

AN6150

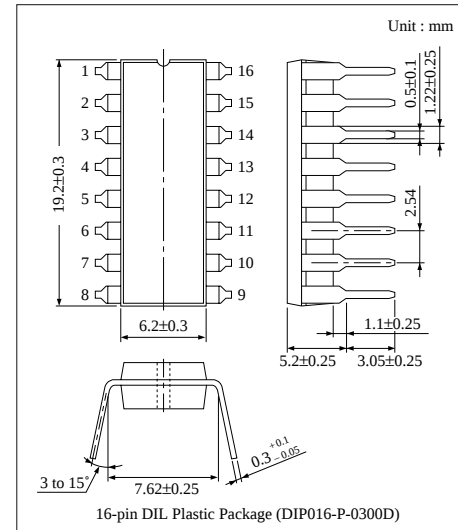
Speech Network Circuit

Overview

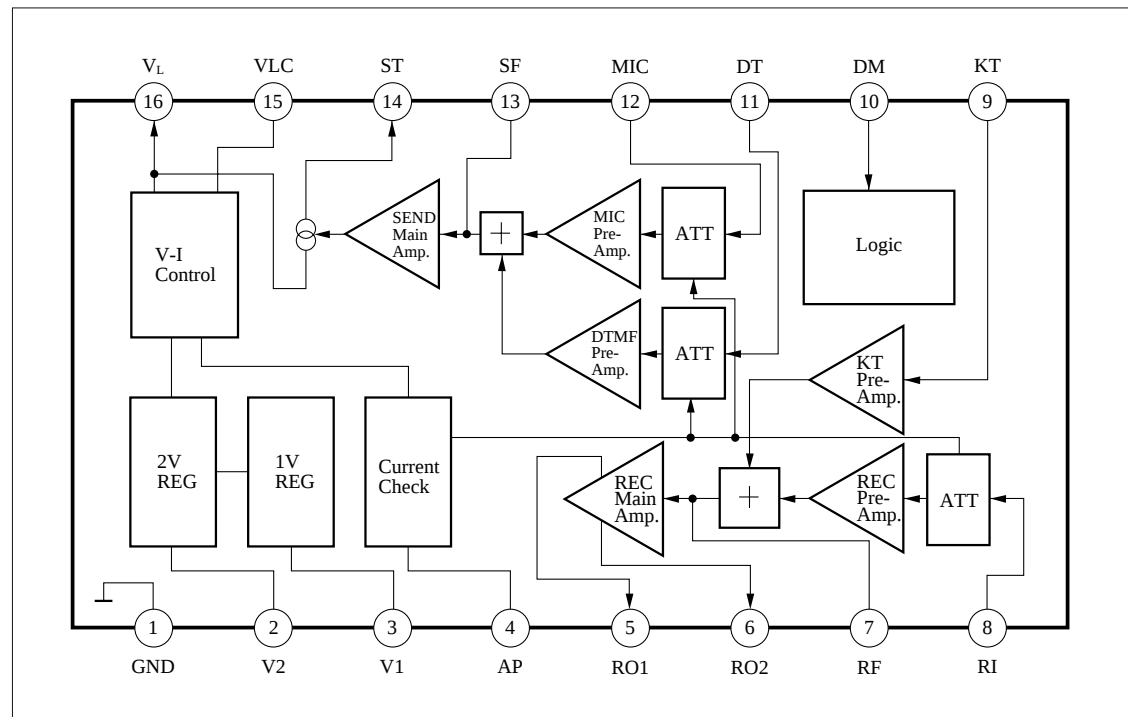
The AN6150 is an integrated circuit designed for telephone speech network. It has the basic function necessary to apply a sound signal onto the line and is applicable for various types of handsets.

Features

- Wide operating voltage range : 3 to 11.5V
- Built-in amplifiers for "Dial Tone" and "DTMF"
- Amplifier output switchable.
- Each amplifier gain automatically changeable depending on line current.
- Various types of microphones and receivers are available.



Block Diagram



■ Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	GND	9	KEY In TONE input
2	2V REG.	10	Dial mute SW
3	1V REG.	11	DTMF input
4	ATT control	12	MIC input
5	REC output	13	Transmission filter
6	REC output	14	SIDE tone
7	REC filter	15	LIN filter
8	REC input	16	LIN

■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Line voltage	V _L	14.4	V
Line current	I _L	135	mA
Power dissipation (Ta=60°C)	P _D	1380	mW
Operating ambient temperature	T _{opr}	−30 to + 75	°C
Storage temperature	T _{stg}	−55 to + 150	°C

