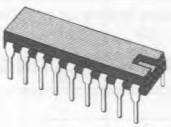
MASK - PROGRAMMABLE SPEECH CIRCUITS

SPEECH CIRCUIT

- MINIMUM NUMBER OF INEXPENSIVE EXTERNAL COMPONENTS, 5 CAPACITORS AND 10 RESISTORS
- MUTE FUNCTION FOR PARALLEL OPERATING WITH DTMF GENERATOR OR DECADING IMPULSING
- LOW VOLTAGE OPERATING, DOWN TO 3.3V
- VERY SHORT START-UP TIME



DIP-18
(Plastic)

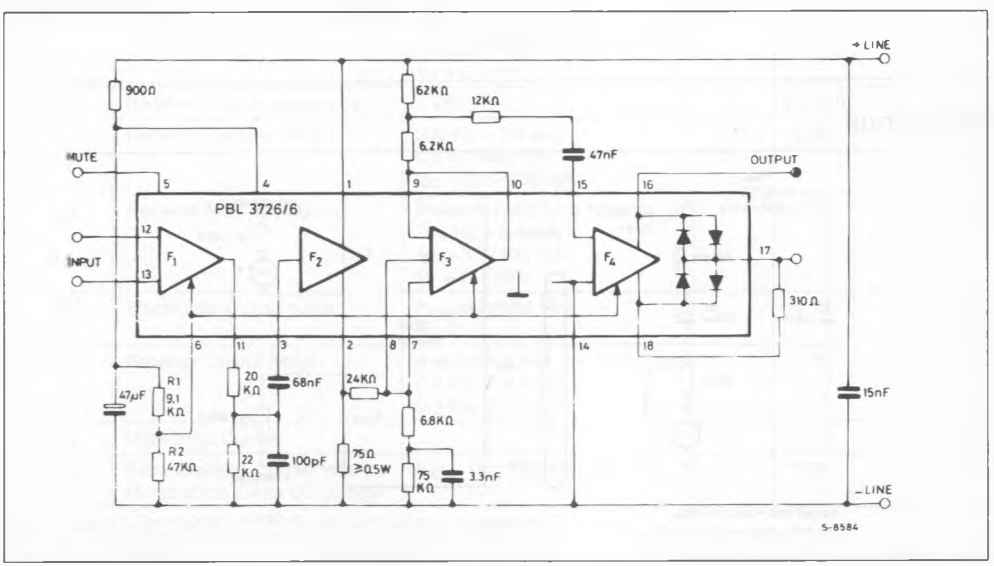
ORDER CODE : PBL3726/6

DESCRIPTON

PBL3726/6 is standard version of the PBL3726 family of the mask-programmable, monolithic integrated speech circuits for use with a low impedance microphone. Sending and receiving gain is regulated with line length. Different ranges of amplifier regulation for various current feeds can be obtained with external resistor or totally cut off. Typical current feeds as 48V 2 x 200Ω 2 x 400Ω and 36V 2 x 250Ω can be handled.

Application-dependent paremeters as line balance, sidetone level and frequency response are set by external components. Parameters are set independently which means easy adaptation for various market needs. An extra 20dB amplifier can be used for various purposes such as extra receiving gain with volume control or active sidetone balance.

TEST CIRCUIT



ABSOLUTE MAXIMUM RATINGS

Maximum Ratings over Operating Free-air Temperature Range (unless otherwise stated)

