

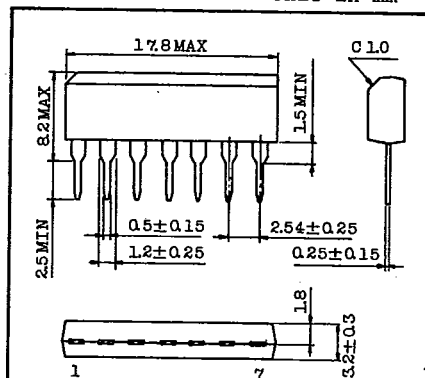
## TA7140P

## VOLTAGE AMPLIFIER

## LOW OUTPUT POWER AMPLIFIER

- Especially Suitable for Line Output Amplifier  
Recording Head Driver and Headphone Driver of Tape  
Recorder Deck.
- Low Noise :  $V_{NI}=1\mu V_{rms}$
- Wide Operating Supply Voltage Range  
:  $V_{CC}=3.5 \sim 25V$
- 150mW Audio Output Power at  $V_{CC}=20V$ ,  $R_L=150\Omega$

Unit in mm



Lead pitch is 2.54 and tolerance is  $\pm 0.25$  against theoretical center of each lead that is obtained on the basis of No.1 lead.

JEDEC

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TOSHIBA

S7A-P

MAXIMUM RATINGS ( $T_a=25^\circ C$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}$	25	V
Power Dissipation (Note)	$P_D$	400	mW
Operating Temperature	$T_{opr}$	$-25 \sim 75$	$^\circ C$
Storage Temperature	$T_{stg}$	$-55 \sim 125$	$^\circ C$

Note: Derated above  $T_a=25^\circ C$  in the proportion of  $4mW/^\circ C$ .

## ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

$V_{CC}=20V$ ,  $T_a=25^\circ C$ ,  $R_L=150\Omega$ ,  $R_f=100\Omega$ ,  $R_g=600\Omega$ ,  $f=1kHz$

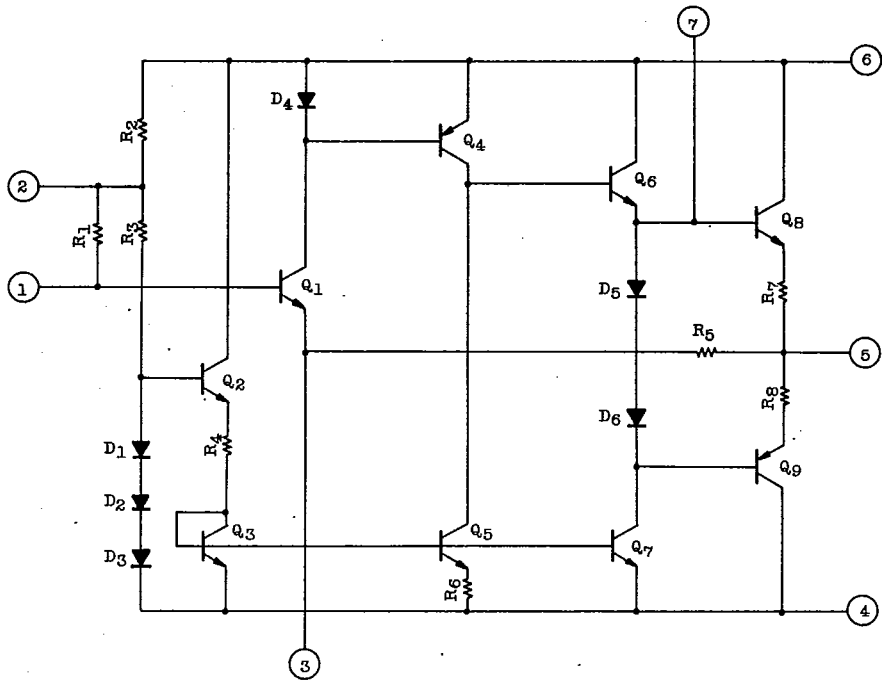
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Operating Supply Voltage Range	$V_{CCopr}$	-	-	3.5	20	25	V	
Supply Current	$I_{CC}$	-	$f=1kHz$	$V_{OUT}=0$	-	4.0	6.0	mA
				$V_{OUT}=4.5V_{rms}$	-	16.5	-	
Voltage Gain (Open Loop)	$G_{VO}$	-	$R_f=0\Omega$	-	63	-	dB	
Voltage Gain (Closed Loop) (Note)	$G_V$	-	-	36.5	40	43.5	dB	
Total Harmonic Distortion	THD	-	$V_{OUT}=4.5V_{rms}$	-	0.5	1	%	
			$V_{CC}=6.5V$ , $V_{OUT}=1.0V_{rms}$	-	1	-	%	
Maximum Output Voltage	$V_{OM}$	-	THD=10%	-	6	-	$V_{rms}$	
Input Resistance	$R_{IN}$	-	-	-	30	-	$k\Omega$	
Output Noise Voltage	$V_{NO}$	-	$BW=20Hz \sim 20kHz$ , $R_g=1k\Omega$	-	100	200	$\mu V_{rms}$	

Note: In regard to the value of voltage gain (closed loop), it is possible to be classified.

