

Monolithic Linear IC

SANYO	No.405D	LA3210
	EQUALIZER AMPLIFIER WITH ALC	

Features

- . Low Noise Use.
- . Wide automatic level control range.
- . Good reduced voltage characteristics.

Maximum Ratings at Ta=25°C

			unit
Maximum Supply Voltage	V _{CCmax}	15	V
Allowable Power Dissipation	P _{dmax}	200	mW
Current Dissipation in Amplifier	I _{CCmax}	3.0	mA
Allowable Current in ALC Transistor	I _{Gmax}	3.5	mA
Operating Temperature	T _{opr}	-20 to +80	°C
Storage Temperature	T _{stg}	-40 to +125	°C

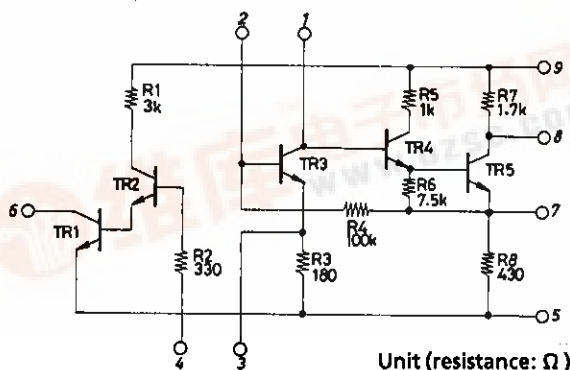
Operating Conditions at Ta=25°C

			unit
Recommended Supply Voltage	V _{CC}	5	V
Recommended Load Resistance	R _L	5.1k	ohm

Operating Characteristics at Ta=25°C, V_{CC}=5V, R_L=5.1kohms, R_G=600ohms, f=1kHz,

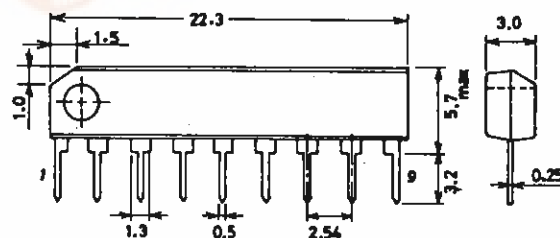
			min	typ	max	unit
See specified Test Circuit.						
Current Dissipation	I _{CC}	v _i =0, ALC off	1.4	2.0		mA
Voltage Gain	V _{GO}	Open loop	66	69		dB
		Closed loop	33	35	37	dB
Output Voltage	V _O	THD=1%	0.7	1.0		V
Total Harmonic Distortion	THD	V _O =0.2V		0.1		%
Input Resistance	r _i		60	100		kohm
Equivalent Input Noise Voltage	V _{NI}	R _G =2.2kohms, NAB		1	2	uV
ALC Transistor Saturation Voltage	V _{sat}			75	100	mV

Equivalent Circuit



Package Dimensions (unit: mm)

