for outline dimensions.

FIGURE 2 – CIRCUIT SCHEMATIC



MAXIMUM RATINGS (T_A = +25°C unless otherwise noted)

Rating	Value	Unit
Power Supply Voltage (Pins 1, 6, 9, 11, 12) (Pin 7 is grounded)	+22	Vdc
Lamp Driver Current	40	mAdc
Power Dissipation (Package Limitation) Derate above T_A = +25°C	625 5.0	mW mW/°C
Operating Temperature Range (Ambient)	0 to +75	°C
Storage Temperature Range	–65 to +150	°C

Maximum Ratings as defined in MIL-S-19500, Appendix A.

ELECTRICAL CHARACTERISTICS (V^+ = 12 Vdc, T_A = +25°C, tests made with a 75 μs de-emphasis network (3.9 kΩ, 0.02 μF) unless otherwise noted)

Characteristic	Min	Typ	Max	Unit
Input Impedance (f = 1.0 kHz)	12	20	–	kΩ
Stereo Channel Separation (See Note 1)				dB
(f = 100 Hz)	–	35	–	
(f = 1.0 kHz)	20	40	–	
(f = 10 kHz)	–	30	–	
Total Harmonic Distortion (See Notes 1 and 2) (Modulation Frequency = 1.0 kHz)	–	0.5	1.0	%
Channel Balance (Monaural Input = 200 mV [rms]) (Monaural, Left and Right Outputs)	–	0.5	–	dB
Ultrasonic Frequency Rejection (See Note 3)				dB
(19 kHz)	–	25	–	
(38 kHz)	–	20	–	
Inherent SCA Rejection (without filter) (f = 60 kHz, 67 kHz and 74 kHz) (See Note 3)	–	50	–	dB
Lamp Indicator (R_A = 180 Ω)				mV(rms)
(Minimum 19 kHz input level for lamp "on")	–	16	25	
(Maximum 19 kHz input level for lamp "off")	5.0	14	–	
Power Dissipation (V^+ = 12 V)				mW
(Without lamp)	–	140	300	
(With lamp)	–	170	300	

Note 1 – Measurement made with 200 mV(rms) Standard Multiplex Composite Signal where L = 1, R = 0 or R = 1, L = 0. Standard Multiplex Composite Signal is here defined as a signal containing left and/or right audio information with a 10% (19 kHz) pilot signal in accordance with FCC regulations.

Note 2 – Distortion specification also applies to Monaural Signal.

Note 3 – Referenced to 1.0 kHz output signal with Standard Multiplex Composite Input Signal.

FIGURE 3 – DISTORTION COMPONENTS IN AUDIO SIGNAL

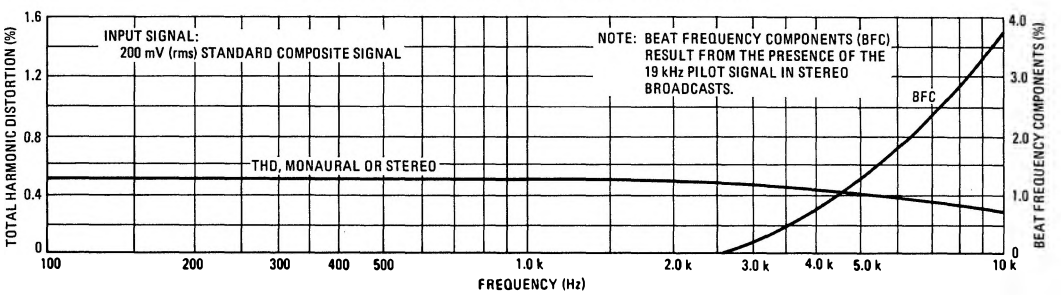


FIGURE 4 – TOTAL HARMONIC DISTORTION

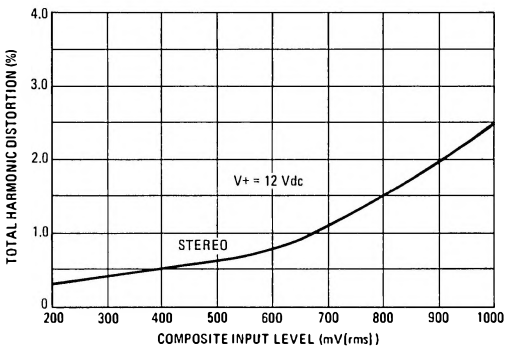


FIGURE 5 – MULTIPLEX SENSITIVITY

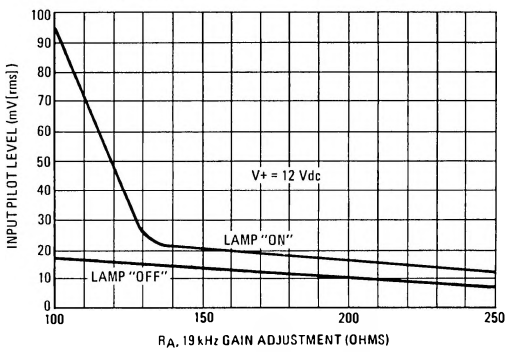


FIGURE 6 – CHANNEL SEPARATION

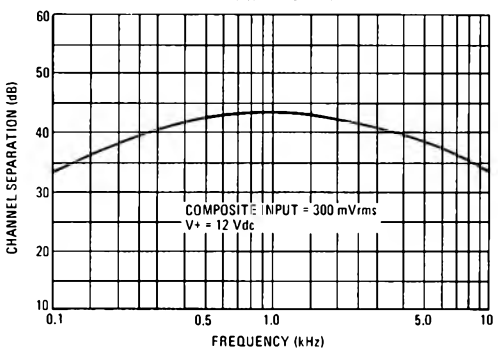


FIGURE 7 – CHANNEL SEPARATION