

INTEGRATED CIRCUIT FOR COMMUNICATION RECEIVER I.F. AMPLIFIERS

TAD110

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TENTATIVE DATA

The TAD110 is a silicon integrated circuit intended for use in a.m. and f.m. communication receivers. The amplifier consists of three gain blocks which are used as mixer-oscillator, i.f. amplifier and limiter in an f.m. system or mixer-oscillator, i.f. amplifier-detector and audio pre-amplifier in an a.m. system.

The mixer-oscillator stage is intended for operation at frequencies up to 30MHz. The i.f. amplifier section is intended for operation at frequencies up to 500kHz.

QUICK REFERENCE DATA

Operating temperature range	-30 to +70	°C
Supply voltage	9.0	V
Typical performance in f. m. circuit (see Fig. 2)		
Total current drain	19	mA
Mixer conversion voltage gain	14	dB
I. F. voltage gain	32	dB
Overall sensitivity		
Input voltage for limiting	12	µV
Noise figure		
f = 30MHz, $R_s = 3.3k\Omega$ at pin 1	7.0	dB
A.M. rejection		
30% a. m. modulation, 15kHz deviation	30	dB
Typical performance in a. m. circuit (see Fig. 3)		
Total current drain	21	mA
Sensitivity		
Input voltage for 10mV volume control		
50Ω source, 30% modulation	2.0	µV
Noise figure		
f = 27MHz, $R_s = 3.3k\Omega$ at pin 1	8.0	dB
A. G. C. range		
Change in r. f. input for 10dB expansion in audio output	56	dB

OUTLINE

14-lead dual-in-line package conforming to J. E. D. E. C. TO-116
For details see page 4 and General Explanatory Notes

RATINGS

Limiting values of operation according to the absolute maximum system

Electrical

Maximum voltage pin 9 (pin 7 earthed)	10	V
Maximum voltage pin 6 (pin 7 earthed)	12	V
Maximum current pin 6	40	mA
Maximum total chip dissipation ($T_{amb} = 70^{\circ}\text{C}$)	300	mW

Temperature

T_{stg} min.	-55	$^{\circ}\text{C}$
T_{stg} max.	+125	$^{\circ}\text{C}$
T_{amb} min. operating	-30	$^{\circ}\text{C}$
T_{amb} max. operating	+70	$^{\circ}\text{C}$

EQUIVALENT CIRCUIT

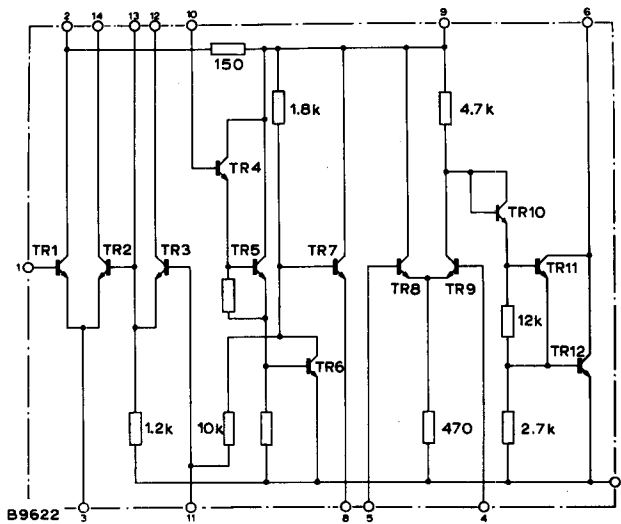


Fig. 1

INTEGRATED CIRCUIT FOR COMMUNICATION RECEIVER I.F. AMPLIFIERS

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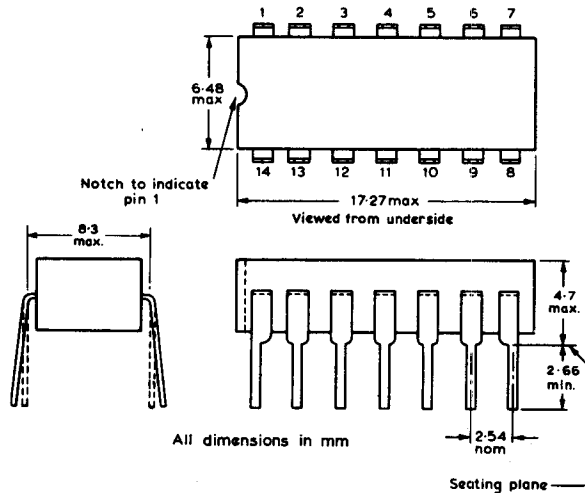
ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}C$)

