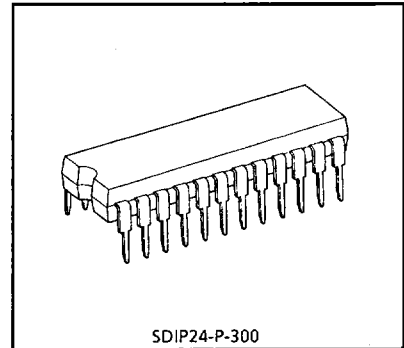


OTHER BIPOLAR ICs FOR TELEPHONE SET

SPEECH NETWORK FOR KEY TELEPHONE SYSTEM

FEATURES

- Possible to change 2 circuits of balancing network
- PAD function for inter call (about 10dB)
- Selectable 2 levels of receiving (about 6dB difference)
- Possible to drive ceramic or low impedance receiver.
- Few external components
- Small package (Shrink DIP24 pin)
- 5V supply voltage
- Operation voltage : 4.0~7.0V

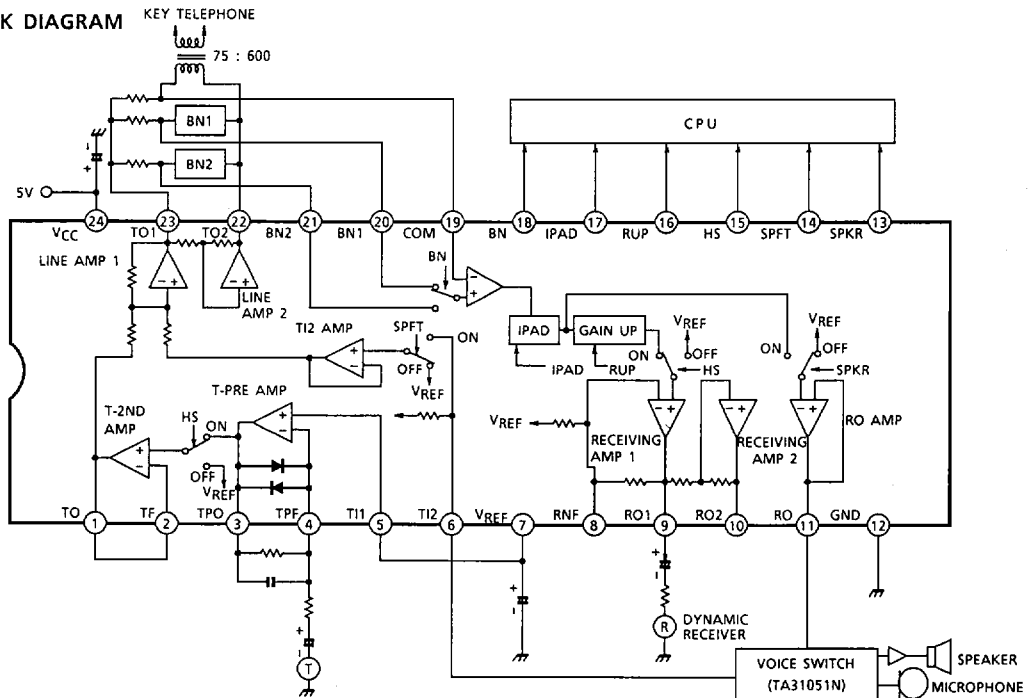


SDIP24-P-300

Weight : 1.2g (Typ.)

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BLOCK DIAGRAM



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OTHER BIPOLAR ICs FOR TELEPHONE SET

SWITCH CONTROL

PIN No.	PIN NAME	FUNCTION			H MODE	L MODE
13	SPKR	RO AMP Input Switching			ON	OFF
14	SPFT	TI2 AMP Input Switching			ON	OFF
15	HS	T-2ND AMP, RECEIVING AMP Input Switching			ON	OFF
16	RUP	RECEIVING AMP Receiving Volume Switching	HS Switching (pin 15)	H	Receiving Volume Regulation 0dB	Receiving Volume Regulation - 6dB
				L		
17	IPAD	Inter Call PAD Switching			OFF (PAD amount 0dB)	ON (PAD amount - 10dB)
18	BN	Balancing Network Switching			BN1 Receiving MUTE BN2	

SWITCH TERMINAL (pin 13, 14, 15, 16, 17)

Each terminal is the same circuit.

When the mode is "H", open or connect to V_{CC} .

Since the protective diode is connected between V_{CC} , avoid impressing the voltage over that of V_{CC} .

