



LOW VOLTAGE TELEPHONE SPEECH CIRCUIT

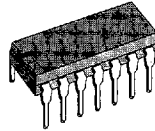
ADVANCE DATA

- OPERATION DOWN TO 1.3 V/5 mA
- DTMF & BEEP TONE INPUTS
- EXTERNAL MUTING FOR EARPHONE AND MICROPHONE
- MUTE TURNS ON BEEP TONE & DTMF INPUTS AND TURNS OFF EARPHONE & MICROPHONE
- SUITABLE FOR DYNAMIC OR PIEZO EARPHONES AND PIEZO, DYNAMIC OR ELECTRET MICROPHONES

DESCRIPTION

The L3280 is a brand new low voltage speech circuit designed to replace hybrid circuits in telephone sets. It is designed for sets that may be operated in parallel. It features both DTMF input and Beep tone input ; ALC on send and receive and muting input.

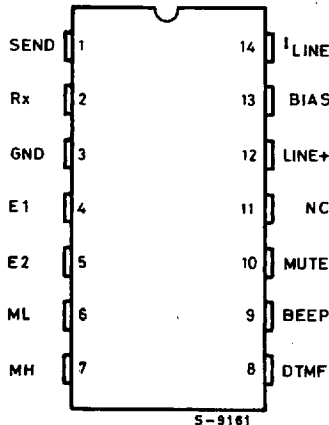
Various DC - characteristics can be programmed at pin 14 replacing testing resistor (43Ω) with proper network value.



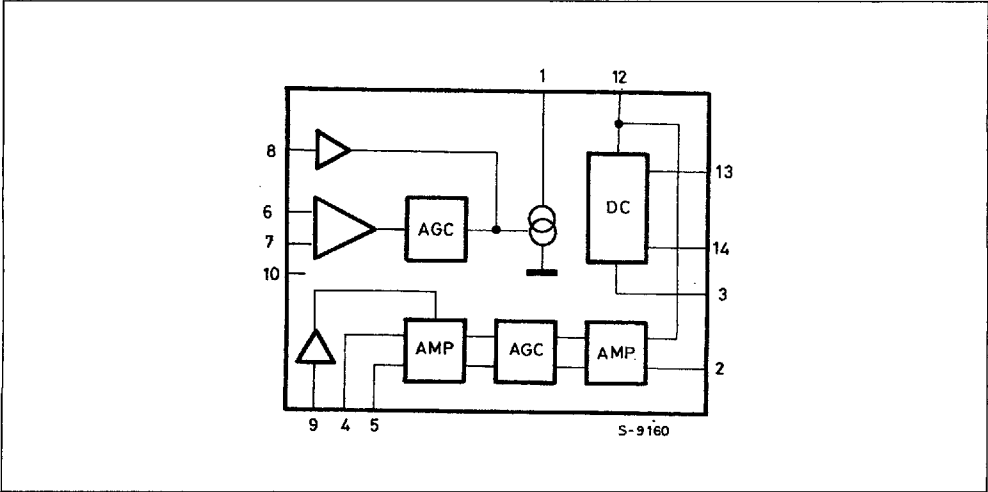
DIP14 (0.25)

ORDERING NUMBER : L3280AB

PIN CONNECTION (top view)



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_L	Line Voltage (3 ms pulse)	20	V
I_L	Line Current	150	mA
P_{tot}	Total Power Dissipation, $T_{amb} = 70\text{ }^{\circ}\text{C}$	1	W
T_{op}	Operating Temperature	- 20 to 55	$^{\circ}\text{C}$
T_j	Junction Temperature	- 65 to 150	$^{\circ}\text{C}$

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	80	$^{\circ}\text{C/W}$

Figure 1 : Test Circuits.

