

Dimensions (mm)

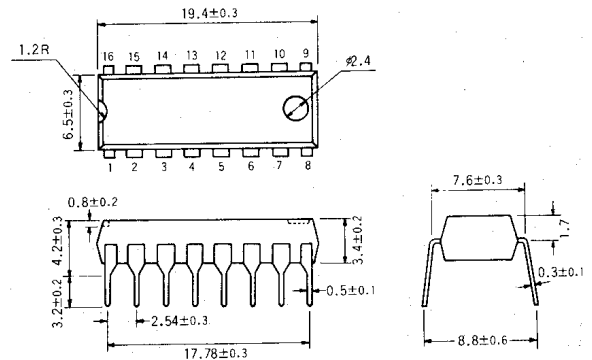


Fig. 1

The BA1330 is a monolithic integrated circuit consisting of an FM stereo demodulator using phase-locked loop techniques to derive the right and left audio channels from a composite signal. It was designed with ample consideration given to use in battery-operated stereo radio cassette recorders and operates stably at supply voltages as low as 3.6V, by virtue of an internally regulated voltage supply. To prevent unstable operation when power is applied and to avoid S/N deterioration when switching to the stereo mode with an almost-dead battery, VCO automatically stops at a voltage less than 3.2V and starts running at a voltage of typically 3.6V or more. In addition, to a VCO oscillation inhibiting terminal (pin 9), built-in hysteresis is provided to stop oscillation during AM reception or forced monaural operation by means of the IF level. A separation control pin (pin 8) is also provided to obtain stable separation without the need for input compensation.

12. Pin-interchangeable with the BA1320 and other comparable circuits

Applications

1. Stereo radio cassettes
2. Car stereos
3. Home stereos
4. Other stereo applications

Block Diagram

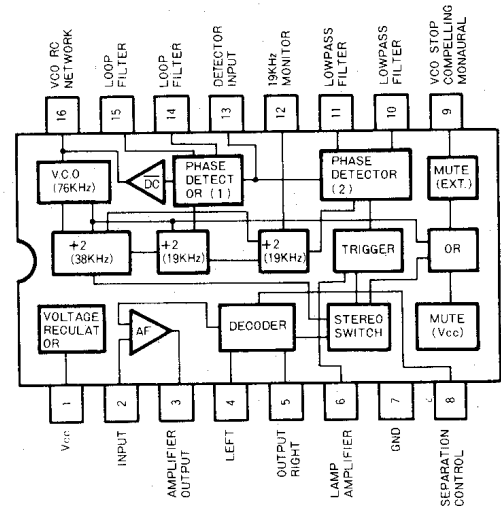


Fig. 2

Features

1. High-performance multiplexer employing a PLL technique
2. Stable operation at supply voltages as low as 3.6V
3. Low lamp lighting level (typically 8mV)
4. Separation control terminal (pin 8)
5. VCO Stopping and forced monaural terminal (pin 9)
6. The threshold voltage of the VCO stop/forced monaural terminal has hysteresis (typically 2dB).
7. In case of a drop in supply voltage, VCO stops and the forced monaural function is enabled automatically.
8. Excellent output ripple rejection
9. Low output voltage loss ($G_V = -1.1\text{dB typ}$)
10. Low distortion (0.3%, typ)
11. Excellent SCA rejection (76dB typ)

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	14	V
Power dissipation	P_d	550*	mW
Operating temperature	T_{opr}	-25~+75	$^\circ\text{C}$
Storage temperature	T_{stg}	-55~+125	$^\circ\text{C}$
Lamp drive current	I_{LAMP}	75	mA

*Derating is done at 5.5mW/ $^\circ\text{C}$ for operation above $T_a = 25^\circ\text{C}$.

Electrical Characteristics

($T_a = 25^\circ\text{C}$, $V_{CC} = 6\text{V}$, $V_{IN} = 300\text{mV}$ (L + R = 90%, Pilot = 10%), $f_m = 1\text{kHz}$)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions	Test circuit
Maximum composite input signal	V_{in}	300	—	—	mV	THD = 1%	Fig. 16
Maximum monaural input signal	V_{in}	300	—	—	mV	THD = 1%	Fig. 16
Input resistance	R_{IN}	—	40	—	$k\Omega$		Fig. 16
Channel separation (1)	Sep-1	35	50	—	dB	$R_{sep} = 500\Omega VR$	Fig. 16
Channel separation (2)	Sep-2	25	40	—	dB	$R_{sep} = 270\Omega$	Fig. 16
Audio output voltage	V_{out}	—	265	—	mV	$V_{in} = 300\text{mVrms}$	Fig. 16
Channel balance	CB	-2	0	+2	dB		Fig. 16
Total harmonic distortion (stereo)	THD	—	0.3	—	%	$V_{in} = 150\text{mV}$	Fig. 16
Lamp on level	L_{on}	5	8	11	mV	Pilot	Fig. 16
Lamp hysteresis	Hys	—	3	—	dB		Fig. 16
Capture range	CR	—	± 7	—	%		Fig. 16
Carrier leakage	CL	—	32	—	dB	$f = 19\text{kHz}$	—
		—	48	—	dB	$f = 38\text{kHz}$	—
SCA Rejection ratio	SCA_{rej}	—	76	—	dB		—
Muting threshold voltage (pin 9)	V_{th}	—	1.0	—	V	ON (VCO STOP)	Fig. 16
		—	0.8	—	V	OFF	Fig. 16
Muting threshold voltage (V_{CC})	V_{th}	—	3.2	—	V	ON (VCO STOP)	Fig. 16
		—	3.6	—	V	OFF	Fig. 16
Signal-to-noise ratio	S/N	—	80	—	dB		Fig. 16
Quiescent supply current	I_{CC}	—	18	—	mA		Fig. 16

Electrical Characteristic Curves

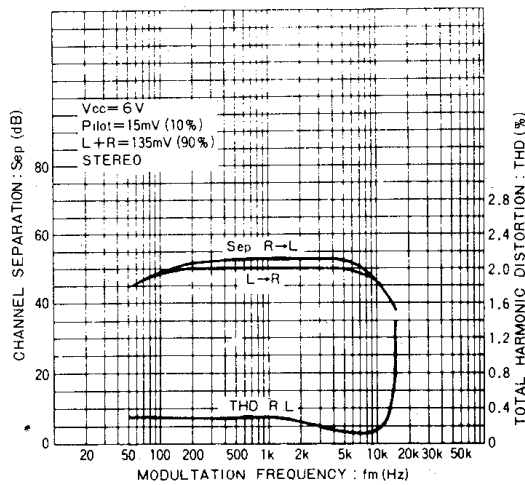


Fig. 3 Total harmonic distortion and channel separation vs. modulation frequency

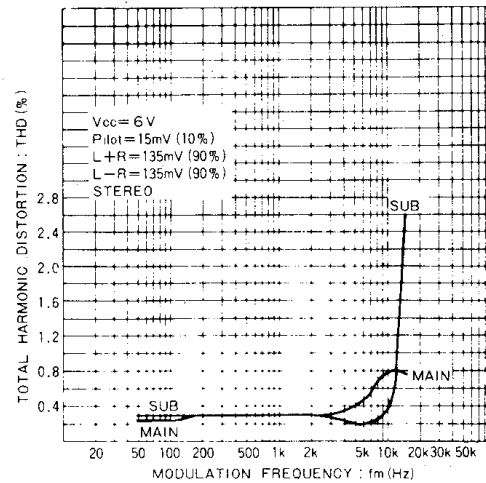


Fig. 4 Main and sub-signal total harmonic distortion vs. modulation frequency