(The values in the figures are typical)

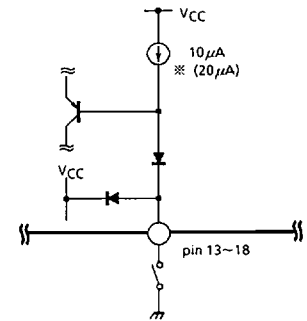
RECEIVER

As the receiver, (1) the ceramic type (2) the low-impedance type (dynamic type) are available.

(1) Ceramic type The receiver of equivalent capacity of about 55nF is assumed.
In case of the ceramic type, since the large voltage amplitude is generally required at driving, make the receiver function in BTL mode.

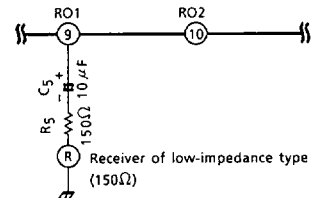
(2) Low-impedance type The receiver of equivalent resistance of about 150Ω is assumed.
For the connection, refer to the example of application circuit.

INTERNAL EQUIVALENT CIRCUIT OF SWITCH TERMINAL



※ Contents in { } is current to IPAD and BN terminals (pin 17 and 18).

EXAMPLE OF CONNECTION CIRCUIT OF LOW-IMPEDANCE TYPE RECEIVER



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OTHER BIPOLAR ICs FOR TELEPHONE SET

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	V _{CC}	8	V
Power Dissipation	P _D	1300	mW
Operating Temperature	T _{opr}	-20~75	°C
Storage Temperature	T _{stg}	-55~150	°C

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, V_{CC} = 5V, f_{IN} = 1kHz, Ta = 25°C)

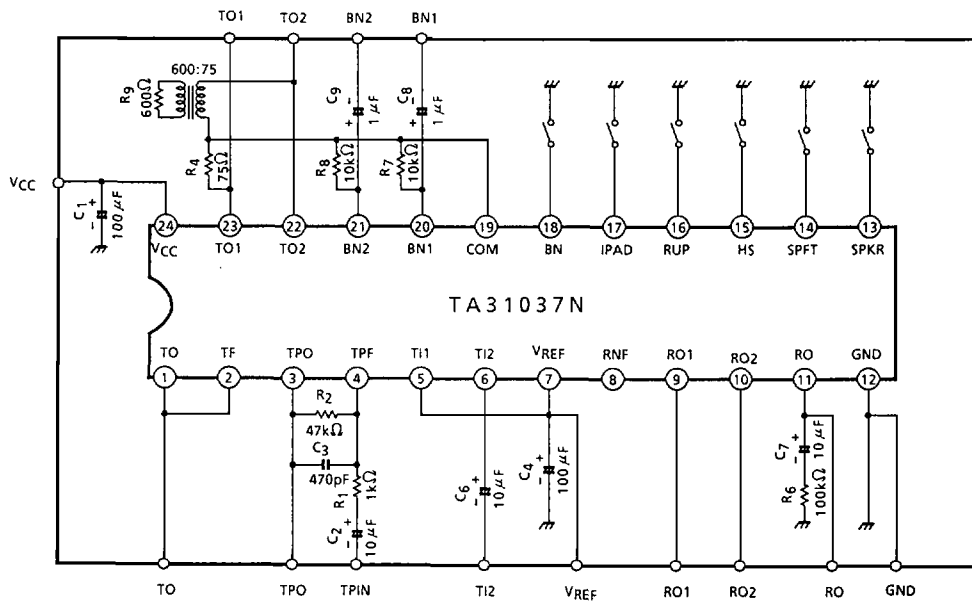
CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I _{CCQ}	1	All switch level is "L".	4.7	9.8	14.3	mA
Reference Voltage	V _{REF}	1	All switch level is "L".	1.95	2.14	2.35	V
Transmit Gain 1	G _{T1}	2	V _{IN} = -47dBV, TP _{IN} Input	37.5	38.8	40.1	dB
Transmit Gain 2	G _{T2}	3	V _{IN} = -17dBV, TI2 Input	10.3	11.6	12.9	dB
Transmit Maximum Output Level	V _{TOM}	3	TI2 Input, THD = 3%	5.0	8.7	—	dBV
Transmit Total Harmonic Distortion	THD _T	2	V _{IN} = -58dBV, TP _{IN} Input	—	0.12	1.5	%
Transmit Output Noise Level	V _{NOT}	8	TO1 - TO2 Output	—	—	-60	dBV
TI2 Input Impedance	RTI2	—	—	—	15	—	kΩ
Receiving Gain 1	G _{R1}	4	V _{IN} = -22dBV, BN1 input, RO1 output	10.2	11.7	13.2	dB
Receiving Gain 2	G _{R2}	5	V _{IN} = -22dBV, BN2 Input, RO1 Output	9.7	11.2	12.7	dB
Receiving Gain 3	G _{R3}	6	V _{IN} = -22dBV, BN1 Input, RO1 - RO2 Output	16.2	17.7	19.2	dB
Receiving Gain 4	G _{R4}	7	V _{IN} = -22dBV, BN1 Input, RO Output	4.5	6.0	7.5	dB
Inter Call PAD Amount	G _{IP}	4	V _{IN} = -22dBV, BN1 input, RO1 Output	-11.7	-10.2	-8.7	dB
Receiving Volume UP Amount	G _{RUP}	4	V _{IN} = -22dBV, BN1 Input, RO1 Output	4.8	6.1	7.4	dB
Receiving Maximum Output Level 1	V _{ROM1}	4	BN1 Input, RO1 Output, THD = 3%	0.5	2.9	—	dBV
Receiving Maximum Output Level 2	V _{ROM2}	7	BN1 Input, RO Output, THD = 3%	-10.5	-8.9	—	dBV
Receiving Maximum Output Level 3	V _{ROM3}	6	BN1 Input, RO1 - RO2 Output, THD = 3%	6.0	8.8	—	dBV
Receiving Maximum Input Level 1	V _{RI1}	4	IP = 0dB, RO1 Output, THD = 3%	-17.5	-15.7	—	dBV
Receiving Maximum Input Level 2	V _{RI2}	4	IP = -10dB, RO1 Output, THD = 3%	-6.0	-4.2	—	dBV

