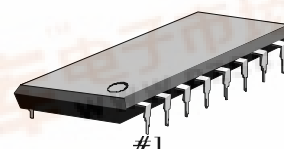


SPEECH NETWORK WITH DIALER INTERFACE**S1T8501****INTRODUCTION**

The S1T8501 is a speech network integrated circuit which includes the following components: transmit amp, receive amp, DTMF amp, voltage regulator, line equalizer, and 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 S1T8501 can work in fixed gain mode.

16-DIP-300A

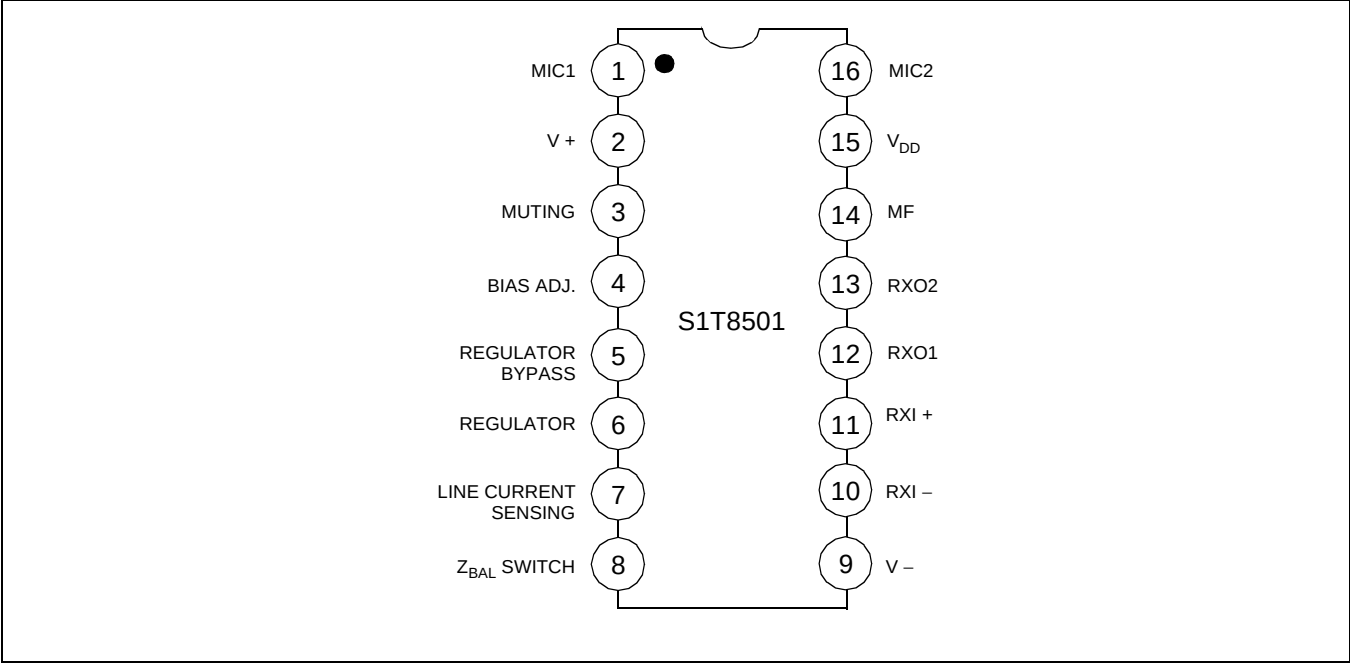
**FEATURES**

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

ORDERING INFORMATION

Device	Package	Operating Temperature
S1T8501X01-D0B0	16-DIP-300A	-45°C — +70°C

PIN CONFIGURATION



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 (Ta = 70°C)	P _D	1	W
Operating Temperature	T _{OPR}	- 45 — + 70	°C
Storage Temperature	T _{STG}	- 65 — + 150	°C