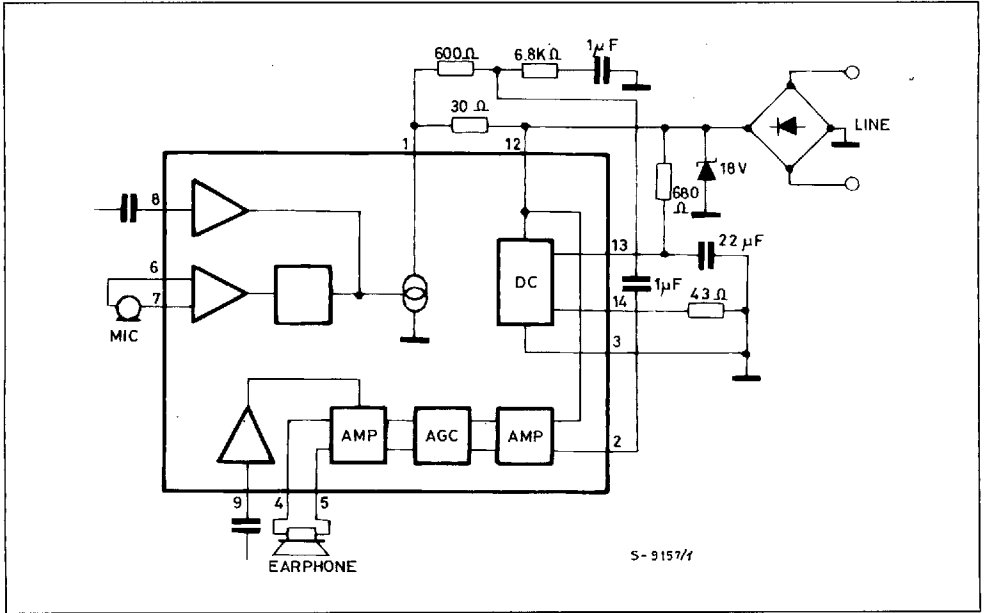


Figure 2 .

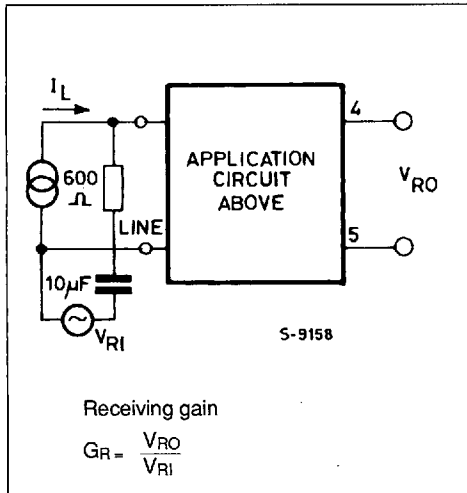
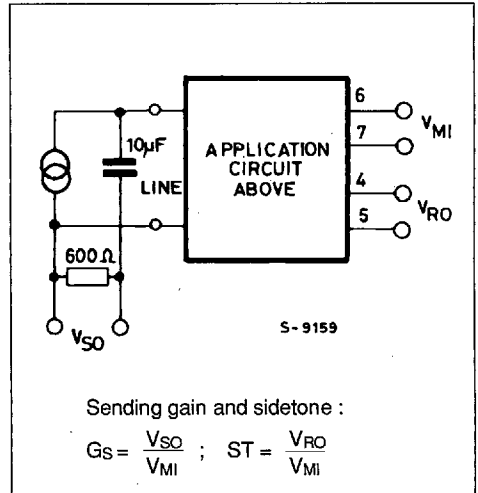


Figure 3.