	Min.	Typ.	Max.	
F.M. Circuit ($V_{supply} = 9.0V$, see Fig. 2)				
Total current drain	-	19	21	mA
Mixer conversion voltage gain pin 1 to pin 14	9.0	14	18	dB
I.F. voltage gain (excluding limiter stage) pin 10 to pin 8	28	32	36	dB
Overall sensitivity Voltage at 50Ω input for output 3dB below max.	4.0	12	20	μV
Noise figure $f = 30MHz$, $R_s = 3.3k\Omega$ at pin 1	4.0	7.0	12	dB
A.M. rejection 30% a.m. modulation 15kHz deviation	25	30	40	dB ←
A.M. Circuit ($V_{supply} = 9.0V$, see Fig. 3)				
Total current drain	15	21	26	mA
Overall sensitivity Voltage at 50Ω input for 10mV a.f. at volume control, 30% modulation	0.5	2.0	4.0	μV
Noise figure $f = 27MHz$, $R_s = 3.3k\Omega$ at pin 1	5.0	8.0	14	dB
A.G.C. range Change in r.f. input for 10dB expansion in audio output	48	56	62	dB
A.F. driver saturation voltage at $I_C = 30mA$	-	0.82	1.0	V

OUTLINE AND DIMENSIONS

Conforms to J.E.D.E.C. TO-116

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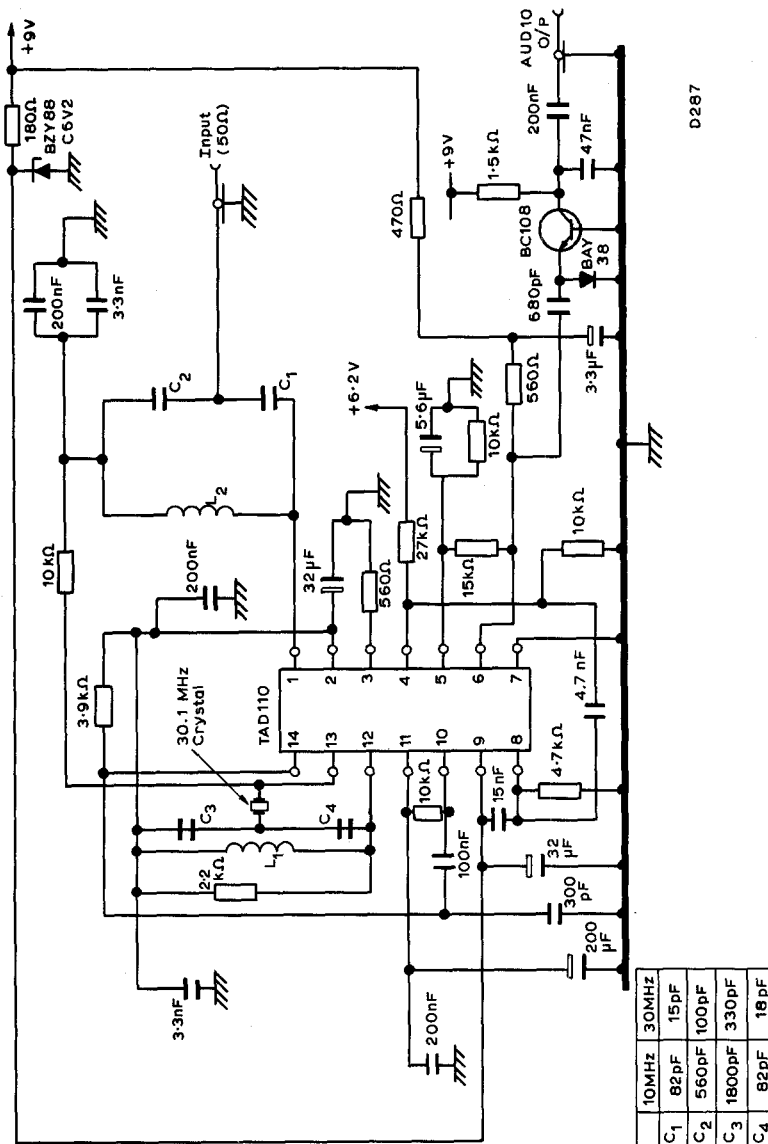
HANDLING NOTES

1. Devices may be soldered directly into circuits with soldering irons. At iron temperatures below 245°C the maximum soldering time should be less than 10 seconds and at iron temperatures between 245°C and 400°C the soldering time should be less than 5 seconds. In both cases the soldering iron should be applied below the seating plane (see outline drawing).
2. Devices mounted up to the seating plane on a printed circuit board may be dip or flow soldered provided the solder temperature is below 245°C and the time of immersion is less than 5 seconds. The body temperature should not be allowed to exceed the maximum storage temperature during soldering. If excessive pre-heat cycles are used, it may be necessary to cool the printed board immediately after leaving the solder bath/wave in order that this requirement is met.
3. Care should be taken not to bend the lead-out tags above the seating plane.