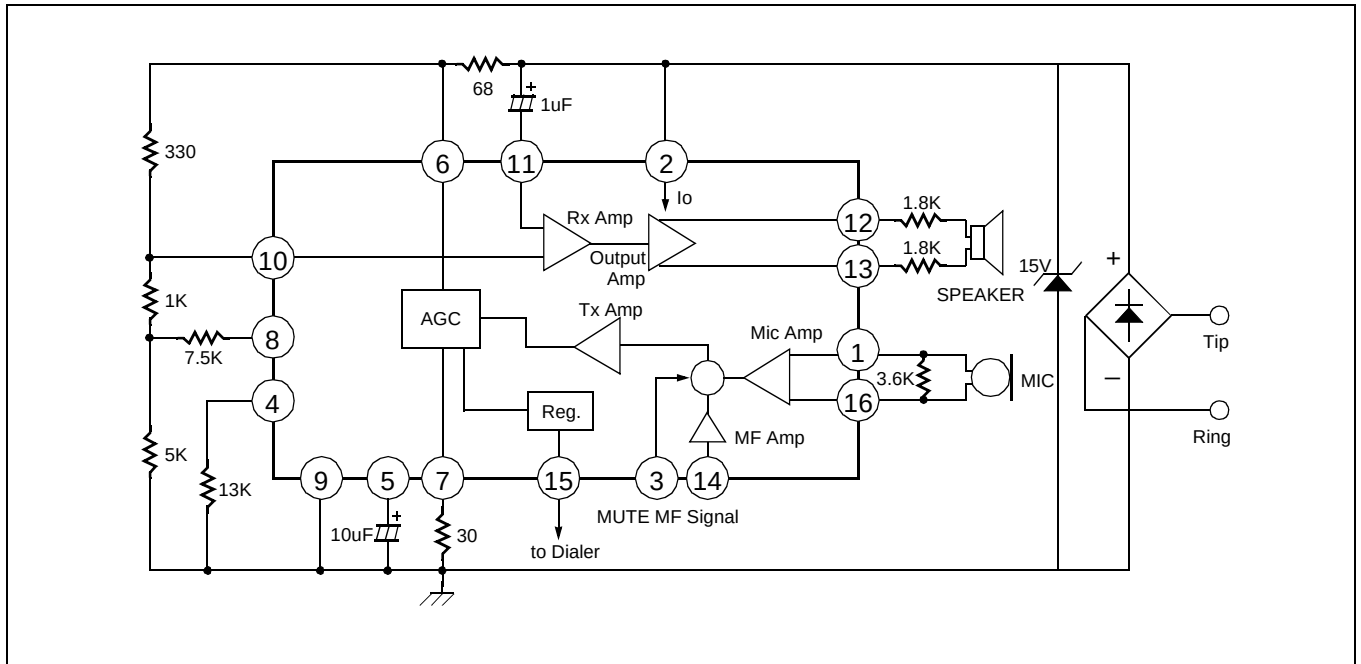
ELECTRICAL CHARACTERISTICS (TA = 25°C)

Characteristic		Symbol	Test Conditions		Min.	Typ.	Max.	Unit	
Line Voltage		V _L	Ta = 25°C	I _L = 12mA	3.9	—	4.7	V	
				I _L = 20mA	—	—	5.5		
				I _L = 80mA	—	—	12.2		
Common Mode Rejection Ratio		CMRR	f = 1kHz, I _L = 12 to 80mA		50	—	—	dB	
Line Matching Impedance		Z _L	V _{RI} = 0.3V, I _L = 12 to 80mA f = 1kHz		500	600	700	Ω	
TX Gain		G _{V (TX)}	Ta = 25°C f = 1kHz VMI = 2mV	I _L = 25mA	48	49	50	dB	
				I _L = 52mA	44	45	46		
			I _L = 25 to 52mA		48	49	50		
TX Gain Flatness		Δ G _{V (TX)}	V _{MI} = 2mV, f _{ref} = 1kHz, I _L = 12 to 80mA		—	—	± 1	dB	
TX Distortion		THD _{TX}	f = 1kHz I _L = 16 to 80mA	V _{SO} = 1V	—	—	2	%	
				V _{SO} = 1.3V	—	—	10		
TX Noise		V _{NO (TX)}	V _{MI} = 0V, I _L = 40mA		—	—	−70	dBm	
Side Tone		G _{V (ST)}	Ta = 25°C, f= 1kHz, I _L = 25 to 52mA		—	—	36	dB	
MIC Input Impedance		Z _{I (MIC)}	V _{MI} = 2mV, I _L = 12 to 80mA		40	—	—	kΩ	
Tx Loss in MF Operation		G _{V (LOSS)}	V _{MI} =2mV	I _L = 25mA	−30	—	—	dB	
				I _L = 52mA	−30	—	—		
RX Gain		G _{V (RX)}	Ta = 25°C V _{RI} = 0.3V f = 1kHz	I _L = 25mA	7	8	9	dB	
				I _L = 52mA	2.5	3.5	4.5		
			I _L = 25 to 52mA		7	8	9		
RX Gain Flatness		ΔG _{V (RX)}	V _{RI} = 0.3V, f _{ref} = 1kHz, I _L = 12 to 80mA		—	—	± 1	dB	
RX Distortion		THDRX	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	
RX Noise		V _{NO (RX)}	V _{RI} = 0V, I _L = 12 to 80mA		—	—	100	μV	
RX Output Impedance		R _{O (RX)}	V _{RO} = 50mV, I _L = 40mA		—	—	100	Ω	
MF Supply Voltage		V _{DD (MF)}	I _L = 12 to 80mA		2.4	2.5	—	V	
MF Supply Current	Standby	I _{SB (MF)}	I _L = 12 to 80mA		0.5	—	—	mA	
	Operation	I _{DD (MF)}			2	—	—		
MF Amplifier Gain		G _{V (MF)}	I _L = 12 to 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 to 80mA		—	—	2	%	

ELECTRICAL CHARACTERISTICS (TA = 25°C) (Continued)

Characteristic		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Starting Delay Time		$t_{D(ST)}$	$I_L = 12 \text{ to } 80\text{mA}$	–	–	5	mS
Muting Threshold Voltage (pin 3)		$V_{TH(MUTE)}$		–	–	1	V
				1.6	–	–	
Muting Current	Standby	$I_{SB(MUTE)}$	$I_L = 12 \text{ to } 80\text{mA}$	–	–	– 10	μA
	Operation	$I_{DD(MUTE)}$	$I_L = 12 \text{ to } 80\text{mA}$	–	–	+ 10	

APPLICATION CIRCUIT



NOTES