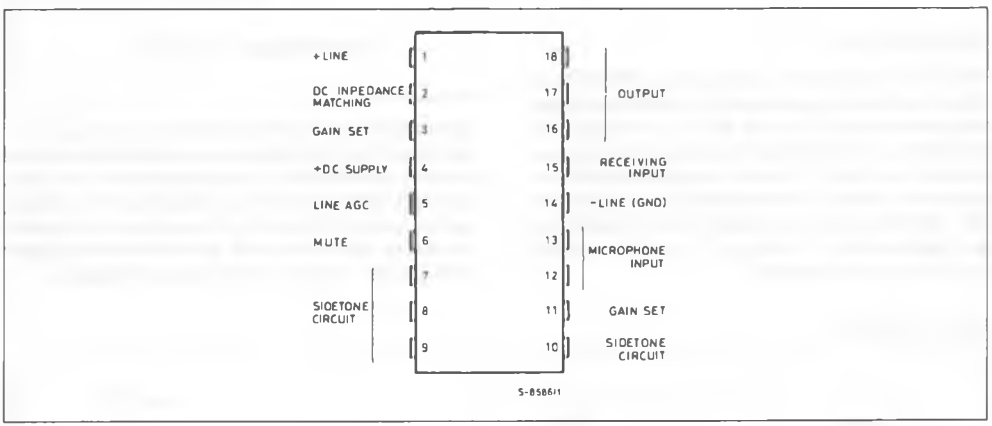
Symbol	Parameter	Test Conditions	Unit
V_{DC}	Line Voltage, t_p = 2 s	22	V
I_{DC} (*)	Continuous Operating Line Current	100	mA
T_j	Junction Temperature	+ 150	°C
T_{amb}	Operating Ambient Temperature	− 40 to + 70	°C
T_{stg}	Storage Temperature	− 55 to + 150	°C

(*) Max current increases linearly up to 130mA with max operating temperature lowered to + 55°C.

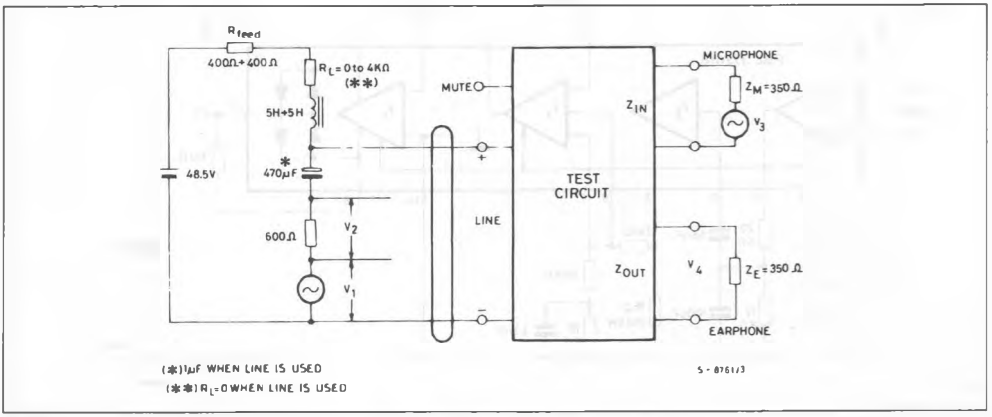
RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min.	Typ.	Max.	Unit
I_L	Line Current	15		100	mA

CONNECTION DIAGRAM



TEST SET-UP



THERMAL DATA

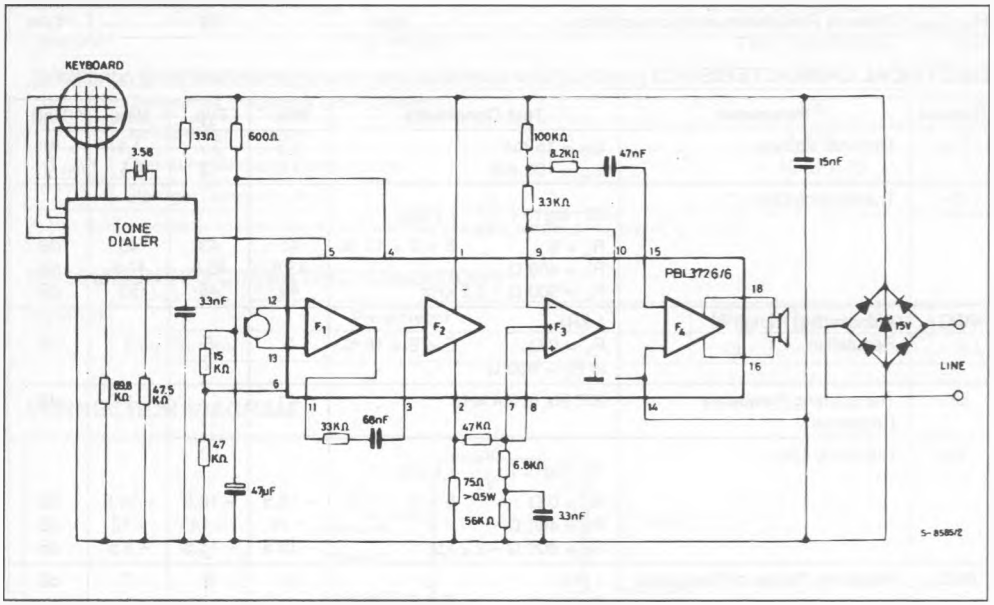
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	80	°C/W