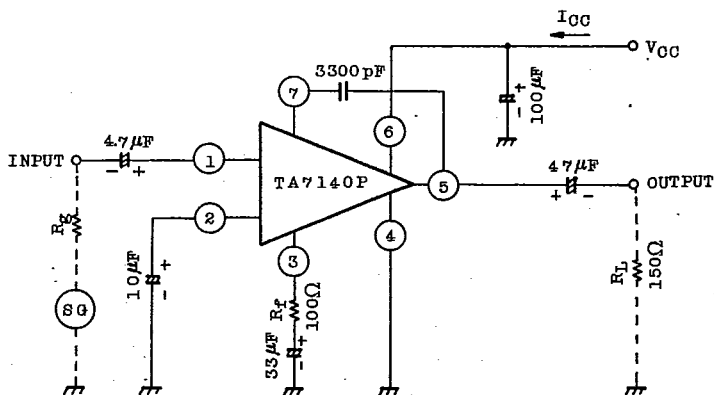
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## EQUIVALENT CIRCUIT

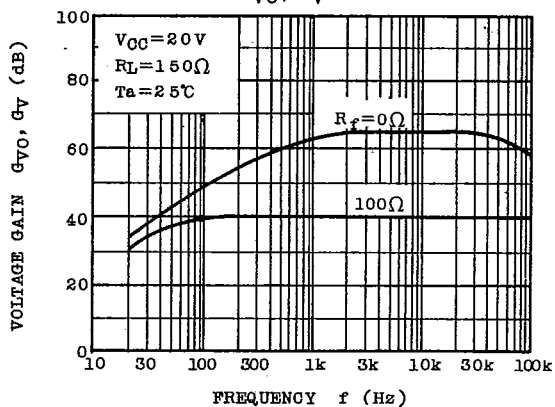
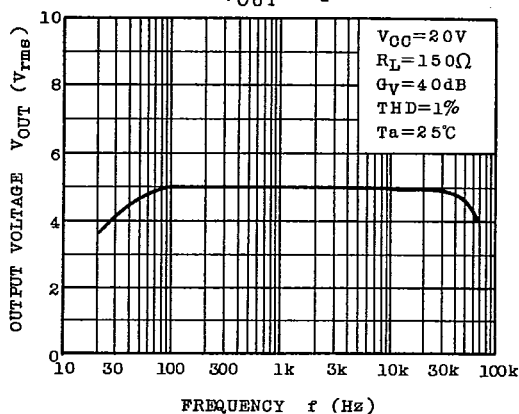
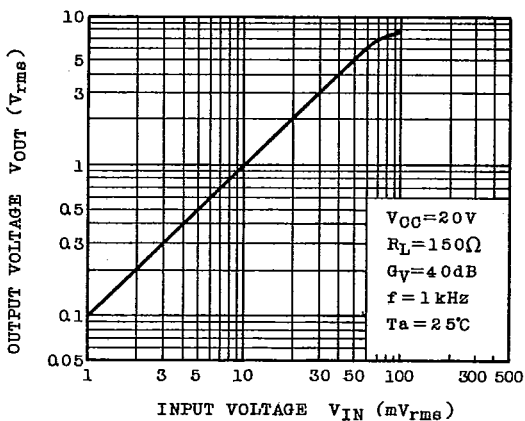
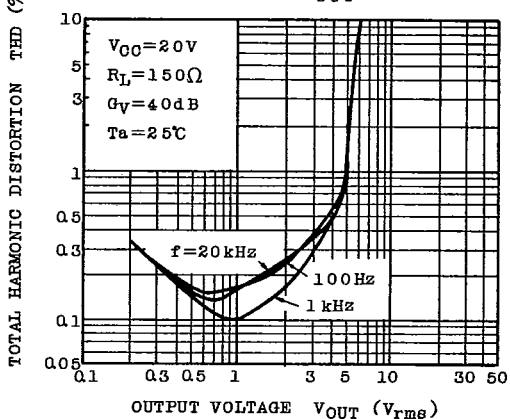
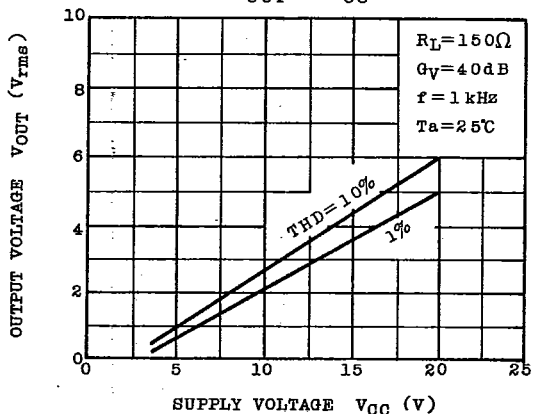
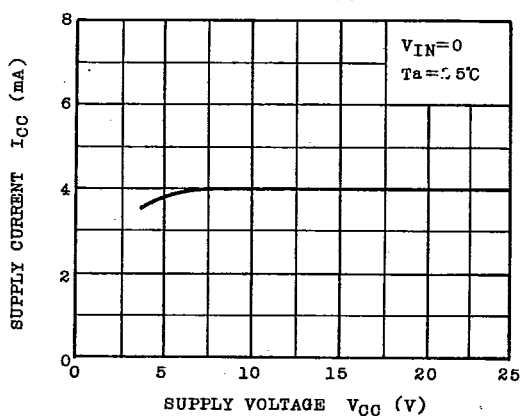


