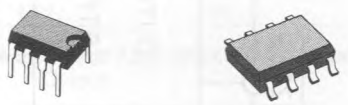
ELECTRONIC TWO-TONE RINGER

- LOW CURRENT CONSUMPTION, IN ORDER TO ALLOW THE PARALLEL OPERATION OF 4 DEVICES
- INTEGRATED RECTIFIER BRIDGE WITH ZENER DIODES TO PROTECT AGAINST OVERVOLTAGES
- LITTLE EXTERNAL CIRCUITRY
- TONE AND SWITCHING FREQUENCIES ADJUSTABLE BY EXTERNAL COMPONENTS
- INTEGRATED VOLTAGE AND CURRENT HYSTERESIS
- BRIDGE OUTPUT CONFIGURATION



Minidip SO-8J

ORDER CODES : L3240B (Minidip)
L3240D1 (SO-8)

DESCRIPTION

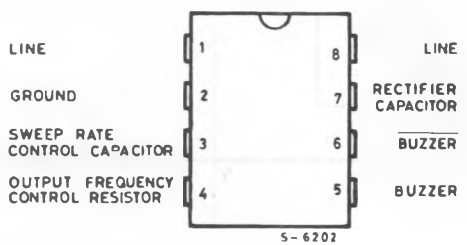
L3240 is a monolithic integrated circuit designed to replace the mechanical bell in telephone sets, in connection with an electro acoustical converter. The device can drive either directly a piezo ceramic converter (buzzer) or a small loudspeaker. In this case a transformer is needed. The two tone frequencies generated are switched by an internal oscillator in a fast sequence and made audible across output amplifiers in the transducer ; both tone frequencies and the switching frequency can be externally adjusted.

The supply voltage is obtained from the AC ring signal and the circuit is designed so that noise on the line or variations of the ringing signal cannot affect the correct operation of the devices.

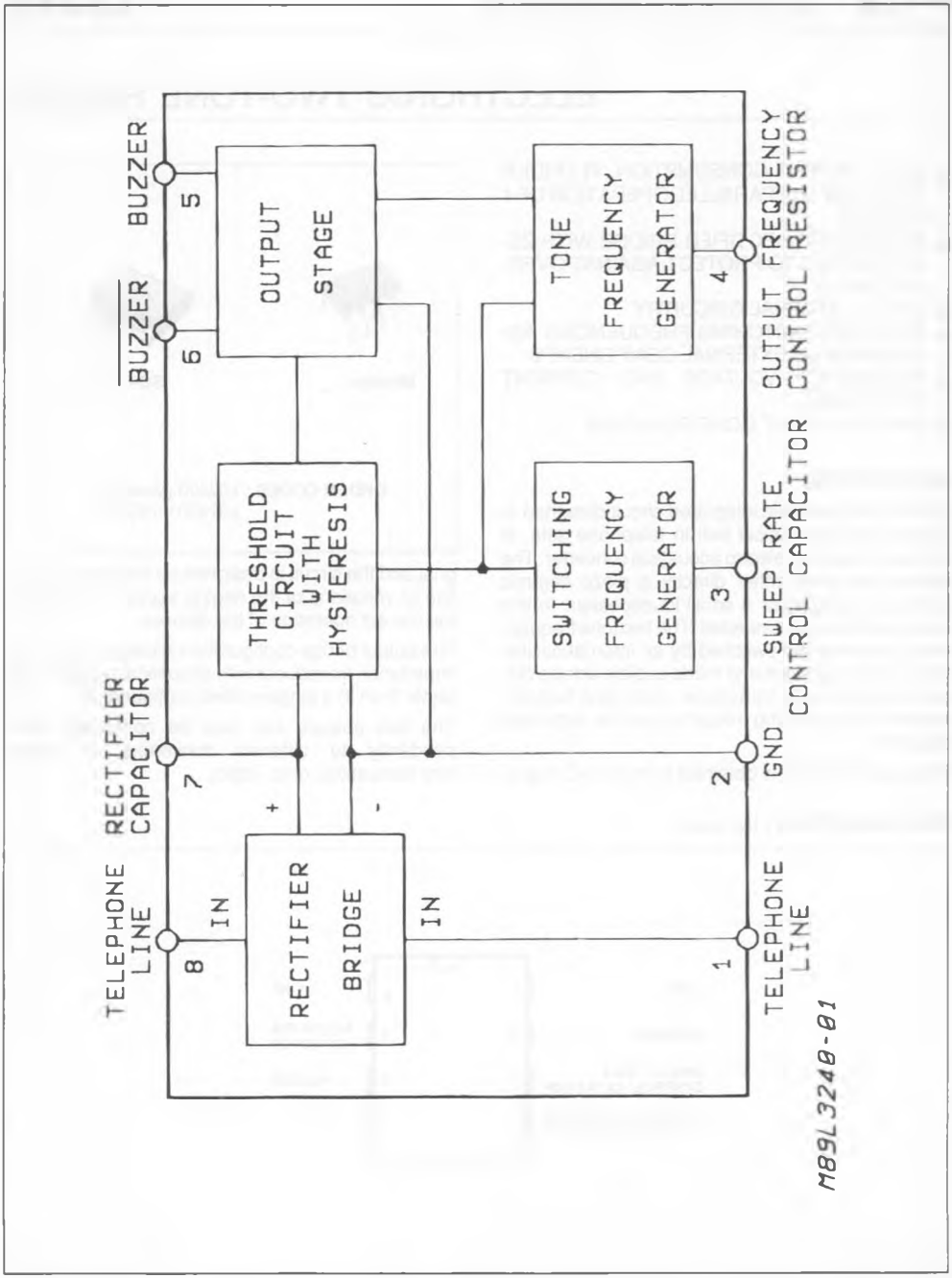
The output bridge configuration allows to use a high impedance transducer with acoustical results much better than in a single ended configuration.