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OTHER BIPOLAR ICs FOR TELEPHONE SET

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Receiving Total Harmonic Distortion 1	THDR1	4	$V_{IN} = -33\text{dBV}$, BN1 Input, RO1 Output	—	0.3	1.4	%
Receiving Total Harmonic Distortion 2	THDR2	6	$V_{IN} = -33\text{dBV}$, BN1 Input, RO1-RO2 Output	—	0.1	0.9	%
Receiving Output Noise Level	V_{NOR}	8	RO1-RO2 Output	—	—	-65	dBV
SW. Low Level Input Voltage	V_{IL}	—	Pin 13~Pin 18 Input Voltage	—	—	0.2	V

TEST CIRCUIT

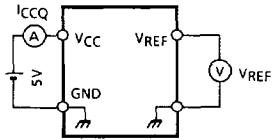


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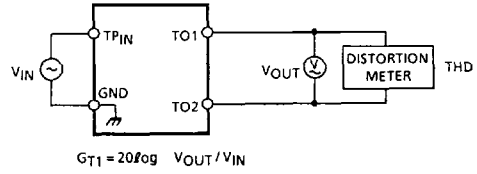
OTHER BIPOLAR ICs FOR TELEPHONE SET

TEST CIRCUIT

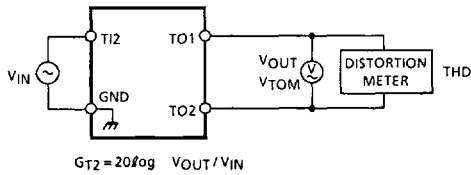
(1) I_{CCQ} , V_{REF}



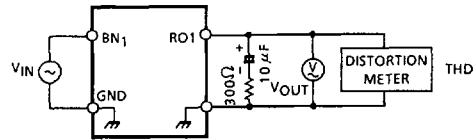
(2) G_{T1} , THD_T



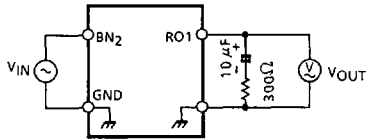
(3) G_{T2} , V_{TOM}



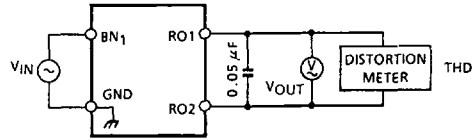
(4) G_{R1} , G_{IP} , G_{RUP} , V_{ROM1} , V_{RIM1} , V_{RIM2} , THD_{R1}