## TEST CIRCUIT



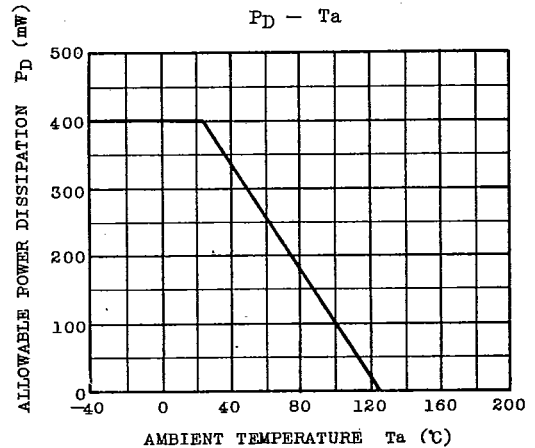
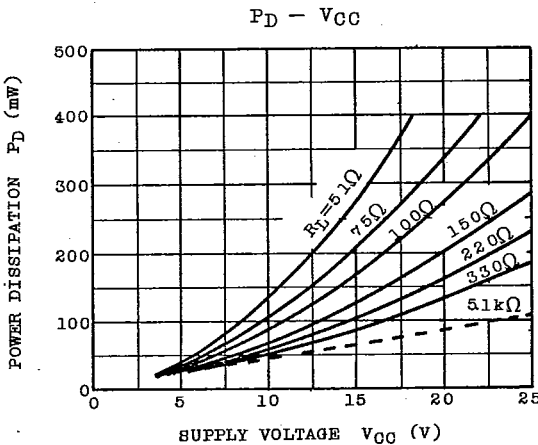
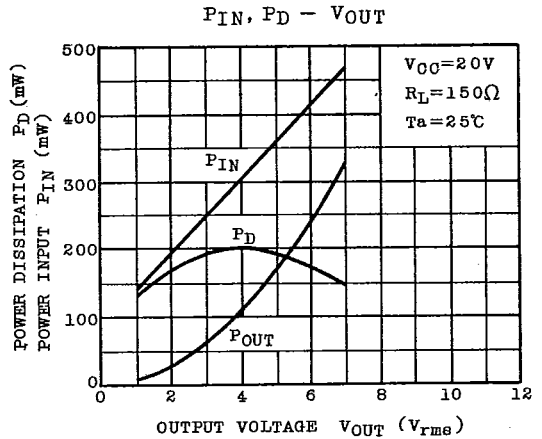
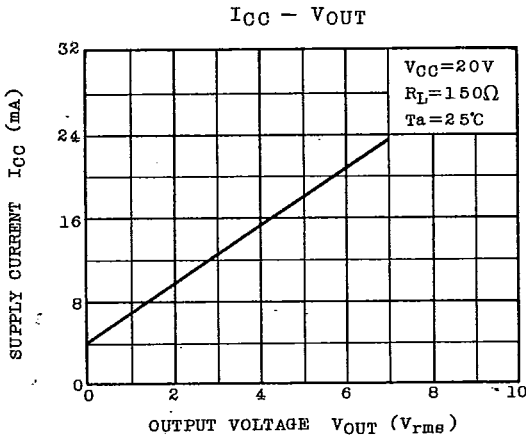
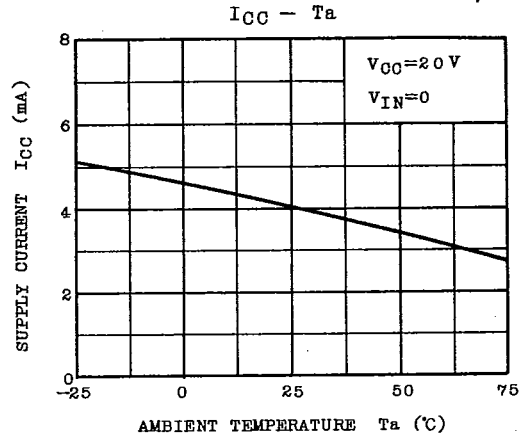
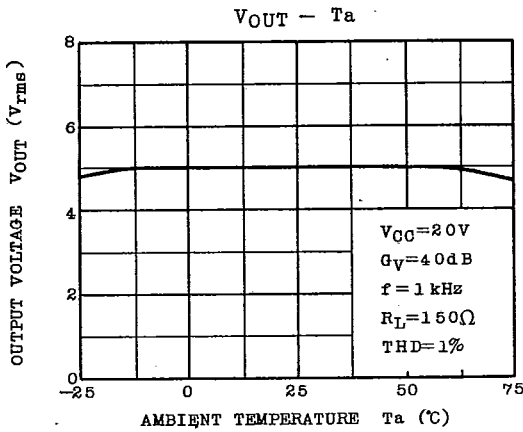
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 $G_{VO}, G_V - f$  $V_{OUT} - f$  $V_{OUT} - V_{IN}$ THD -  $V_{OUT}$  $V_{OUT} - V_{CC}$  $I_{CC} - V_{CC}$ 

