LA4140

3017B

Monolithic Linear IC

0.5W AF Power Amplifier

©528D

Features

- Output power 0.5W typ (V_{CC}=6V, R_L=8ohms, THD=10%).
- Low quiescent current.
- Wide operating voltage range: V_{CC}=3.5 to 12V.
- 9-pin SEP permitting sets to be small-sized and eliminating the need to use a heat sink.

Maximum Ratings at Ta=25°C

					unit
Maximum Supply Voltage	V_{CCmax}	Quiescent mode		14	V
		Operating mode	R_L=16ohms	14	V
			R_L=8ohms	12	V
Maximum Output Current	I_O			500	mA
Allowable Power Dissipation	Pdmax*			*750	mW
Operating Temperature	Topg			-20 to +70	°C
Storage Temperature	Tstg			-40 to +150	°C

*Pdmax: Installed on 50x50mm^2 PCB, See figure of Pdmax - Ta.

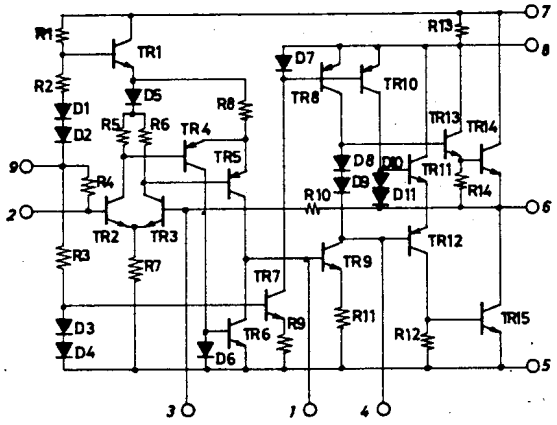
Recommended Operating Conditions at Ta=25°C

			unit
Supply Voltage	V_{CC}	6	V
Load Resistance	R_L	8	ohm

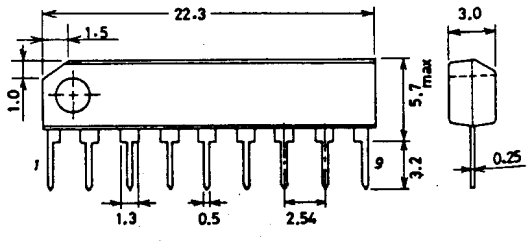
Operating Characteristics at Ta=25°C, V_{CC}=6V, R_L=8ohms, Rg=600ohms, R_f=47ohms, f=1kHz

			min	typ	max	unit
Quiescent Current	I_{CCO}			11		mA
Voltage Gain	VG		47	50	52	dB
Output Power	Po	THD=10%	0.45	0.5		W
Total Harmonic Distortion	THD	Po=100mW		0.3	1.0	%
Input Resistance	r_i			15k		ohm
Output Noise Voltage	V_{NO}	Rg=10kohms, via filter of 50Hz to 20kHz		0.4	1.0	mV

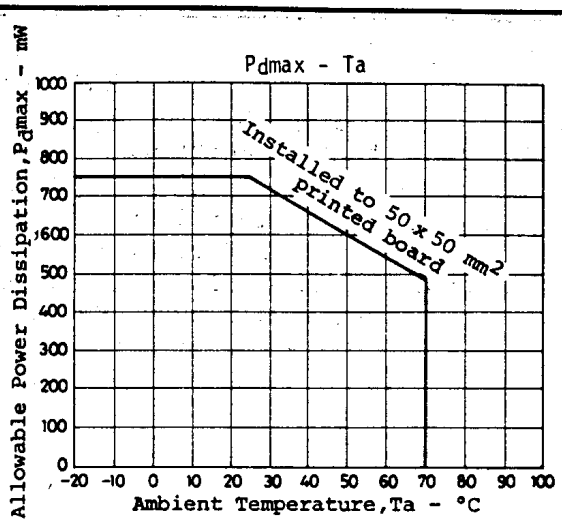
Equivalent Circuit



Case Outline 3017B-S9IC (unit:mm)