ELECTRICAL CHARACTERISTICS (electrical characteristics over recommended operating conditions)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{DC}	Terminal Voltage	I_{DC} = 15 mA I_{DC} = 100 mA	3.3 11	3.7 13	4.1 15	V V
G_T	Transmitting Gain (*)	20 . log10 ($\frac{V_2}{V_3}$) 1 kHz R_L = 0 E = E + 10 % R_L = 400 Ω R_L = 900 Ω – 2.2 kHz	 41 43.5 46	 43 45.5 48	 45 47.5 50	 dB dB dB
REG_T	Transmitting Range of Regulation	1 kHz R_L = 0 Ω E = E + 10 % to R_L = 900 Ω	3	5	7	dB
Lin_T	Transmitting Frequency Response	200 Hz to 3.4 kHz	– 1		1	dB
G_R	Receiving Gain (*)	20 . log10 ($\frac{V_4}{V_1}$) 1 kHz R_L = 0 Ω E = E + 10 % R_L = 400 Ω R_L = 900 Ω – 2.2 kΩ	 – 18.5 – 16 – 13.5	 – 16.5 – 14 – 11.5	 – 14.5 – 12 – 9.5	 dB dB dB
REG_R	Receiving Range of Regulation	1 kHz R_L = 0 Ω E = E + 10 % to R_L = 900 Ω	3	5	7	dB
Lin_R	Receiving Frequency Response	200 Hz to 3.4 kHz	– 1		1	dB
Z_{IN}	Transmitter Input Impedance	1 kHz		1.1		kΩ
V_T	Transmitter Dynamic Output	200 Hz – 3.4 kHz ≤ 2 % Distortion I_{DC} = 20 – 100 mA		1.5		V_p
V_T	Transmitter Max Output	200 Hz – 3.4 kHz I_{DC} = 0 – 100 mA V_3 = 0 – 1 V		3		V_p
Z_{OUT}	Receiver Output Impedance	1 kHz		3 + 310		Ω
	Receiver Dynamic Output **	200 Hz – 3.4 kHz ≤ 2 % Distortion I_{DC} = 20 – 100 mA	0.5	0.55		V_p
V_R	Receiver Max Output	Measured with Line Rectifier 200 Hz – 3.4 kHz I_{DC} = 0 – 100 mA V_1 = 0 – 50 V		0.9		V_p
NT	Transmitter Output Noise	P_{sof}-weighted, REL 1 V R_L 0		– 75		dB_{psof}
N_R	Receiver Output Noise	A-weighted, REL 1 V, with Cable 0-5 Km ∅ 0.5 mm ; 0-3 Km ∅ 0.4 mm		– 85		dB_A
I_M	Mute Input Current		0.1			mA
I_{DC}	Extra Available Current when Muted at the Same DC-voltage	I_{DC} = 15 – 100 mA		10		mA

* Adjustable to both higher and lower values with external components.
** The dynamic output can be doubled. See application notes at R14.

Figure 1 : Typical Application.



Some typical values for R1 and R2 for some different supplies from telephone stations are shown in the next table.

Type	R1	R2
No Regulation all Feeding Systems	∞	0
48 V, 2 x 200 Ω	16 KΩ	47 KΩ
48 V, 2 x 400 Ω	9.1 KΩ	47 KΩ
36 v, 2x 500 Ω	0	∞