

KA8501A

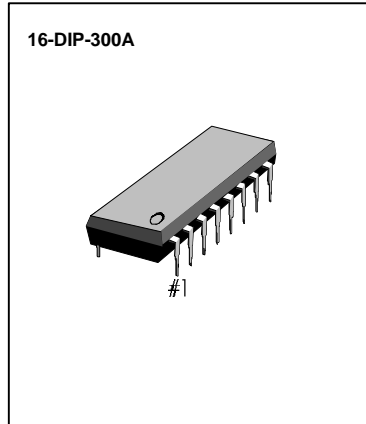
SPEECH NETWORK WITH DIALER INTERFACE

INTRODUCTION

The KA8501A is a telephone speech network integrated circuit which includes transmit amp, receive amp, DTMF amp, voltage regulator, line equalizer, voltage comparator. It handles the voice signal, performing the 2/4 wires interface and changing the gain on both sending and receiving amplifiers to compensate the line current. The KA8501A can work in fixed gain mode.

FEATURES

- Adjusts sending and receiving attenuation length
- Regulated voltage for dialer
- Linear interface for DTMF
- Suitable for ceramic transducers
- Mute function



ORDERING INFORMATION

Device	Package	Operating Temperature
KA8501A	16-DIP-300A	- 45°C ~ + 70°C

PIN CONFIGURATION

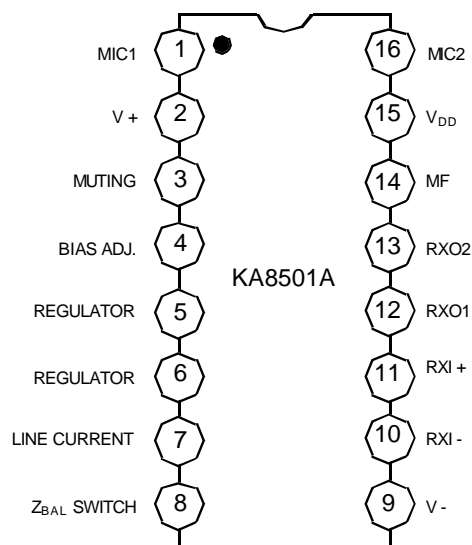


Fig. 1

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Line Voltage (3msec max)	V_L	22	V
Forward Line Current	I_{LF}	150	mA
Reverse Line Current	I_{LR}	-150	mA
Power Dissipation ($T_a = 70^\circ\text{C}$)	P_D	1	W
Operating Temperature	T_{OPR}	- 45 ~ + 70	$^\circ\text{C}$
Storage Temperature	T_{STG}	- 65 ~ + 150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit	
Line Voltage	V_L	$T_a = 25^\circ\text{C}$	$I_L = 12\text{mA}$	3.9	-	4.7	V
			$I_L = 20\text{mA}$	-	-	5.5	
			$I_L = 80\text{mA}$	-	-	12.2	
Common Mode Rejection Ratio	CMRR	$f = 1\text{KHz}, I_L = 12 \sim 80\text{mA}$	50	-	-	dB	
Line Matching Impedance	Z_L	$V_{RI} = 0.3\text{V}, I_L = 12 \sim 80\text{mA}$ $f = 1\text{KHz}$	500	600	700	Ω	
T_X Gain	$G_{V(TX)}$	$T_a = 25^\circ\text{C}$ $f = 1\text{KHz}$ $V_{MI} = 2\text{mV}$	$I_L = 25\text{mA}$	48	49	50	dB
			$I_L = 52\text{mA}$	44	45	46	
			$I_L = 25 \sim 52\text{mA}$	48	49	50	
T_X Gain Flatness	$\Delta G_{V(TX)}$	$V_{MI} = 2\text{mV}, f_{ref} = 1\text{KHz}$ $I_L = 12 \sim 80\text{mA}$	-	-	± 1	dB	
T_X Distortion	THD _{TX}	$f = 1\text{KHz}$ $I_L = 16 \sim 80\text{mA}$	$V_{SO} = 1\text{V}$	-	-	2	%
			$V_{SO} = 1.3\text{V}$	-	-	10	
T_X Noise	$V_{NO(TX)}$	$V_{MI} = 0\text{V}, I_L = 40\text{mA}$	-	-	-70	dBmp	
Side Tone	$G_{V(ST)}$	$T_a = 25^\circ\text{C}, f = 1\text{KHz}$ $I_L = 25 \sim 52\text{mA}$	-	-	36	dB	
MIC Input Impedance	$Z_i(MIC)$	$V_{MI} = 2\text{mV}, I_L = 12 \sim 80\text{mA}$	40	-	-	K Ω	
T_X Loss in MF Operation	$G_{V(LLOSS)}$	$V_{MI} = 2\text{mV}$	$I_L = 25\text{mA}$	- 30	-	-	dB
			$I_L = 52\text{mA}$	- 30	-	-	
R_X Gain	$G_{V(RX)}$	$T_a = 25^\circ\text{C}$ $V_{RI} = 0.3\text{V}$ $f = 1\text{KHz}$	$I_L = 25\text{mA}$	7	8	9	dB
			$I_L = 52\text{mA}$	2.5	3.5	4.5	
			$I_L = 25 \sim 52\text{mA}$	7	8	9	

