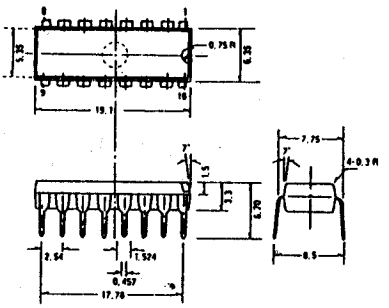
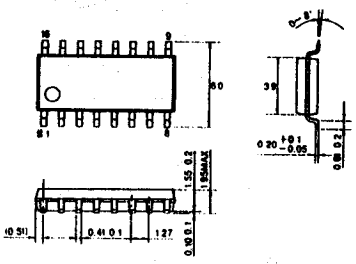
UNIVERSAL SPEECH NETWORK

The DBL5022 can fulfill the standards of other countries by changing the external component.
Dynamic or piezoelectric type can be used with receiver Each gain is controlled with AGC in accordance with the line current. The DBL5022 can be operated down to DC line 1.6V

16DIP Unit : mm



16SOP DBL5022-V



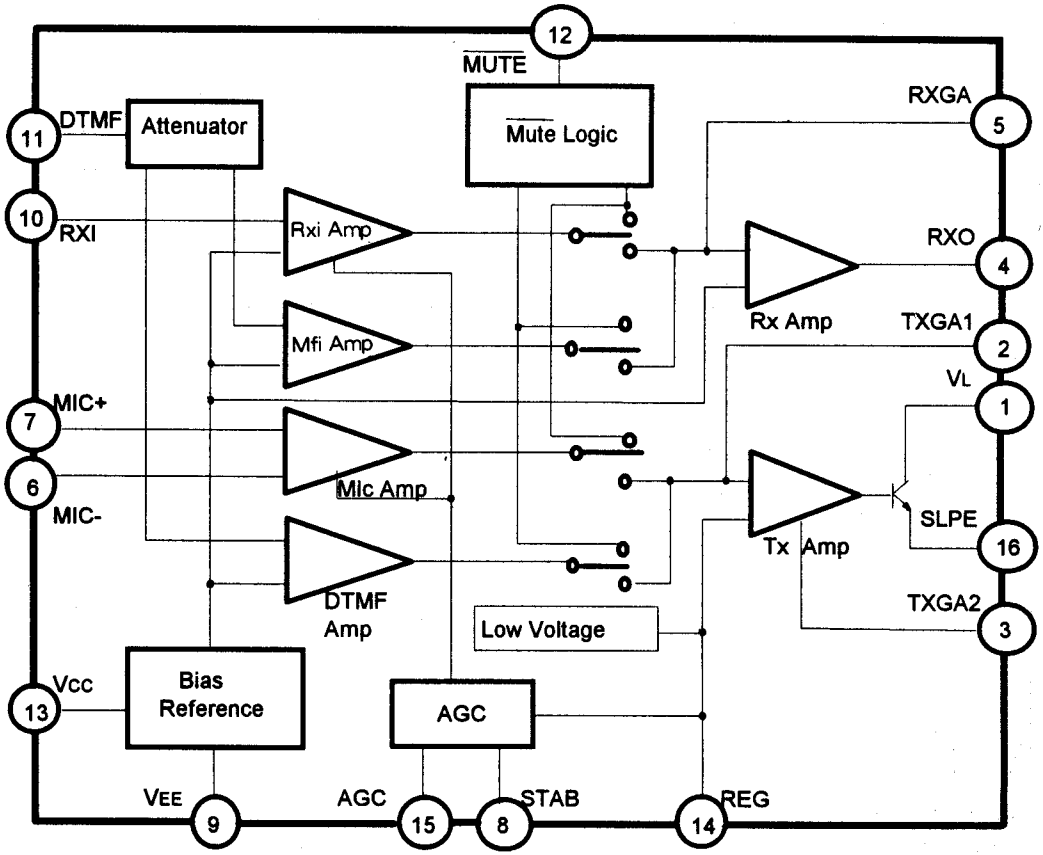
☐ FEATURES

- o Independent adjustment of DC resistance and AC impedance.
- o Voltage regulator with adjustable static resistance
- o Symmetrical high-impedance inputs for dynamic magnetic or piezo-electric microphones
- o Receiving amplifier for dynamic. magnetic or piezo-electric earpieces
- o DTMF signal interface
- o Low DC line voltage : operateds down to 1.6V
- o $\overline{\text{Mute}}$ function
- o DC line voltage adjustment facillty

☐ MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Line Voltage	V_L	12	V
Line Current	I_L	140	mA
Power Dissipation	P_D	666	mW
Operating Temperature	T_{OPr}	-25~+70	℃
Storage Temperature	T_{stg}	-40~+125	℃