3017B

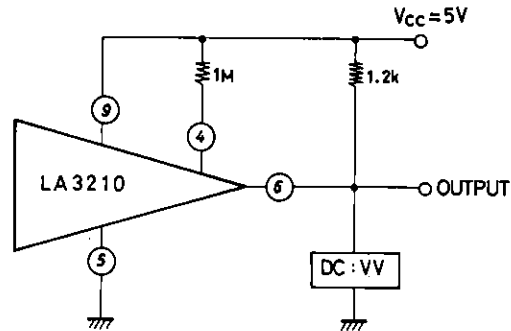


SANYO:SIP9

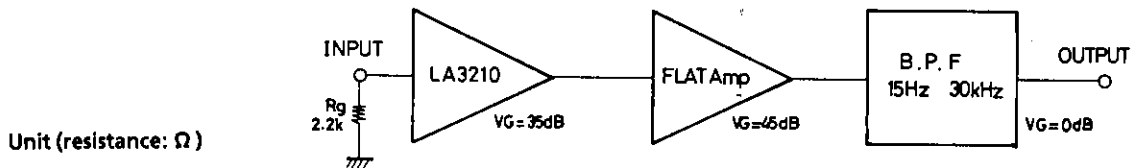
LA3210

Test Circuit

• ALC saturation voltage

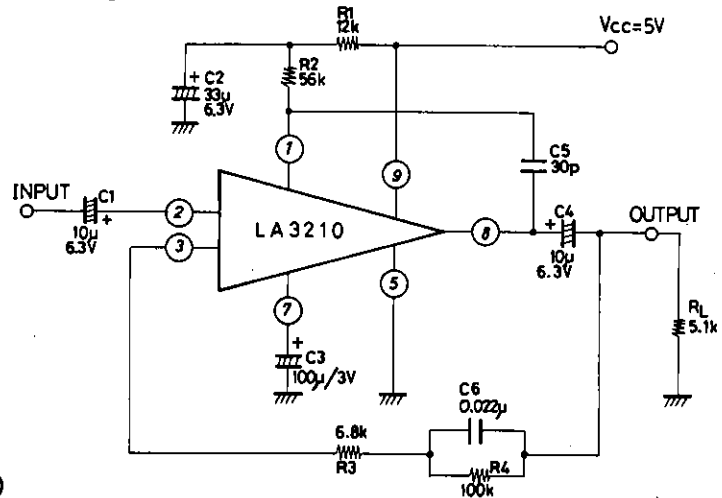


• Noise voltage



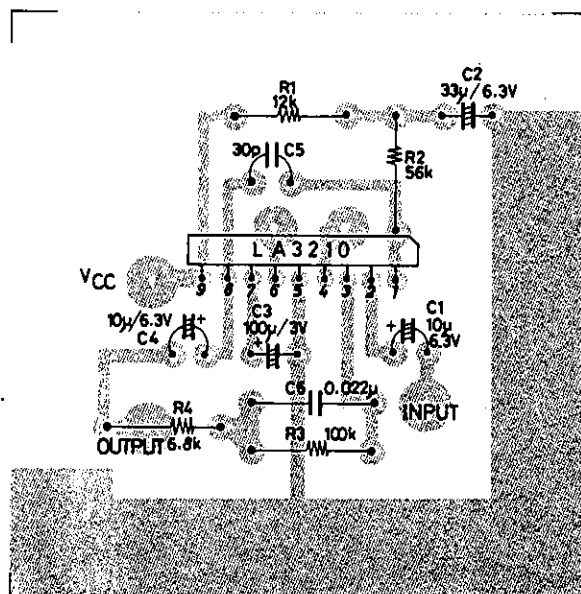
Unit (resistance: Ω)

■ Sample Application Circuit: Equalizer Amplifier with Automatic Level Control designed for Cassette Tape Recorder, Radio



Unit (resistance: Ω , capacitance: F)

Sample Printed Circuit Pattern
(Cu-foiled side, 60 x 60mm²)



Unit (resistance: Ω , capacitance: F)

Description of External Parts

C1: Input coupling capacitor (10uF)

DC current blocking capacitor used to prevent the DC current applied to the base from mixing in the AC signal source

The C1 is calculated using $C1=1/2\pi f_T z_i$ (z_i : input resistance, f_T : low cutoff frequency). If the capacitance value is too decreased, your set is subjected to inductive hum. We recommend using a capacitor of 2.2uF or greater.

We also recommend using 6.3WV or greater because the chemical capacitor becomes less leaky as the withstand voltage gets higher.

C2: Decoupling capacitor (33uF)

Used to bypass the power source ripple.

Decreasing the capacitance value makes the starting time shorter. We recommend using a capacitor of 33uF.

C3: Bypass capacitor (100uF)

Used to AC-short the emitter resistance and prevent AC components from being fed back to the input

C4: Output capacitor (10uF)

Used to block DC components and pass AC components only

The C4 is calculated using $C4=1/2\pi f_L R_L$ (f_L : low cutoff frequency, R_L : load resistance).

