

AN6151K

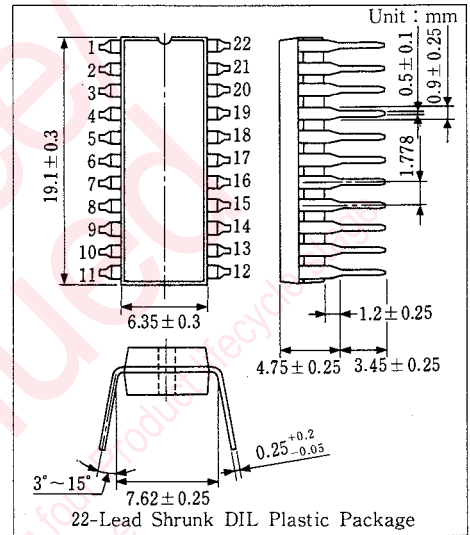
Telephone Set Communication Circuit

Outline

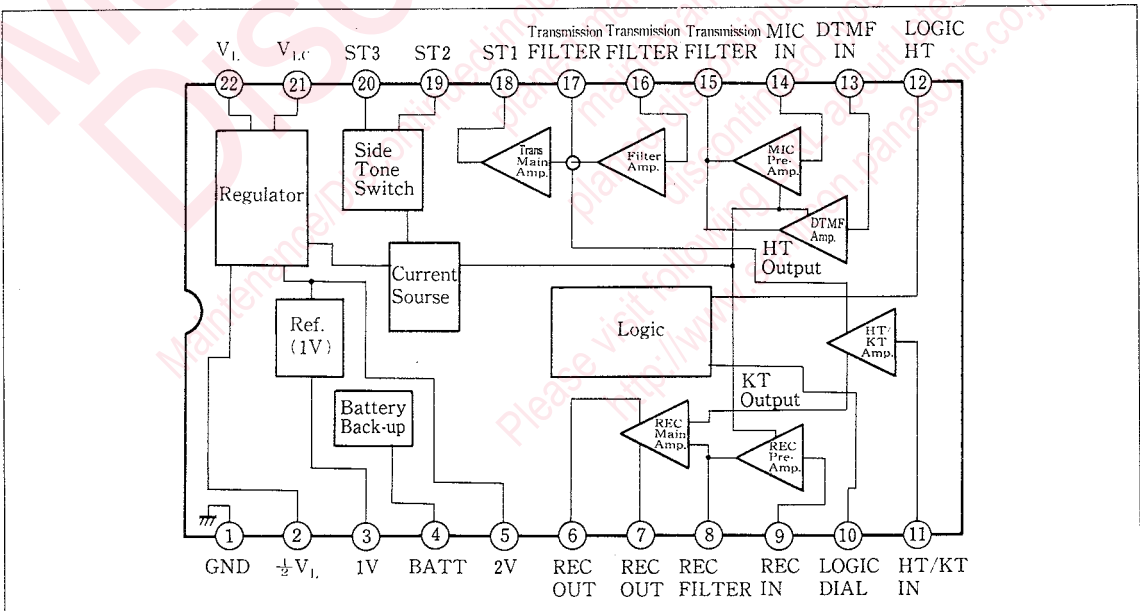
The AN6151K is an integrated circuit designed for telephone set channel. It has all the functions which are necessary to apply a sound signal onto the telephone line and performance similar to that of an ordinary telephone set. It is also applicable for use in both Japan and other countries.