SANYO: SEP9



Notice for Using IC

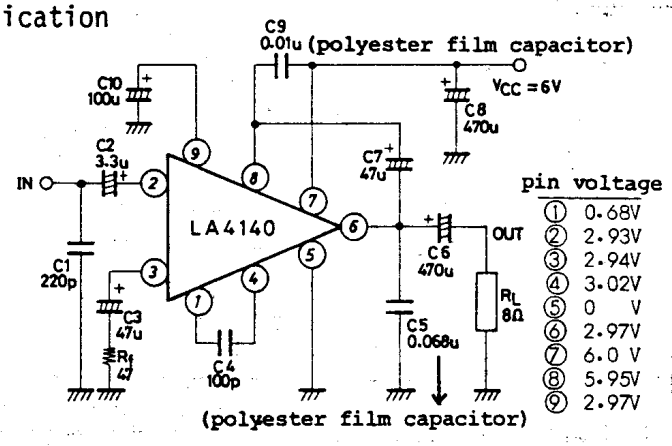
(1) Maximum Ratings
Enough margin covering supply voltage drifting should be prepared and designing over maximum ratings should be absolutely avoided because operation near these ratings causes going across the ratings and leading to destruction.

(2) Terminating Pins
Turning the circuit on leaving pin to pin of IC shorted causes destruction or failure. Turn on ascertaining that solder has never shorted pins when setting IC to printed board.

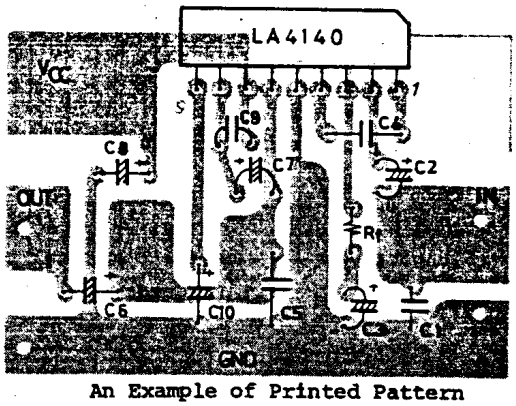
(3) Location
When used in a radio receiver, IC is designed to locate apart from a bar antenua enough.

(4) Printed Pattern Designing
As designing a printed pattern, lines of power supply, output and ground are to be widely short and pattern and peripheral parts are considerably set not to feedback from output to input.
Also, a capacitor C8 at power line, C5 and C9 of anti-oscillator are to be arranged near to pins of IC.

Application



pin	voltage
①	0.68V
②	2.93V
③	2.94V
④	3.02V
⑤	0 V
⑥	2.97V
⑦	6.0 V
⑧	5.95V
⑨	2.97V



An Example of Printed Pattern
(bottom view, 35 x 50 mm²)

[Peripheral Parts]

C1,220pF: Anti-noise capacitor.

C2,3.3uF: Coupling capacitor. Large C2 makes operating noise of variable resistor large. Small one makes frequency response of low frequency range narrow.

C3,47uF: Feedback capacitor. Small C3 makes the starting time short, but frequency response of low range narrow.

C4,100pF: For frequency response adjusting of high range, but excessive small one is apt to oscillate.

C5,0.068uF: For anti-oscillation. Polyester film capacitor is available which has good thermal and high frequency characteristics.

C6,470uF: Output capacitor. It decides power of low frequency.

C7,47uF: Bootstrap capacitor. Excessive small C7 causes wave form clipping point to be unbalanced at low frequency range.

C8,470uF: Filter capacitor.

C9,0.01uF: Anti-oscillation. Polyester film capacitor is available.

C10,100uF: Filter capacitor. Rejects power line hum. Small C10 decreases ripple rejection ratio.

R_f,47ohm: Decides voltage gain. Closed loop voltage gain is nearly calculated as follows. But about ±3dB tolerance should be prepared owing to scatter of internal resistance of IC.

$$VG = 20 \log (15000/R_f[\text{ohm}]) \quad [\text{dB}]$$