Issue 1
17.5.73

DESIGNS DEPARTMENT HANDBOOK NO. 3.132(73)

Amplifier, Intercom, Loudspeaker AM5/11

C O N T E N T S

D R A W I N G S

Circuit	D 33766 A3
Parts List	D 33767 A4
Component Location	D 33771 A4
LM 380 Circuit	DSK 15348 A4

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Amplifier, Intercom, Loudspeaker AM5/11

1. Description

The AM5/11 is a small printed circuit amplifier card designed to drive loudspeakers in an intercom system. It is normally used with 30Ω loudspeakers, although loads down to 4Ω may be used.

The amplifier operates from a -50V supply and is fully protected against overloads.

The AM5/11 supersedes, and is a direct replacement for, amplifier AM5/8.

2. General Specification

Load impedance	$\geqslant$ 4Ω
Power output	> 1.6 watts into 8Ω
Voltage gain	34dB ± 2dB
Input level for max. output	$\triangleq$ -12dB
Input impedance	25KΩ (unbalanced)
Output impedance	< 1Ω (unbalanced)
Noise output	< -68dB
Frequency response	1kHz - 20kHz ± 0.5dB -3dB at 250Hz
Total harmonic distortion	< 0.5%
Power supply voltage	-46V to -52V
Power supply current:	
Quiescent	20mA
Max. output	350mA
Dimensions	50mm x 76mm x 27mm overall height
Mounting centres	$1\frac{3}{4}$" x $2\frac{9}{16}$"

3. Circuit Description

The circuit diagram is shown in D 33766 A3. The amplifier uses a single integrated circuit power amplifier: National Semiconductors LM 380 (for I.C. circuit see DSK 15348 A4).

The input is fed to the I.C. input, pin 2, via network C1, R1 which gives the amplifier a 6dB/octave roll off below 250Hz.

The output is capacitively coupled from pin 8 of the I.C. The network C4, L1 across the output terminals is designed to maintain the amplifier stability at all load impedances.

The power supply regulator TR1 is used to maintain the I.C. supply voltage to approximately 19 volts. This regulator is an emitter follower fed from a zener diode D2.

4. Test Data

D.C. Voltages

The integrated circuit used in this amplifier is designed for use with the a +ve supply. For convenience, and to avoid possible damage to the device, voltages at the I.C. pins should be measured with respect to the -ve stabilised rail (I.C. pins 2, 3, 4, 5, 7, 9, 10, 11, 12, 13).

I.C. Voltages

Pin	Description	Voltage (with respect to pins 2,3,4,5,7,9,10,11,12, 13)
1	Bypass (not used)	9.7*
2	non-inv. input	≙0.1
6	inverting input	≙0.1
8	output	9.7*
14	+ve supply	19.4

* *normally approximately half supply voltage, for supply between 8V and 22V.*

A.C. Tests

The gain of the integrated circuit should be 34dB ± 2dB.

5. Manufacturing Information

The unit is manufactured in accordance with Designs Department Manufacturing Information No. 3.563(73).