The two outputs can also be connected independently to different converters or actuators (acoustical, opto, logic).

PIN CONNECTION (top view)



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{AB}	Calling Voltage (f = 50 Hz) Continuous	120	V_{rms}
V_{AB}	Calling Voltage (f = 50 Hz) 5s N/10s OFF	200	V_{rms}
DC	Supply Current	30	mA
T_{op}	Operating Temperature	– 20 to + 70	°C
T_{stg}	Storage and Junction Temperature	– 65 to + 150	°C

THERMAL DATA

$R_{th\ i\text{-}amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W

Figure 1 : Test Circuit.

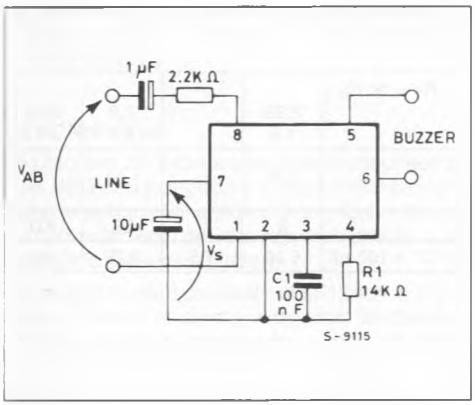


Figure 2 : Typical Application with Balanced Output.

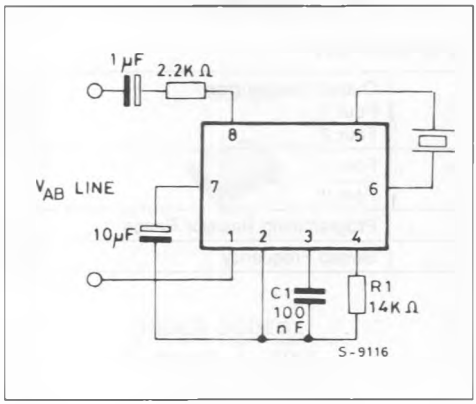


Figure 3 : Application Compatible with LS1240 (single ended output).

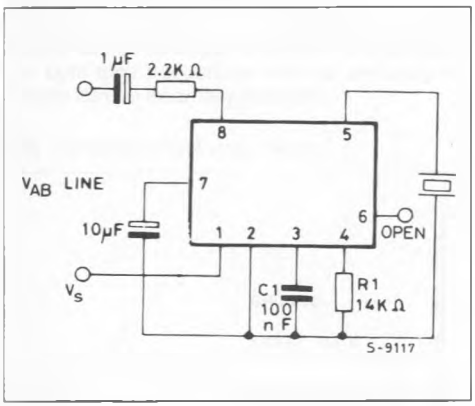
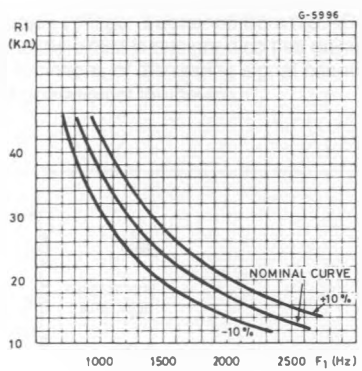


Figure 4 : F_1 Out vs. R_1.



$$R_1 \approx \frac{3.56 \times 10^4}{F_1\ (HZ)} \times \left(1 - 0.16 \times \ln \frac{F_1}{2543}\right) \qquad f_2 = 0.725\ f_1 \qquad f_{SWEEP} = \frac{750}{C1\ (nF)}$$

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C ; V_s = applied between pins 7-2 ; otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_s	Supply Voltage				26	V
I_B	Current Consumption Without Load (pins 8-1)	V_s = 16.5 to 29.5 V		1.5	1.8	mA
V_{ON}	Activation Voltage		12		13.5	V
V_{OFF}	Sustaining Voltage		7.8		9.3	V
R_D	Differential Resistance in OFF Condition (pins 8-1)		6.4			KΩ
V_{OUT}	Output Voltage Swing			V_s – 5		V
I_{OUT}	Short Circuit Current (pins 5-6)	V_s = 20 V		35		mA
V_s	Voltage Drop Between Pins 8-1 and Pins 7-2			3		V

AC OPERATION

	Output Frequencies Fout 1 Fout 2	V_s = 26 V R_1 = 14 KΩ V_s = 0 V V_s = 6 V	 2,29 1.6		 2,8 2.1	KHz
	$\frac{\text{Fout 1}}{\text{Fout 2}}$		1.33		1.43	
	Programming Resistor Range		8		56	KΩ
	Sweep Frequency	R_1 = 14 KΩ C1 = 100 nF	5.25	7,5	9.75	Hz