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Fig. 2

F.M. MIXER AND L.F. AMPLIFIER WITH DETECTOR

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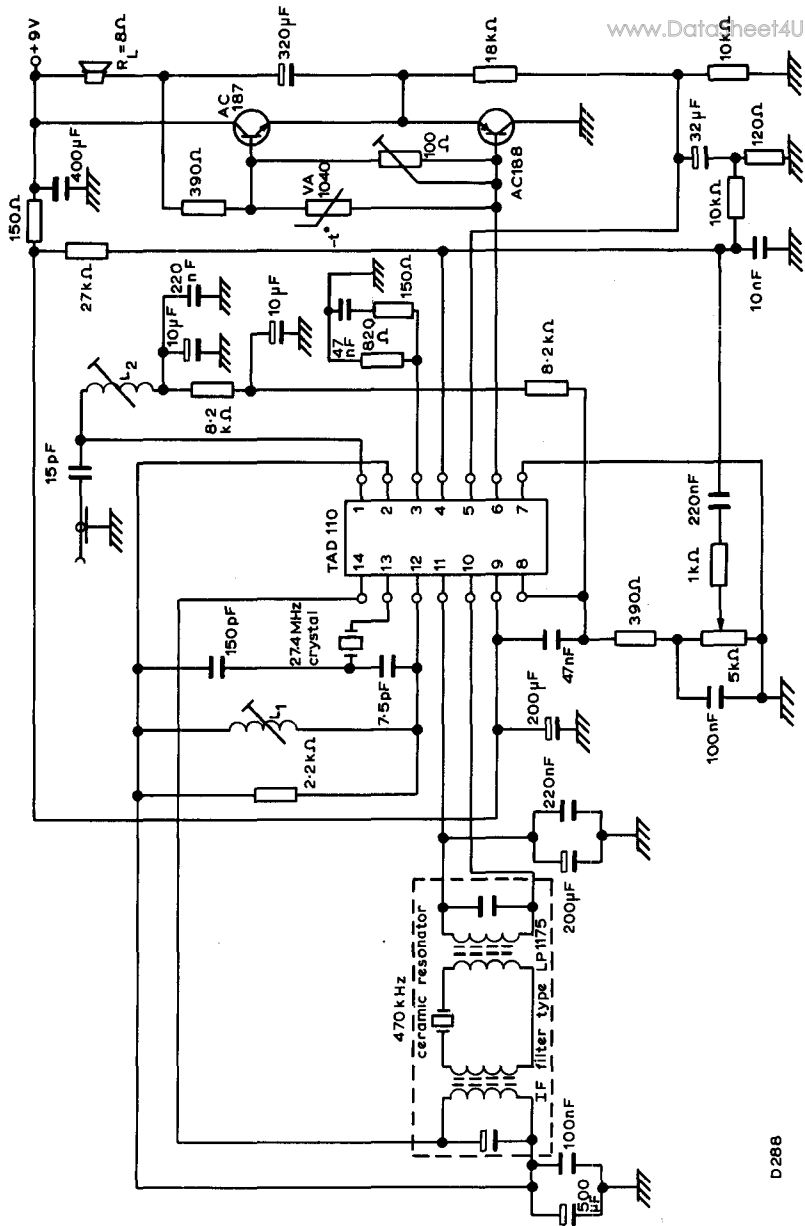