VM161A4

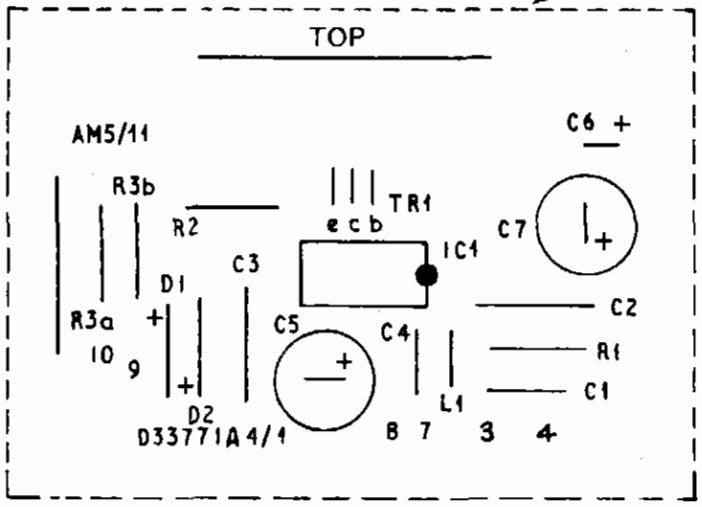
BBC

AM5/11 PRINTED BOARD COMPONENT LOCATION

D33771A4

CHANGE	ISS
2 - 2 - 73	1
PINS Nos 3 & 4 WERE REVERSED 18-5-73	2

MINIMUM SIZE TO CUT NEGATIVE



PLEASE NOTE
THE ORIGINAL SHEET IS OF POOR QUALITY

CHARACTERS AND LINES TO BE PRINTED IN WHITE

PRINTED WIRING ON REVERSE SIDE OF BOARD IS D33770A4

SCALE 1 : 1

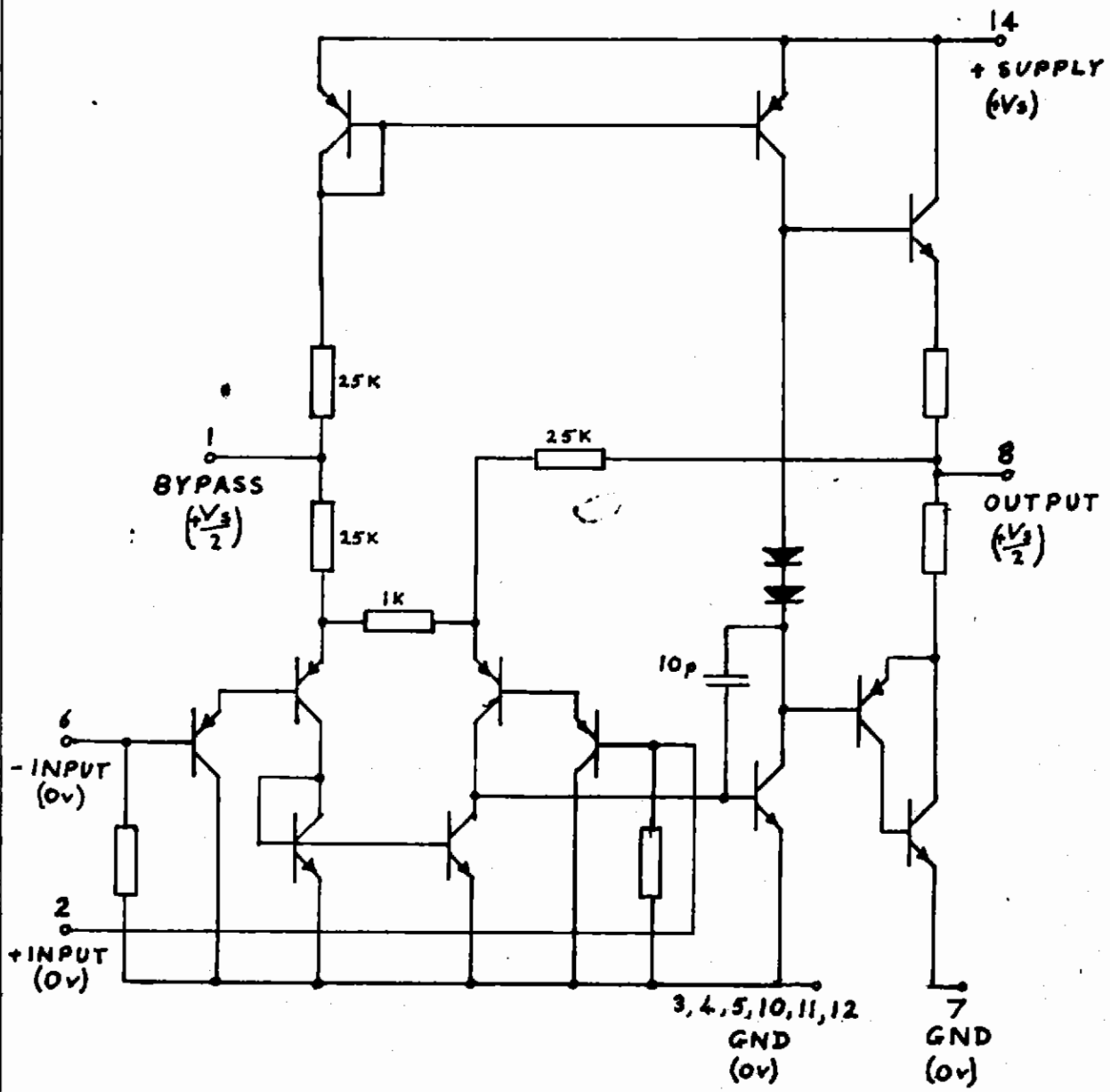
AM5/11 PRINTED BOARD COMPONENT LOCATION

DRN	B.A.C.
TCD	
CKD	R.N.R.
APPD	

DESIGNS DEPT

D33771A4

ISS	CHANGE	
	15-5-73	



TYPICAL VOLTAGES SHOWN IN BRACKETS

BBC	LM380 CIRCUIT	DRN.	RWR	DSK15348 A4
		TCD.		
DS/A4		CKD.		
		APPD		