Features

- Wide operating voltage range : 3 ~ 10V
- Built-in amplifiers for "Hold Tone", "Dial Tone", "DTMF"
- Amplifier output switchable
- Balance network circuit switchable depending on line current
- Each amplifier gain automatically changeable depending on line current
- Compact 22-lead shrunk dual-in-line plastic package



Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

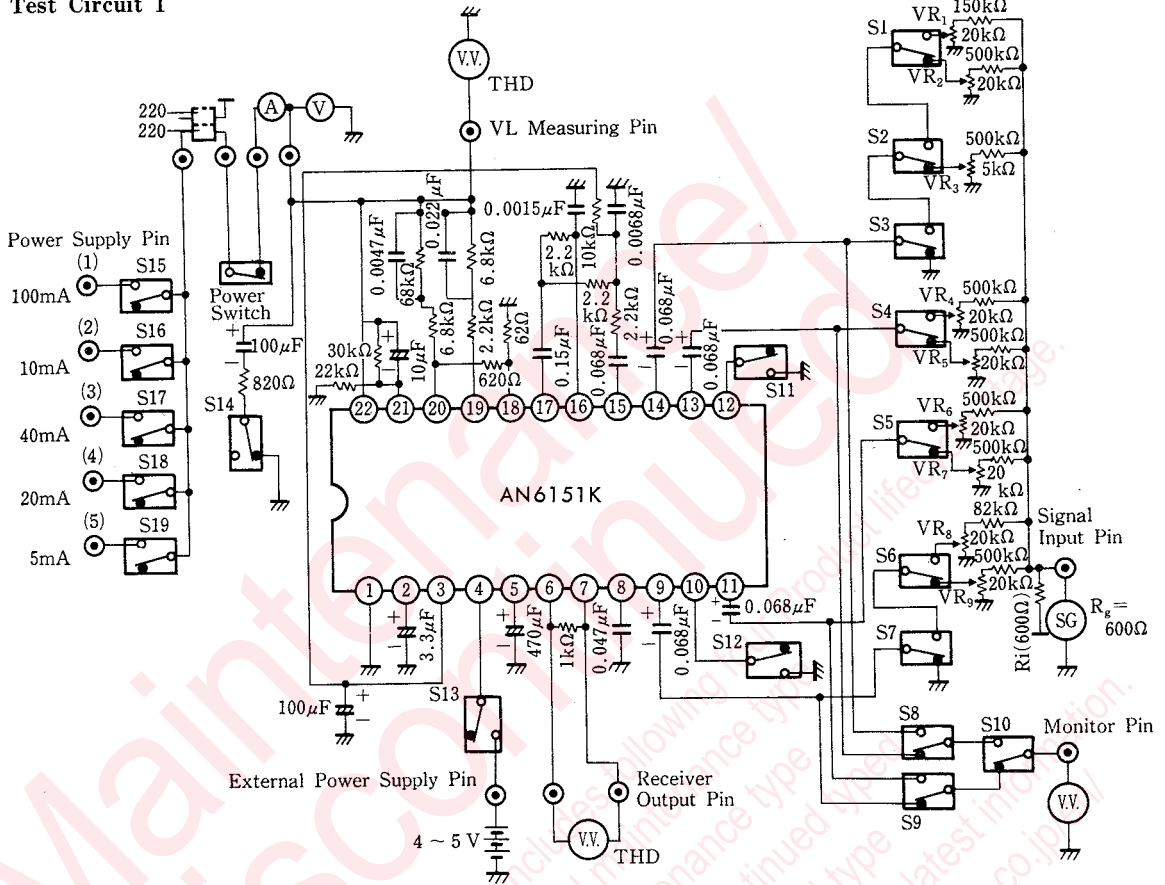
Item	Symbol	Rating	Unit
Line Voltage	V _L	12	V
Line Current	I _L	120	mA
Power Dissipation	P _D	1440	mW
Operating Ambient Temperature (Ta=60°C)	T _{opr}	-30 ~ +75	°C
Storage Temperature	T _{stg}	-55 ~ +150	°C