Fig. 3

27MHz A. M. RECEIVER CIRCUIT

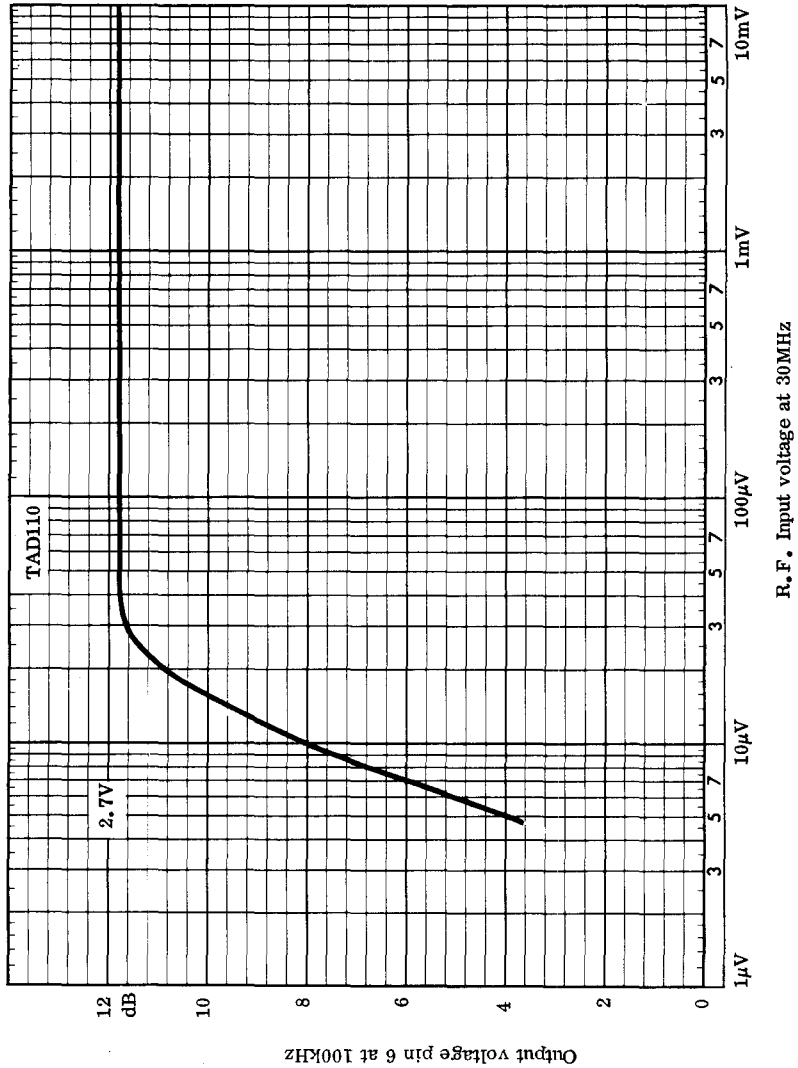
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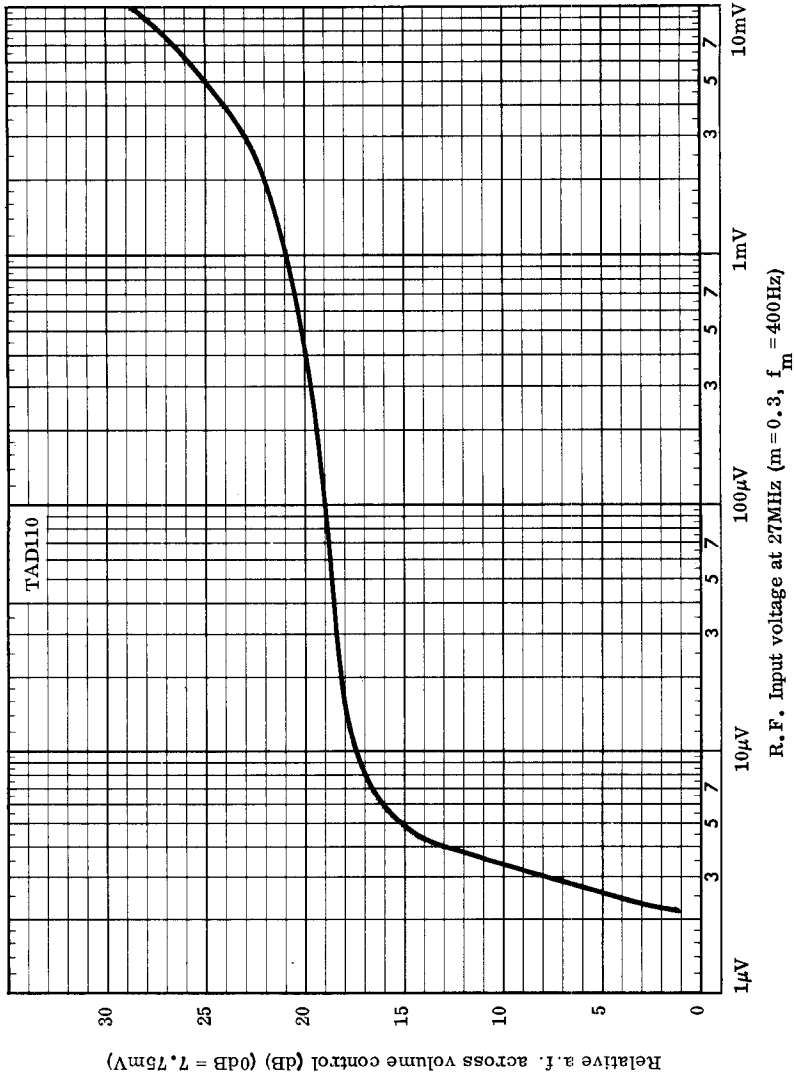
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TYPICAL SENSITIVITY - F.M. CIRCUIT





TYPICAL A.G.C. CHARACTERISTIC - A.M. CIRCUIT