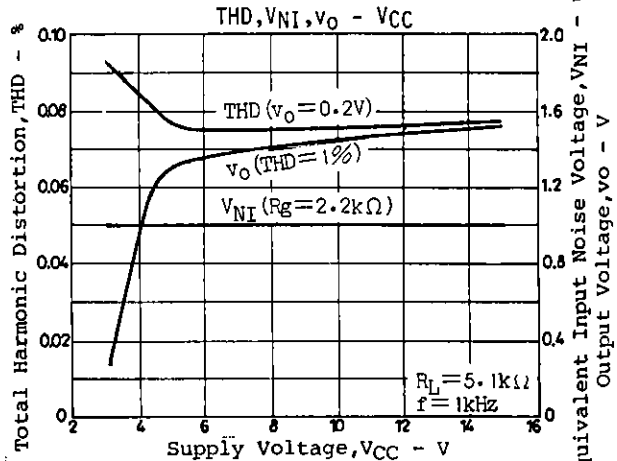
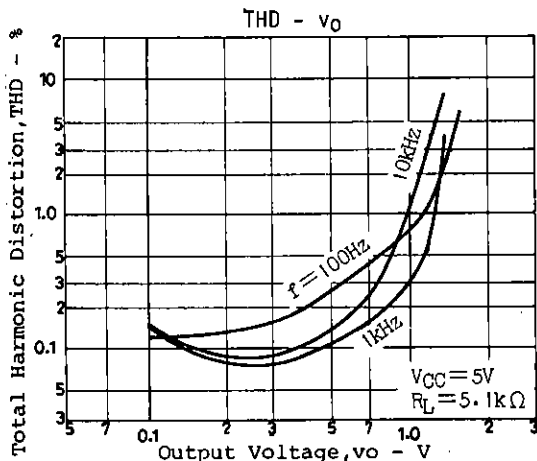
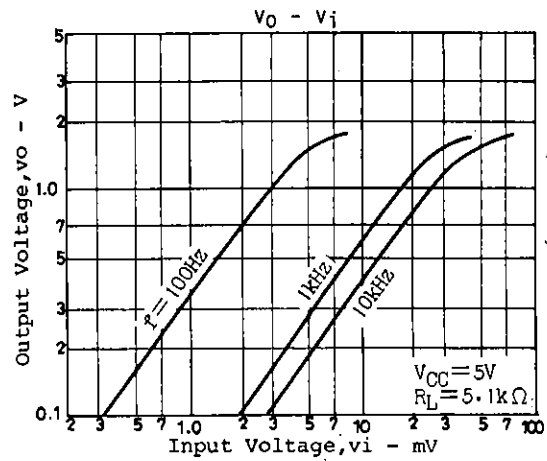
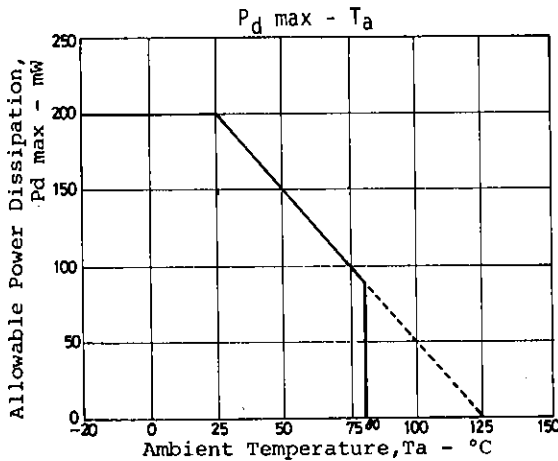
C5: Phase compensation capacitor (30pF)

Used to prevent high-frequency oscillation caused by phase shift when a deep feedback is provided. It should be noted that the high frequency response depends on the capacitance value of C5.