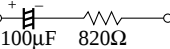
■ Electrical Characteristics (I_L=40mA, f_{in}=1kHz, Ta=25°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Receive System						
Receiver gain *1	G _{V-R}	V _i =−45dBm	−7	−4.5	−2	dBm
Receiver output distortion *1	THD _{-R}	V _i =−45dBm	—	1	5	%
Max. receiver level *1	V _{O-R}	THD=5%	0	4	—	dBm
Receiver auto pad *1	ΔAP _{-R}	V _i =−45dBm, DI _L =100 to 20mA	−5.5	−3	−0.5	dB
KEY IN TONE gain *1	G _{V-KT}	V _i =−40dBm, Dial Mute SW− ON	−25	−22.5	−20	dBm
Transmission System						
Transmission gain *2	G _{V-T}	V _i =−45dBm	−6	−4	−2	dBm
Transmission output distortion *2	THD _{-T}	V _i =−45dBm	—	1	5	%
Max. transmission level *2	V _{O-T}	THD=5%	−2.2	2.8	—	dBm
Transmission auto pad *2	ΔAP _{-T}	V _i =−45dBm, DI _L =100 to 20mA	−6.5	−3.5	−1	dB
DTMF gain *2	G _{V-DT}	V _i =−35dBm, Dial Mute SW− ON	−8	−6	−4	dBm
DTMF output distortion *2	THD _{-DT}	V _i =−35dBm, Dial Mute SW− ON	—	1	5	%
DTMF auto pad *2	ΔAP _{-DT}	V _i =−35dBm, DI _L =100 to 20mA	−6	−4	−2	dB
Power Supply						
DC line voltage (1)	V _{L-1}	I _L =12mA	2.4	3	3.6	V
DC line voltage (2)	V _{L-2}	I _L =127mA	5.4	7.8	10.2	V
Internal supply voltage	V _{CC}	I _L =12mA	1.7	2.0	2.3	V

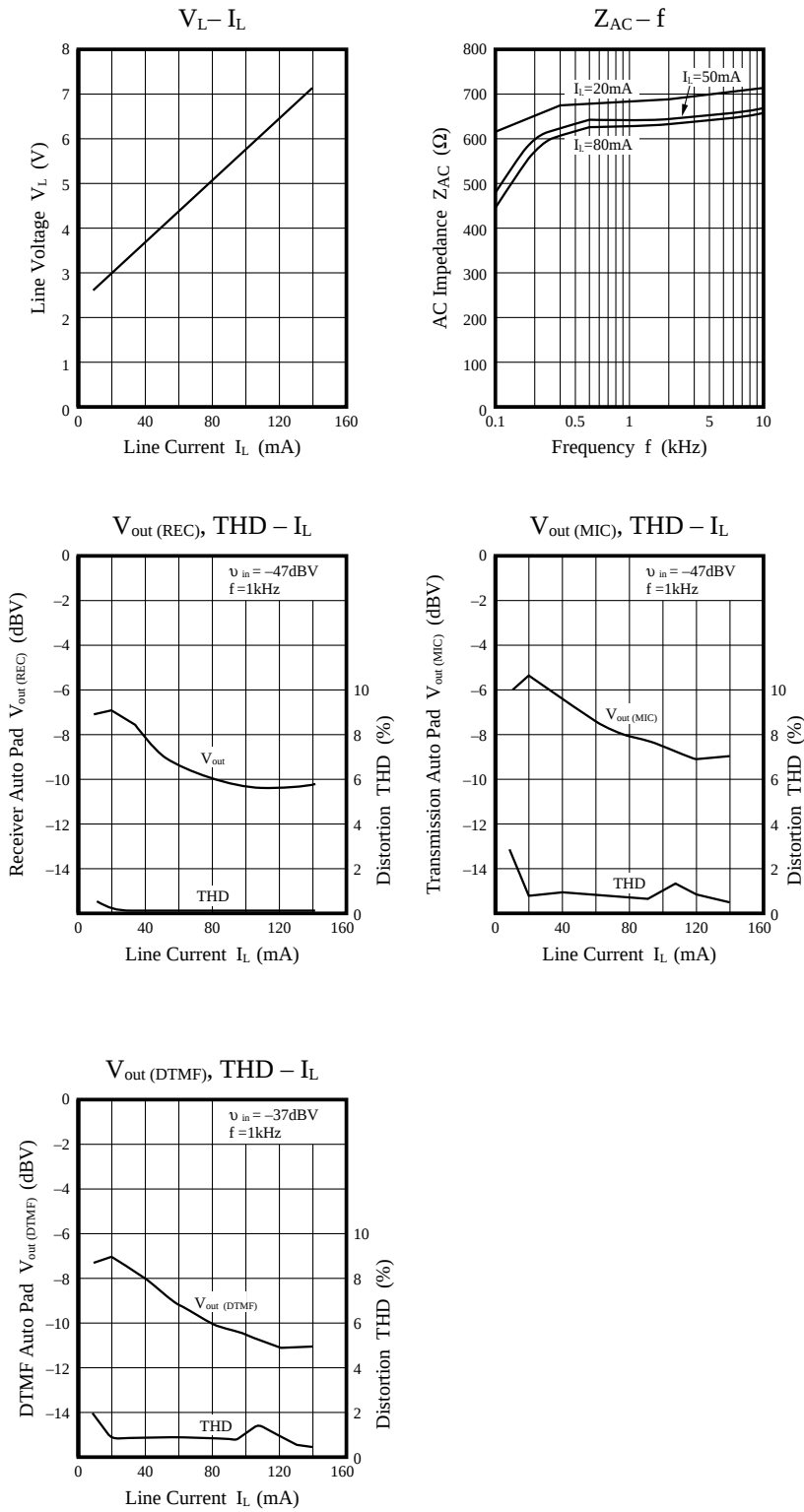
*1 Connect the 1kΩ load between Pins5 and 6 for measurement.
*2 Connect the 600Ω receiver impedance between Pins16 and 1 and measure it at the receiver side.

