



**MOTOROLA**  
Semiconductors

**MC1309**

**Advance Information**

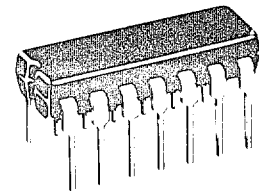
**PHASE LOCK LOOP  
FM STEREO DEMODULATOR**

... a monolithic device using I<sup>2</sup>L and ION Implant technology for use in solid-state stereo receivers.

- Requires No Inductors
- Low External Part Count
- Excellent Channel Separation Without Adjustment
- Only Single Potentiometer Oscillator Frequency Adjustment Necessary
- 50 mA Lamp or LED Driving Capability With Current Limiting
- Automatic, Transient-Free Stereo/Mono Switching
- Wide Dynamic Range: 0.25-1.7 V(p-p) Composite Input Signal
- Wide Supply Range: 4.5-16 Vdc
- Low Distortion: Typically 0.1% at 850 mV(p-p) Composite Input Signal
- Excellent SCA Rejection
- Gain Adjustable By Changing Load Resistors

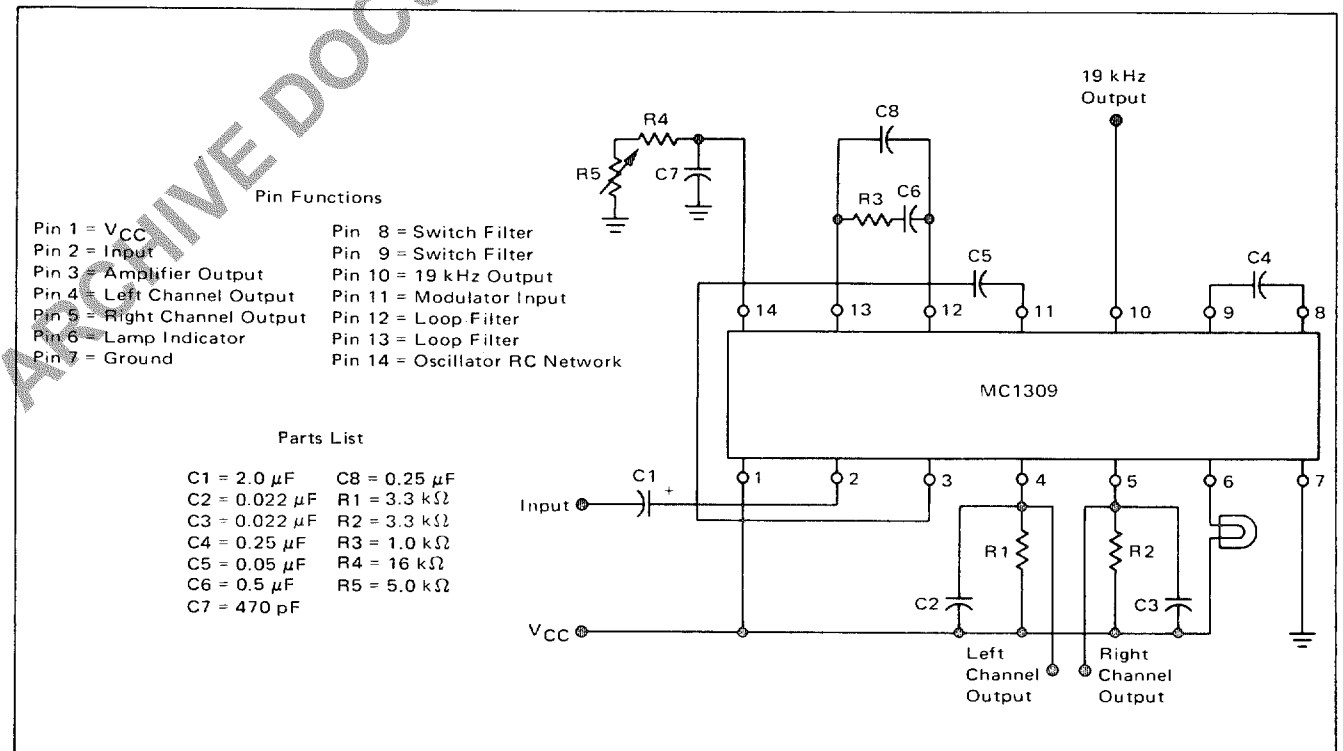
**PHASE LOCK LOOP  
FM STEREO  
DEMODULATOR**