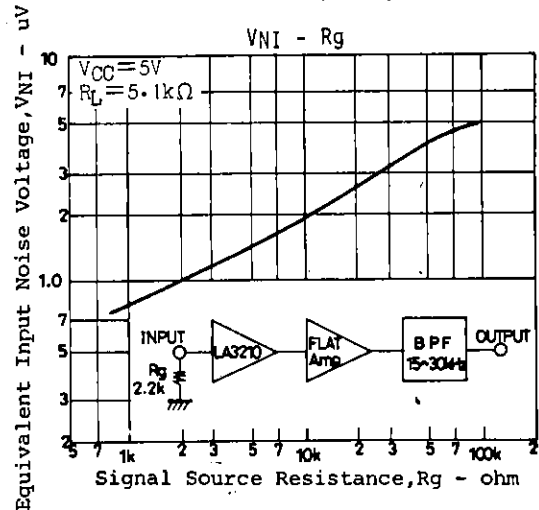
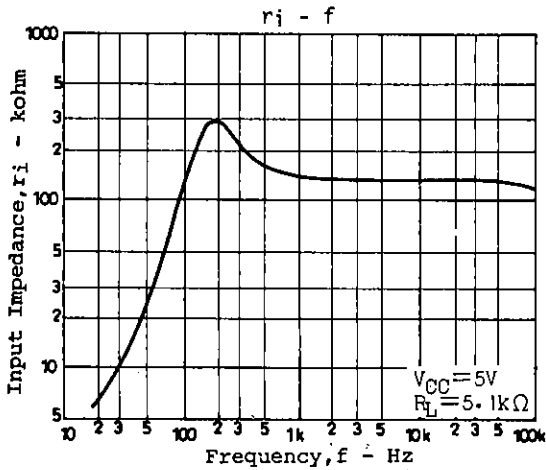
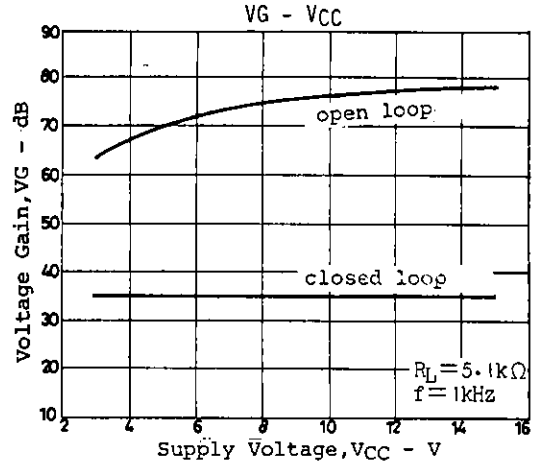
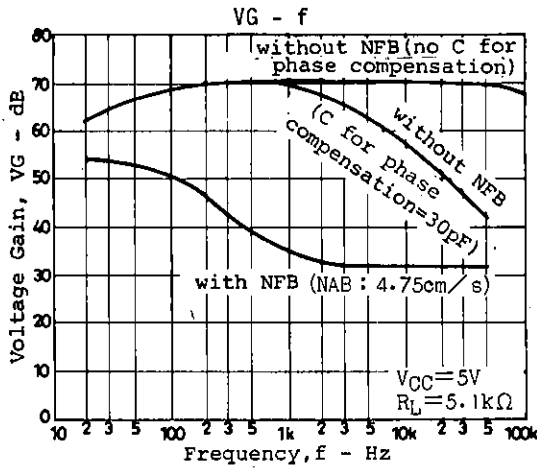
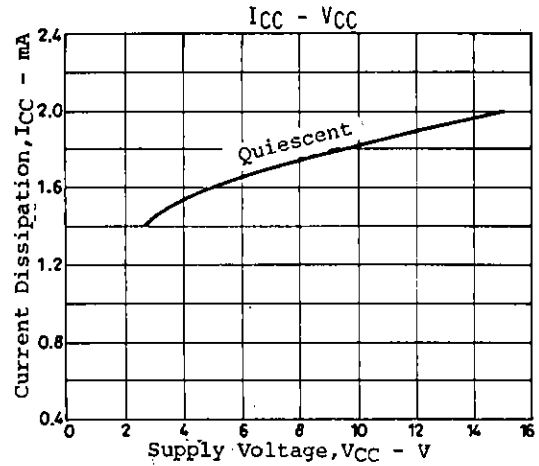
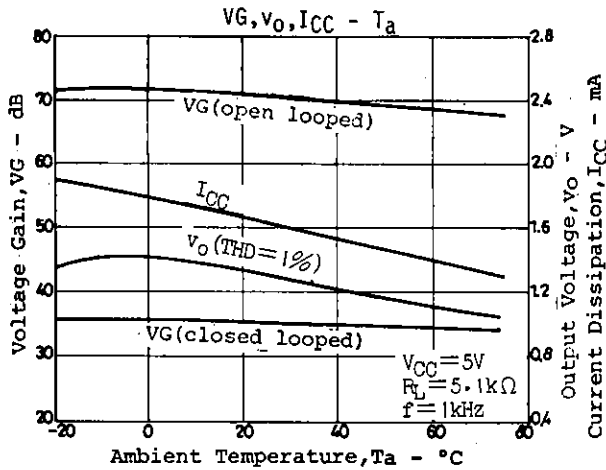
R1: Decoupling resistor used to bypass the power source ripple through C2.

R2: Collector resistor of the first stage transistor of IC. Taken as load resistance in terms of AC.

C6,R3,R4: Equalizer parts on which the closed-loop voltage gain depends. NAB 4.75 cm/s is provided.



LA3210



Proper Cares in Using IC

1. If the IC is used in the vicinity of the maximum rating, even a slight variation in conditions may cause the maximum rating to be exceeded, thereby leading to a breakdown. Allow an ample margin of variation for supply voltage, etc. and use the IC in the range where the maximum rating is not exceeded.
2. Pin-to-pin short
If the supply voltage is applied when the space between pins is shorted, a breakdown or deterioration may occur. When installing the IC on the board or applying the supply voltage, make sure that the space between pins is not shorted with solder, etc.

- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.