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

Parameter	Symbol	Condition	min	typ	max	Unit
Dial Mute input						
Dial mute OFF	V _{DM-H}		0.8	—	V _{CC}	V
Dial mute ON	V _{DM-L}		—	—	0.3	V
Input current (1)	I _{DM-H}	V _{DM} =V _{CC}	−2.0	0.1	2.0	μA
Input current (2)	I _{DM-L}	V _{DM} =0V	−2.0	− 0.2	− 0.02	μA
Receiver System						
K. T. output distortion *1, 4	THD _{-KT}	V _i =−42dBV, I _L =40mA	—	1	—	%
Mute						
K.T. mute *1, 4	M _{-KT}	V _i =−15dBV, Dial mute SW− OFF	40	—	—	dB
MIC mute *2, 4	M _{-T}	V _i =−40dBV, Dial mute SW− ON	60	—	—	dB
DTMF mute *2, 4	M _{-DT}	V _i =−28dBV, Dial mute SW− OFF	40	—	—	dB
Power Supply						
AC impedance (1)*3, 4	Z _{AC-1}	I _L =30mA, f _{in} =1kHz	400	670	800	Ω
AC impedance (2)*3, 4	Z _{AC-2}	I _L =90mA, f _{in} =1kHz	400	620	800	Ω

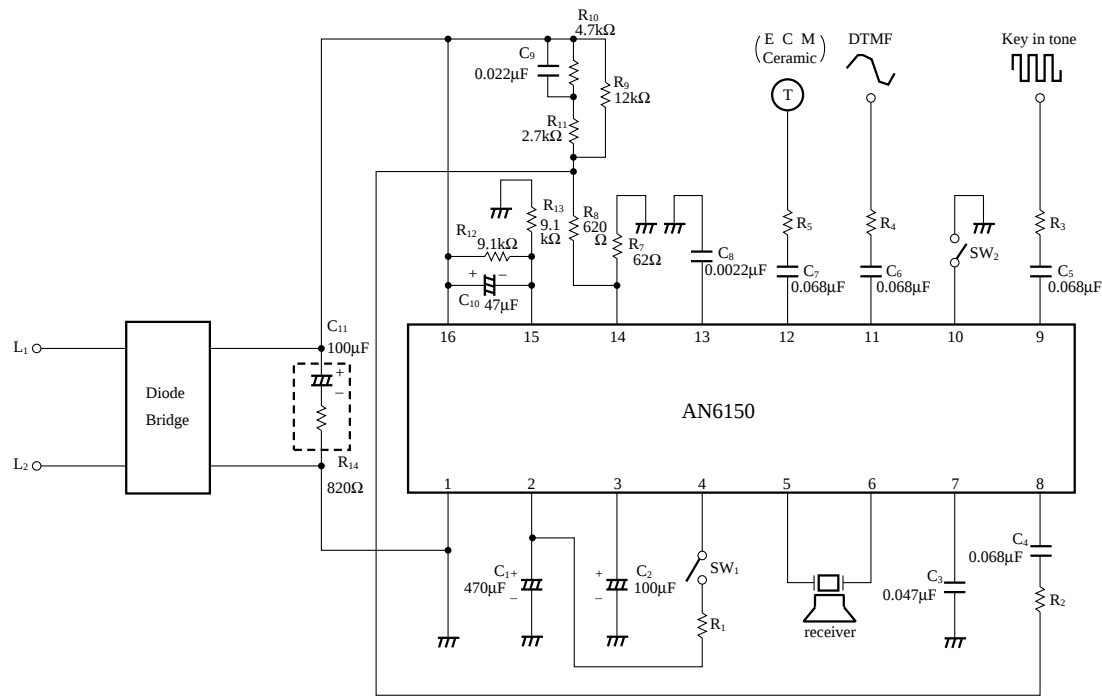
*1 Connect the 1kΩ load between Pins5 and 6 for measurement
*2 Connect the 600Ω receiver impedance between Pins16 and 1 measure it at the receiver side.
*3 Connect  between Pins16 and 1 for measurement.
*4 Characteristics above are of reference valuse for design but not guaranteed values.

■ Characteristics Curve



■ Application Circuits

- In case of using ceramic receiver



- In case of using low impedance receiver