■ Electrical Characteristics (I_L=40mA, f_{reg}=1kHz, Ta=25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Receiver System							
Receiver Gain	G _{V-R} *1	1	v _{i(REC)} = -47dBV	38.5	41	43.5	dB
Receiver Output Distortion	THD _R *1	1	v _{i(REC)} = -47dBV		1.5	5	%
Max. Receiver Level	V _{O-R} *1	1	THD=5%	-5.2	-1.2		dBV
Auto Pad	ΔAP _R *1	1	ΔI _L =100mA-40mA, v _{i(REC)} = -47dBV	-6	-3	-1.5	dB
KEY IN TONE gain	G _{V-KT} *1	1	v _{i(KEY)} = -42dBV (D·M : ON)	15	18	21	dB
KEY IN TONE Output Distortion	THD _{KT} *1		v _{i(KEY)} = -42dBV (D·M : ON)		1		%
Transmission System (when LIN Open)							
Transmission Gain	G _{VKT} *2	1	v _{i(MIC)} = -37dBV	27.5	29.5	31.5	dB
Transmission Output Distortion	THD _{KT} *2	1	v _{i(MIC)} = -37dBV		1	5	%
Max. Transmission Level	U _{OT} *2	1	THD=5%	-2.2	2.8		dBV
Transmission Auto Pad	ΔAP _T *2	1	ΔI _L =100mA-40mA, v _{i(MIC)} = -37dBV	-6.5	-3.5		dB
HOLD TONE Gain	G _{V-HT} *2	1	v _{i(HOLD)} = -32dBV (H : ON)	21	24	27	dB
HOLD TONE Distortion	THD _{HT} *2	1	v _{i(HOLD)} = -32dBV (H : ON)		1	10	%
DTMF Gain	G _{V-DT} *2	1	v _{i(TUCH)} = -37dBV (D·MON)	30.5	32.5	34.5	dB
DTMF TUCH TONE Output Distortion	THD _{DT} *2	1	v _{i(TUCH)} = -37dBV (D·MON)		1	7	%
DTMF Auto Pad	ΔAP _{DT} *2	1	ΔI _L =100mA-40mA, v _{i(REC)} = -36dBV	-6.5	-4.5	-2.5	dB
BATTERY ON	U _{BT} *2	1	I _L =5mA, v _{i(REC)} = -47dBV	38			dB
Power Supply							
DC Impedance (1)	Z _{DC-1} *2		I _L =20mA		150		Ω
DC Impedance (2)	Z _{DC-2} *2		I _L =100mA		80		Ω
AC Impedance (1)	Z _{AC-1} *2		I _L =40mA		2		kΩ
AC Impedance (2)	Z _{AC-2} *2		I _L =100mA		1.5		kΩ

*1 : Measure between Pin ⑥ and ⑦. *2 : Measure between Pin ② and ①.