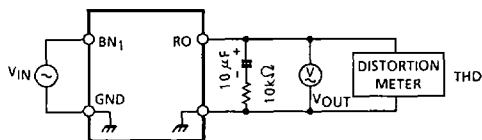
(5) G_{R2}



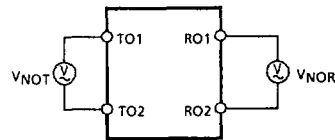
(6) G_{R3} , V_{ROM3} , THD_{R2}



(7) G_{R4} , V_{ROM2}

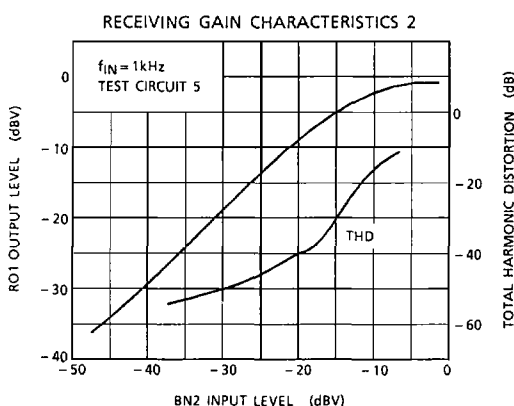
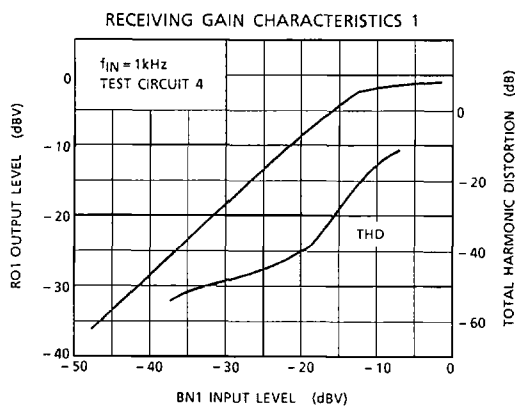
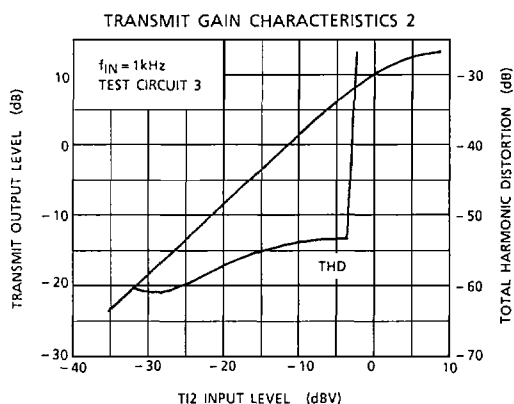
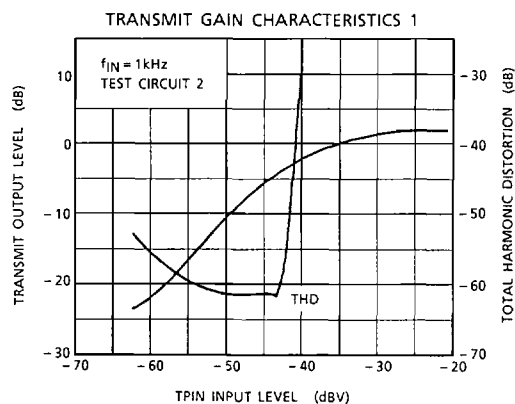
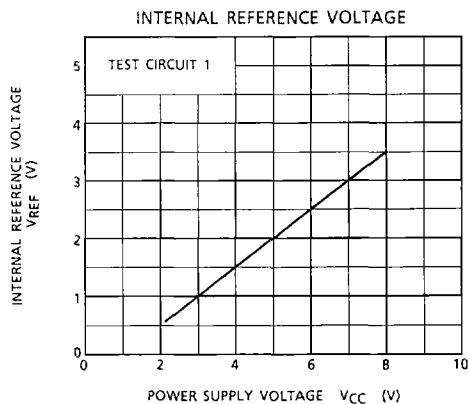
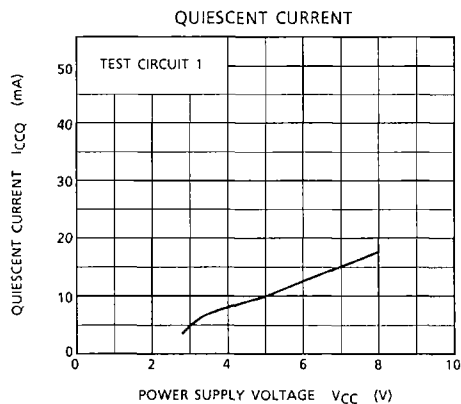


