

Speech Network

GENERAL DESCRIPTION

The XR-T5995 Speech Network is a monolithic integrated circuit specifically designed for implementing a low cost telephone set circuit. It is designed to use an electrodynamic microphone and electromagnetic receiver to replace a carbon microphone and telephone network hybrid.

FEATURES

- Interfaces with Inexpensive Condenser Electret Microphone, Electromagnetic Receiver
- Low Voltage CMOS Process to Operate from 20 mA to 100 mA Loop Current
- Minimum External Component Counts
- Uses Inexpensive and Non-critical External Components
- A DTMF Input for Tone Dialing
- External Mute Capability

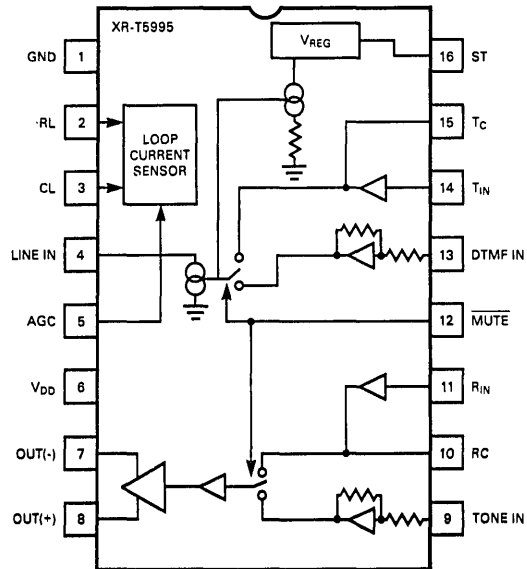
APPLICATIONS

- Low Cost Telephone Set
- Trimline Phone
- Line Monitor

ABSOLUTE MAXIMUM RATINGS

DC Supply Voltage V_{DD}	15 V
Operating Temperature	0°C to 70°C
Power Dissipation	1100 mW
Storage Temperature	-55°C to 125°C

FUNCTIONAL BLOCK DIAGRAM



ORDERING INFORMATION

Part Number	Package	Operating Temperature
XR-T5995CP	Plastic	0°C to 70°C
XR-T5995CN	Ceramic	0°C to 70°C

SYSTEM DESCRIPTION

The XR-T5995 Speech Network contains all the necessary circuits to perform hybrid operation. (On board microphone, receiver amplifier and driver, external muting for tone dialing or pulse dialing.) A DTMF is provided to interface to Touch Tone dialing.

XR-T5995

ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETERS	MIN.	TYP.	MAX.	UNIT	CONDITIONS
V _L	Operating Voltage	2.7		9	V	I = 20 – 100 mA
I _L	Operating Current	15		100	mA	
GT	Transmitter Gain	39.5	43.5	47.5	dB	V _{IN} = 3 mV, f = 1 KHz
DT	Transmit Distortion		2.5	6	%	V _L = 1.2 V _{p/p} , f = 1 KHz
NT	Transmit Noise Level		-76		dB	V _M = 0
O _T	Transmit Output		2.3		V _{p/p}	
GR	Receiver Gain	-14.8	-10.8	-6.8	dB	V _L = 100 mV, f = 1 KHz
D _R	Receive Distortion		2.7	6	%	V _R = .3 V _{p/p} , f = 1 KHz
N _R	Receive Noise Level		-78		dB	V _L = 0 V
O _R	Receiver Output Level			.6	V _{p/p}	
Z _{NET}	Network Impedance	350		750	Ω	V _L = .5 V _{p/p} , f = 1 KHz
ST	Side Tone	5	8		dB	
GDT	DTMF Gain	10	14	18	dB	V _{DT} = .03 V, f = 1 KHz
GAT	Audible Tone Gain	-7	-3	+1	dB	
Z _T	Transmit Input Impedance		12		KΩ	
Z _R	Receive Input Impedance		100		Ω	

PIN AND FUNCTION DESCRIPTIONS

Pin	Number	
GND	1	
Most negative supply terminal.		
RL, CL	2,3	
Current sense input, allows loop compensation for receiving or transmitting amplifiers.		
LINE IN	4	
To hold DC current and AC input impedance matching seen on the phone line.		
AGC	5	
Automatic gain control unit to set transmit and receive amplifier gain and attenuation on different line loop currents.		
VDD	6	
Most positive regulated supply terminal.		
OUT (-), OUT (+)		
Differential output driver, used to drive a speaker or an electromagnetic receiver.		
TONE IN	9	
External pacifier tone input, to provide audio feedback to the user that a key has been depressed in dial pulse mode.		
RC, RIN	10,11	
Input, output of receiving amplifier.		
MUTE	12	
External mute input is provided to mute the line receive amp and to insert the tone to the receiver.		
DTMF IN	13	
This input is used with a Touch Tone dialer to insert the DTMF signal to the line.		
TIN, TC	14,15	
Microphone input, output to transmitting amplifier.		
ST	16	
Sidetone compensation input.		

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