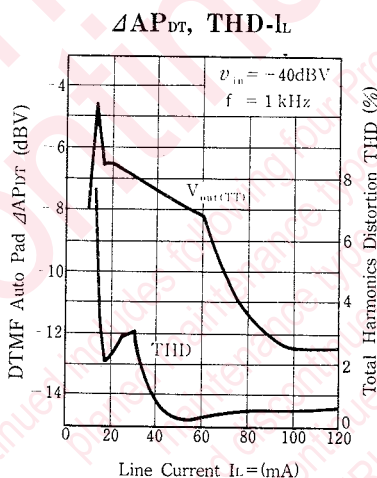
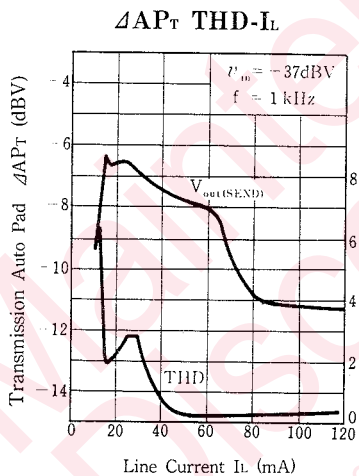
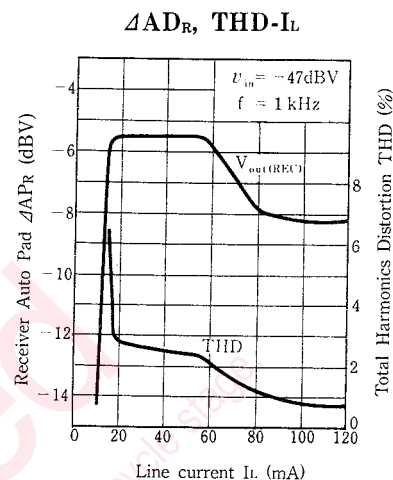
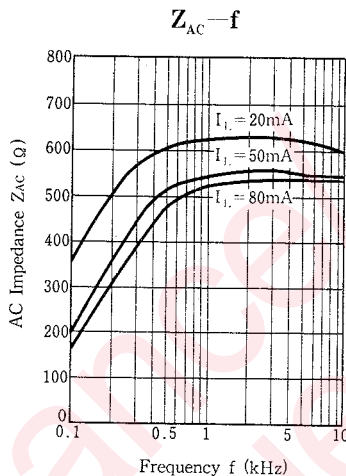
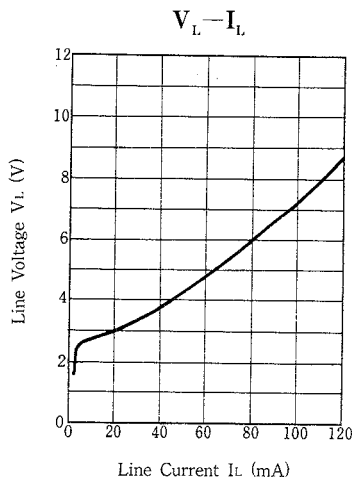
Test Circuit 1



● Measuring Method

Item	Symbol	Pin No.	Relay Switch No.																		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Receiver Gain	G_{V-R}	6 ~ 7	—	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—	—	—
Receiver Output Distortion	THD_R	6 ~ 7	—	—	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—	—
Receive Level	V_{O-R}	6 ~ 7	—	—	—	—	—	—	○	○	—	—	—	—	—	—	—	—	—	—	—
Receiver Auto Pad	ΔA_{PR}	6 ~ 7	—	—	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—	—
KEY IN TONE Gain	G_{V-KT}	6 ~ 7	—	—	—	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—
Transmission Gain	G_{V-T}	22 ~ 1	—	○	○	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Transmission Output Distortion	THD_T	22 ~ 1	—	○	○	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Max. Transmission Level	V_{O-T}	22 ~ 1	○	○	○	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Transmission Auto Pad	ΔA_{PT}	22 ~ 1	—	○	○	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
HOLD TONE Output Gain	G_{V-HT}	22 ~ 1	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—	—	—	—
HOLD TONE Output Distortion	THD_{HT}	22 ~ 1	—	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—	—	—
DTMF Output Gain	G_{VDT}	22 ~ 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DTMF Output Distortion	THD_{DT}	22 ~ 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DTMF Auto Pad	ΔA_{DT}	28 ~ 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
BATTERY ON	V_{OBT}	6 ~ 7	—	—	—	—	—	—	—	○	—	—	—	—	—	—	—	—	—	—	○