☐ BLOCK DIAGRAM



☐ PIN DESCRIPTION

Pin No	Symbol	Description
1	V_L	Positive power line and TX Amp output
2	TXGA1	TX gain adjustment
3	TXGA2	TX gain adjustment
4	RXO	RX output
5	RXGA	RX gain adjustment
6	MIC^-	Mic(−)Input
7	MIC^-	Mic(+)Input

☐ PIN DESCRIPTION

Pin No	Symbol	Description
8	SRAB	Current stabilizer
9	V_{EE}	Ground
10	RXI	Rx input
11	DTMF	DTMF signal input
12	$\overline{MUTE}$	'H' $\overline{Mute}$ input
13	V_{CC}	Internal power supply pin
14	REG	Voltage regulator decoupling
15	AGC	Automation gain control input
16	SLPE	Slope(DC resistance)adjustment

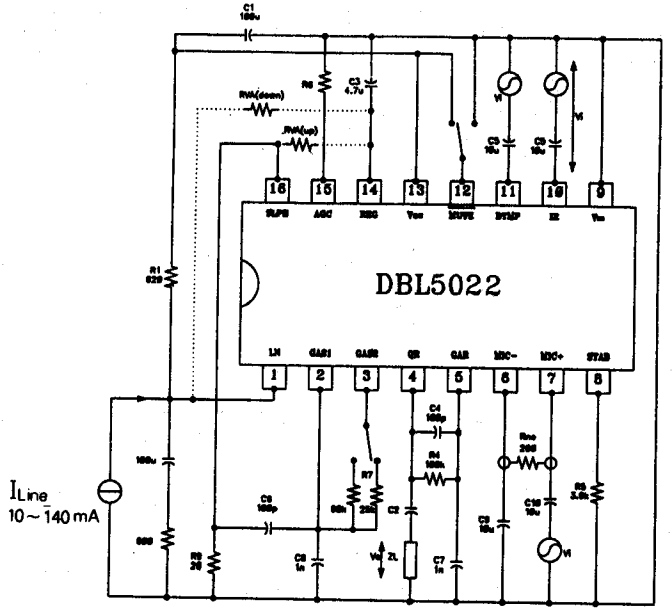
☐ ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Test Condition		Min.	Typ.	Max.	Unit
Line Voltage	V_L	ILine=1mA		–	1.6	–	V
		ILine=4mA		–	1.9	–	
		ILine=15mA		3.55	4	4.25	
		ILine=100mA		4.9	5.7	6.5	
		ILine=140mA		–	–	7.5	
Variation with temperature	$\triangle V_L/\triangle T$	ILine=15mA		–	−0.3	–	mV/k
Voltage drop over circuit between V_L & V_{EE} with external resistor R_{AV}	R_{VA}	ILine=15mA R_{VA}(R_{EG} to S_{LPE})=39K		–	4.5	–	V
		ILine=15mA R_{VA}(V_L to R_{EG})=68K		–	3.5	–	V
Supply Voltage	V_{CC}	$\overline{Mute}$=High	Ip=1.2mA	2.2	2.7	–	V
			Ip=0mA	–	3.4	–	
MIC input impedance	Zi(mic)	Between MIC− & MIC+		–	64	–	K Ω
		MIC−or MIC+ to V−		–	32	–	
Common mode rejection ratio	CMRR(T_X)	–		–	82	–	dB
TX Gain	G_V(T_X)	R7=68K, Vin=3mVrms		50.5	52	53.5	dB
TX Gain frequency response	$\triangle G_{TXF}$	f=300~3400Hz		–	±0.2	–	dB
DTMF input impedance	$Zi_{(MF)}$	–		–	20.7	–	KΩ