**SILICON MONOLITHIC  
INTEGRATED CIRCUIT**



**P SUFFIX**  
PLASTIC PACKAGE  
CASE 646

**FIGURE 1 – TYPICAL APPLICATION AND TEST CIRCUIT**



**MAXIMUM RATINGS** ( $T_A = +25^\circ$  unless otherwise noted.)

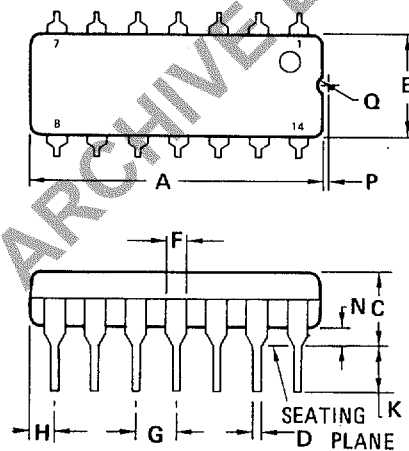
Rating	Value	Unit
Power Supply Voltage	16	Volts
Lamp Current	50	mA
Junction Temperature	150	$^\circ\text{C}$
Operating Temperature Range (Ambient)	-20 to +75	$^\circ\text{C}$
Storage Temperature Range	-65 to +150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** Unless otherwise noted;  $V_{CC} = +9\text{ Vdc}$ ,  $T_A = +25^\circ\text{C}$ , 1.7 V(p-p) standard multiplex composite signal with L or R channel only modulated at 1.0 kHz and with 10% pilot level for stereo tests; 1.7 V(p-p) 1 kHz input signal for monaural tests; using circuit in Figure 1.

Characteristic	Min	Typ	Max	Unit
Current Drain	—	11	—	mA <sub>dc</sub>
Maximum Standard Composite Input Signal (0.5% THD)* ( $V_{CC} = 9.0\text{ V}$ ) ( $V_{CC} = 6.0\text{ V}$ )	1.7 0.85	2.2 1.9	— —	V(p-p)
Maximum Monaural Input Signal (1.0% THD)* ( $V_{CC} = 9.0\text{ V}$ ) ( $V_{CC} = 6.0\text{ V}$ )	1.7 0.85	2.2 2.1	— —	V(p-p)
Channel Balance	—	0	1.0	dB
Stereo THD ( $V_{in} = 0.85\text{ V(p-p)}$ )	—	0.1	—	%
Monaural THD ( $V_{in} = 0.85\text{ V(p-p)}$ )	—	0.1	—	%
Channel Separation ( $f = 100\text{ Hz}$ ) ( $f = 1.0\text{ kHz}$ ) ( $f = 10\text{ kHz}$ )	— 30 —	38 46 44	— — —	dB
Monaural Gain	0.6	0.8	—	V/V
Input Impedance	15	30	—	k $\Omega$
Ultrasonic Frequency Rejection 19 kHz 38 kHz	— —	32 42	— —	dB
SCA Rejection	—	71	—	dB
Stereo Switch Level Lamp "On" Lamp "Off"	— 2.0	9.2 5.0	12 —	mV
Mono/Stereo Switching Transient — No Lamp	—	5.7	—	mV
Capture Range (Pilot = 60 mV (RMS))	—	$\pm 8.9$	—	%

\*THD and Channel Separation are measured after a Bandpass Filter (200 Hz - 10 kHz), unless otherwise specified.

**OUTLINE DIMENSIONS**



**NOTES:**

- LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
- DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL

PLASTIC PACKAGE  
CASE 646  
 $R_{\theta JA} = 100^\circ\text{C}$

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.16	18.80	0.715	0.740
B	6.10	6.60	0.240	0.260
C	4.06	4.57	0.160	0.180
D	0.38	0.51	0.015	0.020
F	1.02	1.52	0.040	0.060
G	2.54 BSC		0.100 BSC	
H	1.32	1.83	0.052	0.072
J	0.20	0.30	0.008	0.012
K	2.92	3.43	0.115	0.135
L	7.37	7.87	0.290	0.310
M	—	10 $^\circ$	—	10 $^\circ$
N	0.51	1.02	0.020	0.040
P	0.13	0.38	0.005	0.015
Q	0.51	0.76	0.020	0.030



**MOTOROLA Semiconductor Products Inc.**