(8) V_{NOT} , V_{NOR}



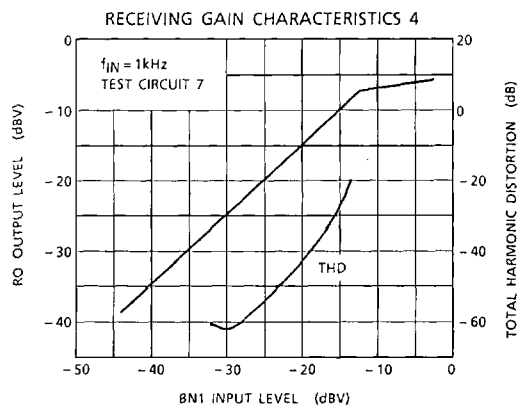
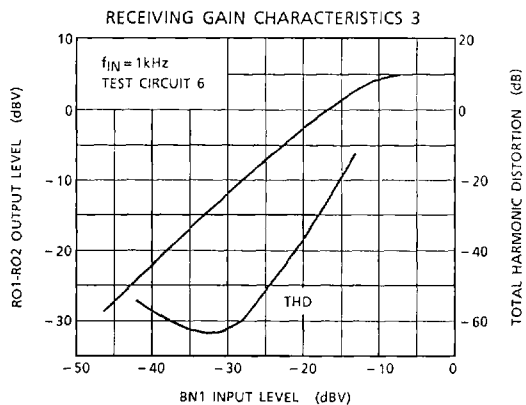
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OTHER BIPOLAR ICs FOR TELEPHONE SET



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OTHER BIPOLAR ICs FOR TELEPHONE SET

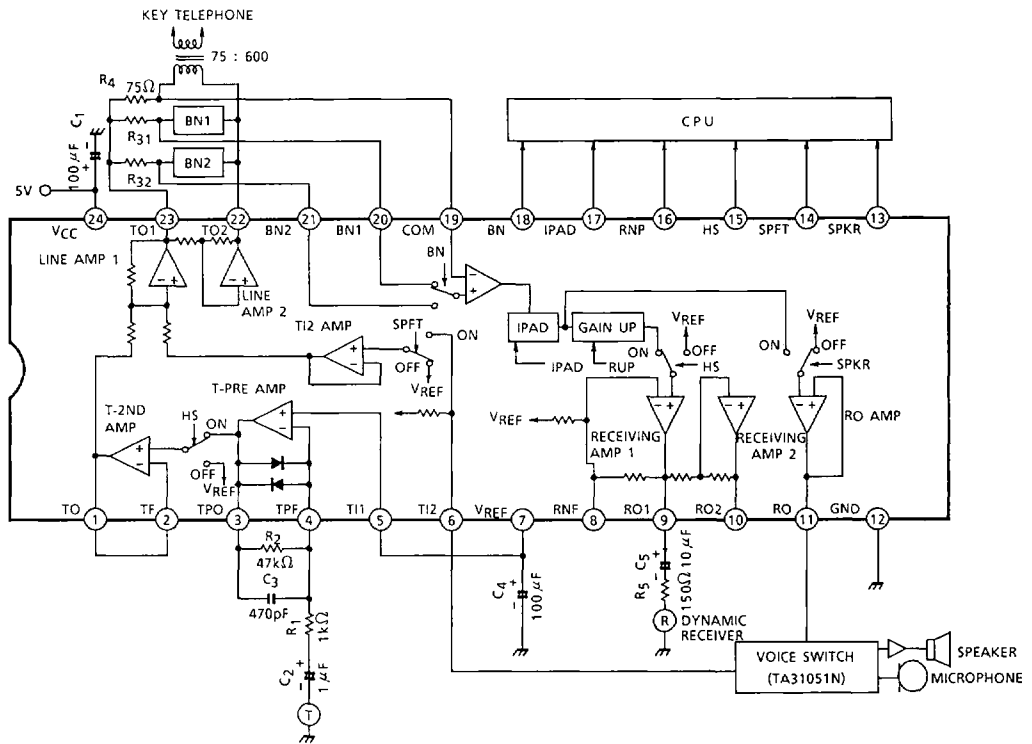


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OTHER BIPOLAR ICs FOR TELEPHONE SET

APPLICATION CIRCUIT



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