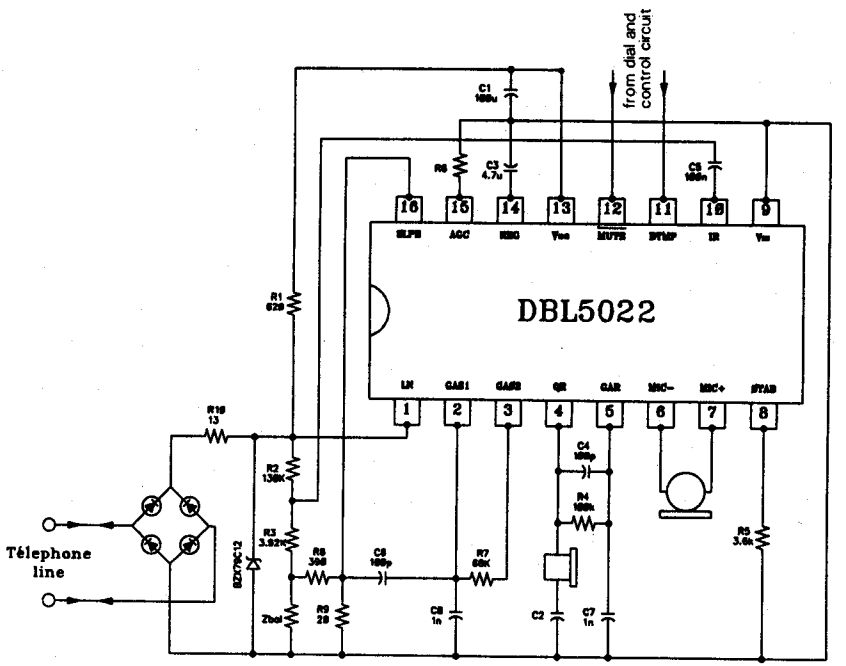
☐ ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Test Condition		Min.	Typ.	Max.	Unit
DTMF Gain	$G_{V(MF)}$	R7=68K, DTMF mode		24	25.5	27	dB
DTMF Gain response	$\triangle G_{MF}$	R7=68K, f=300~3400Hz		–	±0.2	±0.5	dB
TX Gain adjustment	$\triangle Gv.adj(T_X)$	R7=68K→25K		−12	−8	−7	dB
TX Dynamic output voltage	$T_O(T_X)$	THD=10%	IL=4mA	–	0.8	–	Vrms
			IL=15mA	1.7	2.3	–	
TX noise output voltage	Vno(Tx)	R7=68K Between pin6 & pin7=200Ω		–	−69	–	dBmp
RX input impedance	Zi(Rx)	–		–	21	–	KΩ
RX output impedance	Zo(Rx)	–		–	4	–	KΩ
RX Gain	Gv(Rx)	R4=100K, RL=300Ω		29.5	31	32.5	dB
RX Gain frequency response	$\triangle G_{TXF}$	f=300~3400Hz		–	±0.2	–	dB
RX Dynamic output voltage	$Vo_{(RX)}$	THD=2% R4=100K	RL=150Ω	0.22	0.33	–	V
			RL=450Ω	0.3	0.48	–	
RX noise output voltage	$Vno_{(RX)}$	RL=300Ω, R4=100K I_L=15mA, Rxi=open		–	50	–	uV
RX Ganin adjustment	$\triangle Gv.adj(Rx)$	R4=100K→28K		−13	−11	−9	dB
$\overline{\text{Mute}}$ input voltage	$V_{IH}(\overline{\text{Mute}})$	–		1.5	–	V_{CC}	V
	$V_{IL}(\overline{\text{Mute}})$	–		–	–	0.3	
$\overline{\text{Mute}}$ input current	I_{Mute}	–		–	8	15	uA
$\overline{\text{Mute}}$ attenuation	Matt(TX)	MIC+ or MIC− to V_L (CCIT weighted)		–	70	–	dB
DTMF Gain	Gv(DTMF)	voltage gain from DTMF to Rxo		–	−19	–	dB
TX Gain variation range by AGC	$\triangle G_{TXA}$	R6=110K IL=15mA~70mA		–	−5.8	–	dB
RX Gain variation range by AGC	$\triangle G_{RXA}$	R6=110K IL=15mA~70mA		–	−5.8	–	dB
Highest line current for maximum gain	$I_{HL(AGC)}$	R6=110K		17	23	26	mA
Lowest line current for minimum gain	$I_{LL(AGC)}$	R6=110K		54	61	73	mA

☐ TEST CIRCUIT

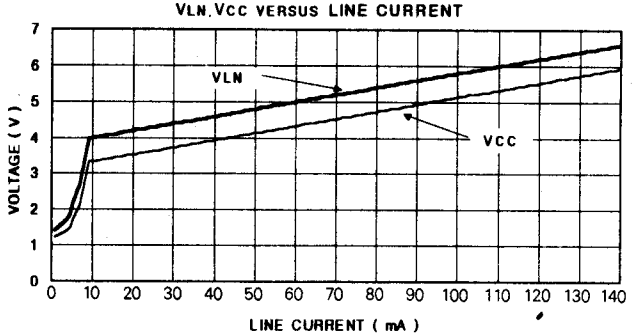


☐ APPLICATION CIRCUIT

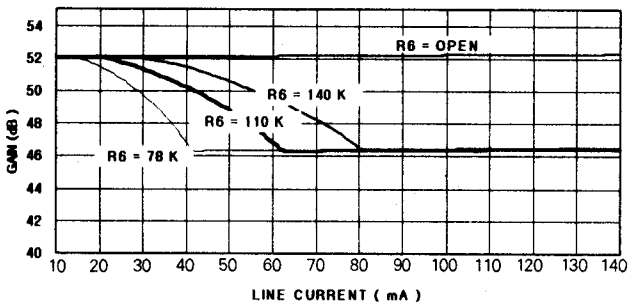


☐ TYPICAL PERFORMANCE CHARACTERISTICS

VLN, VCC VERSUS LINE CURRENT



TRANSMIT GAIN VERSUS LINE CURRENT



RECEIVE GAIN VERSUS LINE CURRENT