ELECTRICAL CHARACTERISTICS (Continued)

Characteristic		Symbol	Test Conditions	Min	Typ	Max	Unit		
R _X Gain Flatness		$\Delta G_{V(RX)}$	V _{RI} = 0.3V, f _{ref} = 1KHz I _L = 12 ~ 80mA	-	-	± 1	dB		
R _X Distortion		THD _{RX}	f = 1KHz	I _L = 12mA	V _{RO} = 1.6V	-	-	2	%
					V _{RO} = 1.9V	-	-	10	
			I _L = 50mA	V _{RO} = 1.8V	-	-	2		
				V _{RO} = 2.1V	-	-	10		
R _X Noise		V _{NO(RX)}	V _{RI} = 0V, I _L = 12 ~ 80mA	-	-	100	μV		
R _X Output Impedance		R _{O(RX)}	V _{RO} = 50mV, I _L = 40mA	-	-	100	Ω		
MF Supply Voltage		V _{DD(MF)}	I _L = 12 ~ 80mA	2.4	2.5	-	V		
MF Supply Current		Stand by	I _L = 12 ~ 80mA	0.5	-	-	mA		
		Operation						2	
MF Amplifier Gain		G _{V(MF)}	I _L = 12 ~ 80mA f _{MF} = 1KHz V _{MF} = 80mV	15	-	17	dB		
DC Input Voltage Level (pin 14)		V _{I(MF)}	V _{MF} = 80mV	-	0.3V _{DD}	-	V		
Input Impedance (pin 14)		Z _{I(MF)}	V _{MF} = 80mV	40	-	-	KΩ		
Distortion		THD _{MF}	V _{MF} = 110mV I _L = 12 ~ 80mA	-	-	2	%		
Starting Delay Time		t _{D(ST)}	I _L = 12 ~ 80mA	-	-	5	mS		
Muting Threshold Voltage (pin 3)		V _{TH(MUTE)}		-	-	1	V		
				1.6	-	-			
Muting Current		Stand by	I _L = 12 ~ 80mA	-	-	-10	μA		
		Operation						I _{DD(MUTE)}	I _L = 12 ~ 80mA

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APPLICATION CIRCUIT

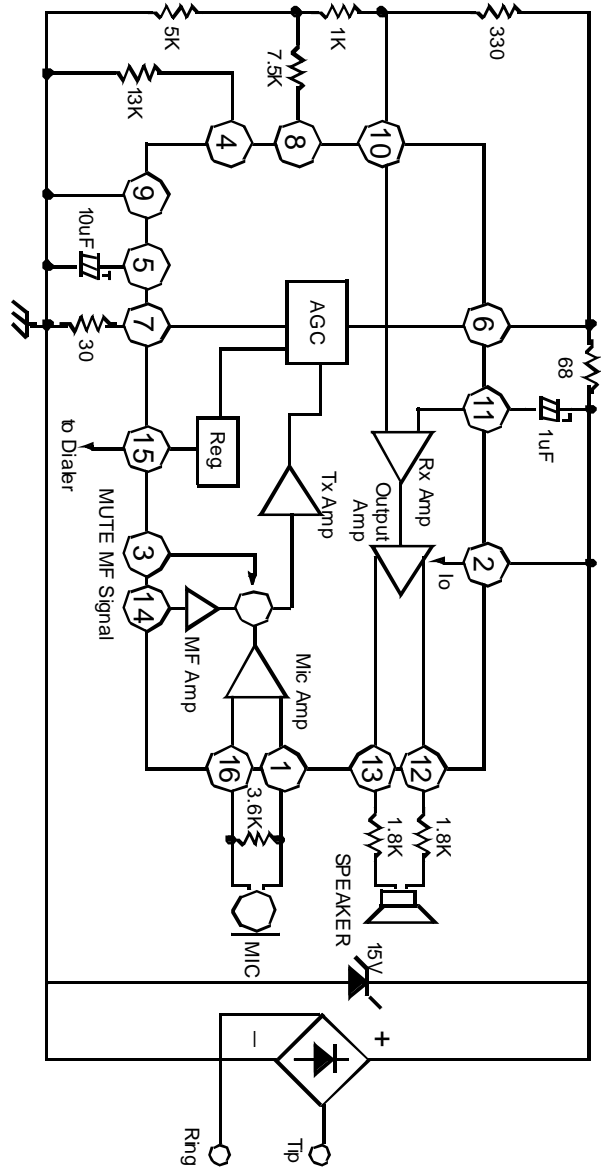


Fig. 2