○ : SW ON, — : SW OFF

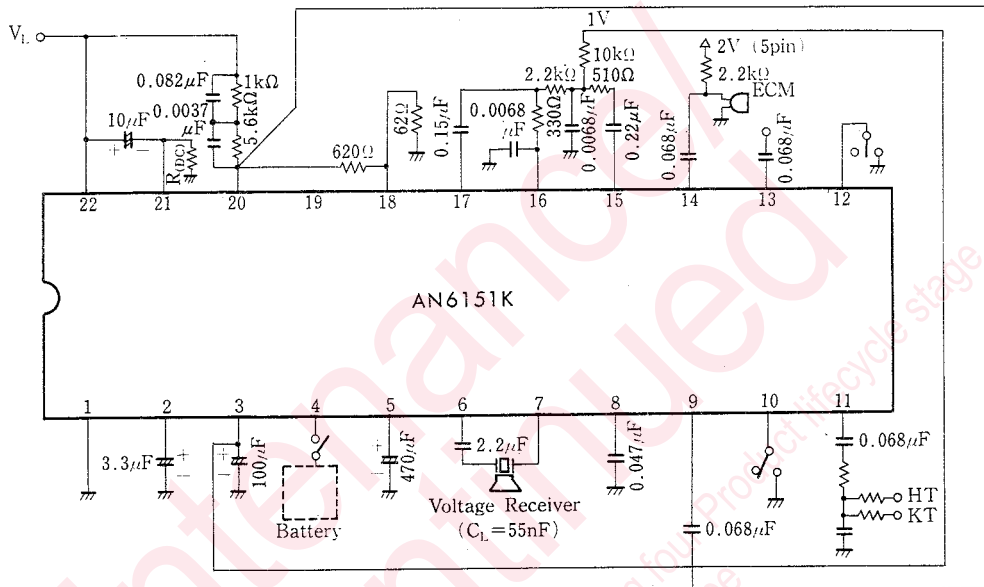


■ Pin

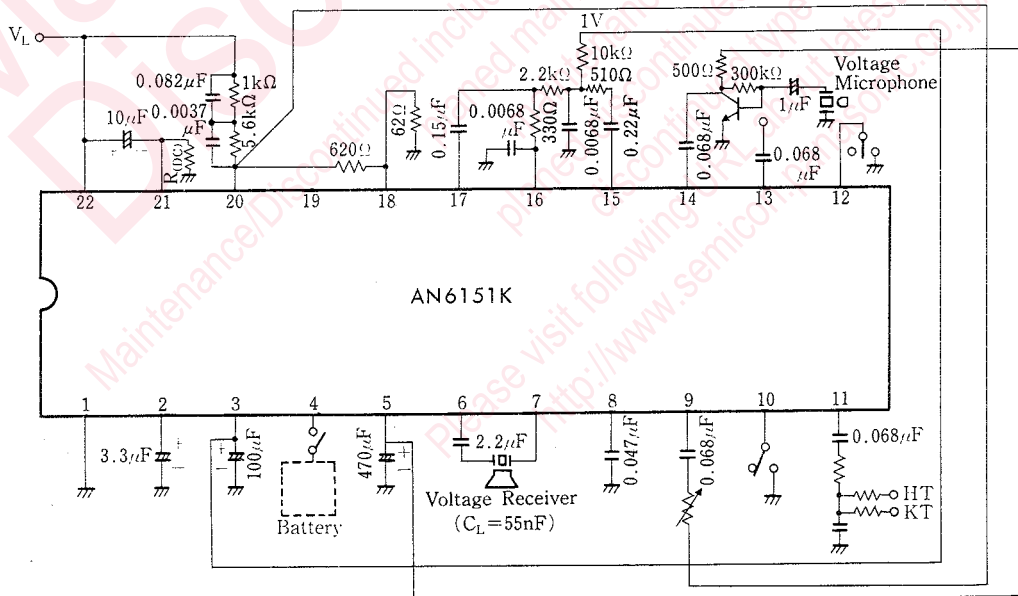
Pin No.	Pin Name	Pin No.	Pin Name
1	GND	12	Logic (Hold Tone)
2	1/2 Line Voltage	13	DTMF Input
3	1V Reference Voltage	14	Transmission MIC Input
4	Battery-Back up	15	Transmission MIC Filter (1)
5	2V Reference Voltage	16	Transmission MIC Filter (2)
6	Receiver Output (1)	17	Transmission MIC Filter (3)
7	Receiver Output (2)	18	Side Tone-SW (1)
8	Receive Filter	19	Side Tone-SW (2)
9	Receiver Input	20	Side Tone-SW (3)
10	Logic (Dial Tone)	21	Line Filter
11	Hold Tone/KEY in Tone Input	22	Line

■ Application Circuits

● When ECM is used in the Transmission MIC



● When ceramic is used in the Transmission MIC



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