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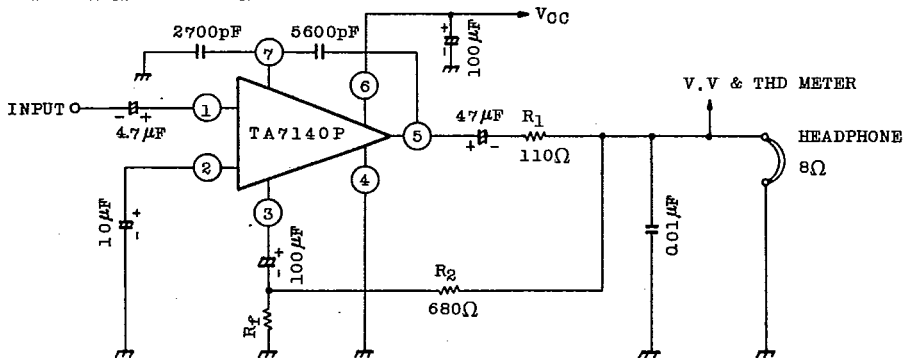
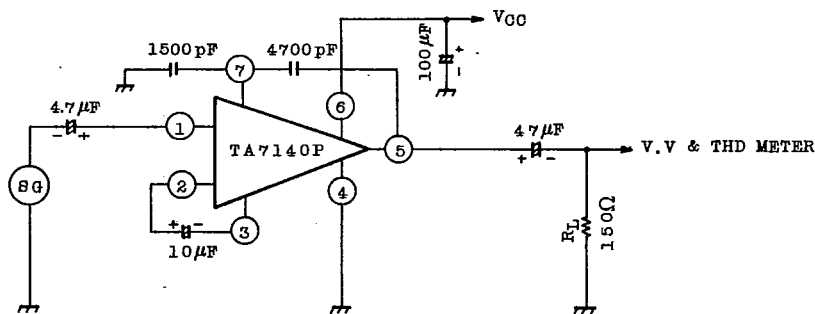


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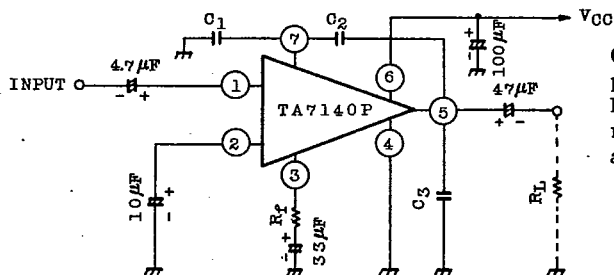
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## APPLICATION CIRCUIT

## 1. HEADPHONE AMPLIFIER

2. BUFFER AMPLIFIER ( $G_v=9\text{dB}$ )

## 3. FLAT AMPLIFIER



$C_1, C_2$  and  $C_3$  are for preventing parasitic oscillation. For various closed loop gain, recommended compensation values are shown in the following table.

## VOLTAGE GAIN

$G_v$	40dB	30dB	20dB	10dB	0dB
$R_f$ [ $\Omega$ ]	100	330	1.1k	4.7k	$\infty$ (open)
$C_1$ [pF]	0	1500	1500	1500	1500
$C_2$ [pF]	3300	4700	4700	4700	4700
$C_3$ [pF]	0	0	0	0	2200

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