ELECTRICAL CHARACTERISTICS(T_{amb} = 25°C ; f = 1kHz ; I_L = 20mA : mute low ; R1 (pin 14) = 43Ω, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V _L	Line Voltage	I _L = 20 mA		3.05	3.35	V
V _L	Line Voltage	I _L = 50 mA		5.8	6.2	V
V _L	Line Voltage	I _L = 80 mA		8.5	10	V
C _{MRR}	Common Mode Rej. Ratio		50			dB
G _S	Sending Gain	V _{MI} = 2 mV, I _L = 20 mA	47.8	49.3	50.8	dB
D _{GS}	Delta Sending Gain	I _L = 70 mA, V _{MI} = 2 mV	- 7	- 5.5	- 4	dB
T _{HDS}	Sending Distortion	V _{SO} = 700 mV			5	%
N _{TX}	Sending Noise	I _L = 50 mA, V _{MI} = 0 V		- 71		dBm
Z _{MI}	Mic. Input Impedance	V _{MI} = 2 mV	40			KΩ
G _R	Receiving Gain	I _L = 20 mA, V _{RI} = 0.2 V	7.7	9.2	10.7	dB
D _{GR}	Delta Receiving Gain	I _L = 70 mA, V _{RI} = 0.2 V	- 7	- 5.5	- 4	dB
T _{HDR}	Receiving Distortion	V _{RO} = 615 mV			5	%
N _{RX}	Receiving Noise	V _{RI} = 0 V		300		μV
Z _{RO}	Receiving Output Imped.	R ₁ = 200 Ω, V _{RO} = 50 mV		10		Ω
	Sidetone	V _{MI} = 2 mV		40		dB
Z _{ML}	Line Match. Impedance	V _{RI} = 0.2 V	500	600	700	Ω
V _L	Line Voltage	I _L = 5.5 mA		1.5	1.8	V
V _{SO}	Sending Output Voltage	I _L = 5.5 mA, T _{HD} = 5 %	100			mV
I _{RO}	Rec. Output Current	I _L = 5.5 mA, T _{HD} = 5 %	0.7			mA
	OPERATION @ I _L = 16 mA					
MULO	Mute Input Low	(speaking mode)			1	V
MUHI	Mute Input High	(dialling mode)	2			V
GMF	DTMF Gain	V _{in} = 2 mV ; Mute = 2 V	25	26.5	28	dB
RMF	DTMF Input Impedance	Mute = 2 V	6	8.5		KΩ
THDMF	DTMF Distorsion	Mute = 2 V ; V _{in} = 25 mV			5	%
G _{beep}	Beeptone Gain	Mute = 2 V ; V _{in} = 25 mV		8.5		dB
R _{beep}	Beeptone Input Imped.	Mute = 2 V	12			KΩ
THD	Beeptone Distorsion	Mute = 2 V ; V _{bt} = 100 mV			5	%
DV _L	DELTA V _{LINE}	Mute = 2 V ; I _L = 20 mA	0.5		1.2	V
G _{BACK}	Back Tone Gain		-	-	-3.0	dB

CHARACTERISTIC AT 1 KHz

Figure 4 : Receive Characteristic and Max Output at 2 % THD.

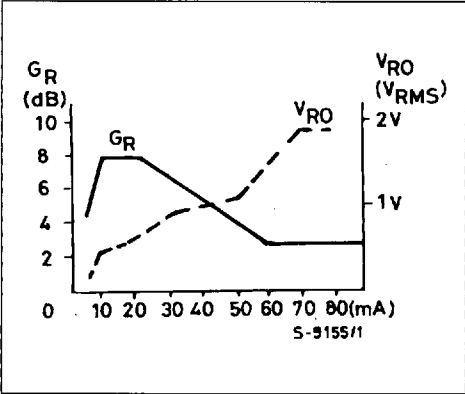


Figure 5 : Sending ALC Characteristic and Max Output at 2 % THD.

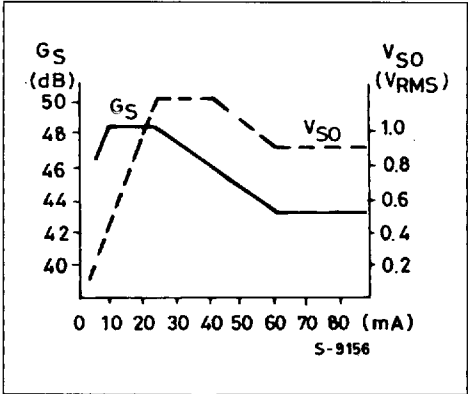
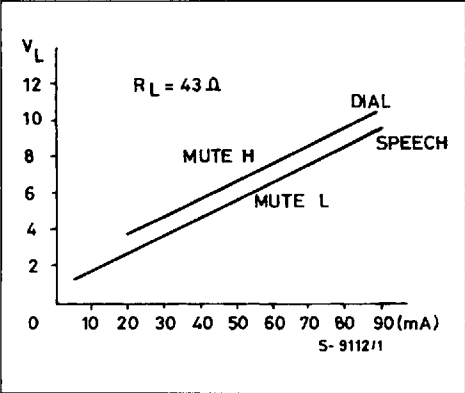


Figure 6 : DC Characteristic Measured between Line and GND.



LOGIC OF MUTE SWITCHING

	DTMF	BEEP	MIC INPUT	RECEIVE INPUT
MUTE H	ACTIVE TO LINE OUTPUT	ACTIVE TO EARPHONE OUTPUT	MUTED	MUTED
MUTE L	MUTED	MUTED	ACTIVE	ACTIVE

Figure 7 : Application Circuit for Dynamic Transducer.

