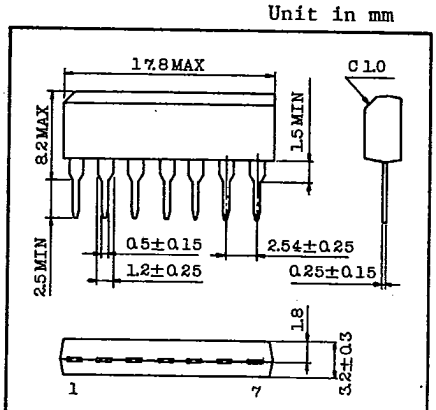
TA7140P

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}=1μV_{rms}
- Wide Operating Supply Voltage Range
  : V_{CC}=3.5~25V
- 150mW Audio Output Power at V_{CC}=20V, R_L=150Ω

Unit in mm



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

JEDEC	—
TOSHIBA	S7A-P

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	25	V
Power Dissipation (Note)	P_D	400	mW
Operating Temperature	Topr	-25~75	°C
Storage Temperature	Tstg	-55~125	°C

Note: Derated above Ta=25°C in the proportion of 4mW/°C.

ELECTRICAL CHARACTERISTICS (Unless otherwise specified V_{CC}=20V, Ta=25°C, R_L=150Ω, R_f=100Ω, R_g=600Ω, f=1kHz)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	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}=4.5Vrms	-	16.5	-	
Voltage Gain (Open Loop)	G_{VO}	-	R_f=0Ω		-	63	-	dB
Voltage Gain (Closed Loop) (Note)	G_V	-	-		36.5	40	43.5	dB
Total Harmonic Distortion	THD	-	V_{OUT}=4.5Vrms		-	0.5	1	%
			V_{CC}=6.5V, V_{OUT}=1.0Vrms		-	1	-	%
Maximum Output Voltage	V_{OM}	-	THD=10%		-	6	-	V_{rms}
Input Resistance	R_{IN}	-	-		-	30	-	kΩ
Output Noise Voltage	V_{NO}	-	BW=20Hz~20kHz, R_g=1kΩ		-	100	200	μV_{rms}

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

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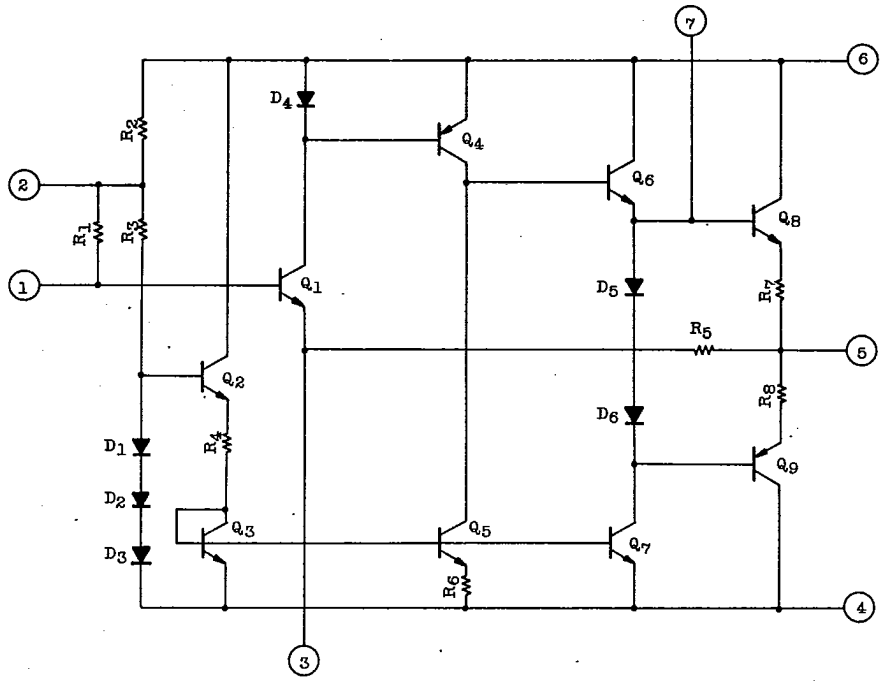
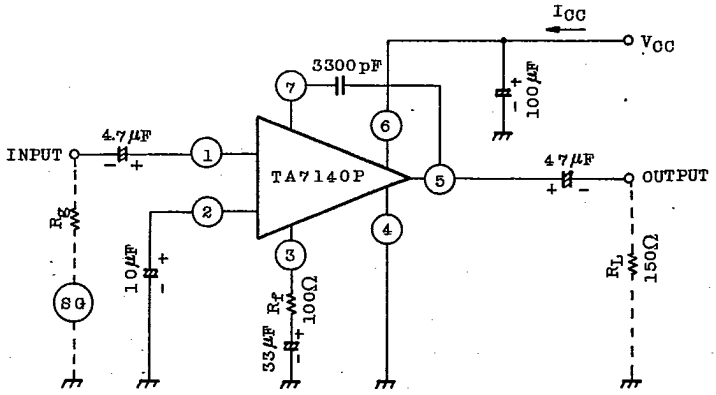
EQUIVALENT CIRCUIT



TEST CIRCUIT



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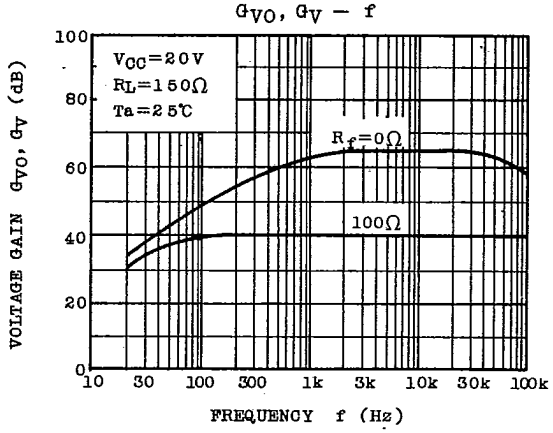
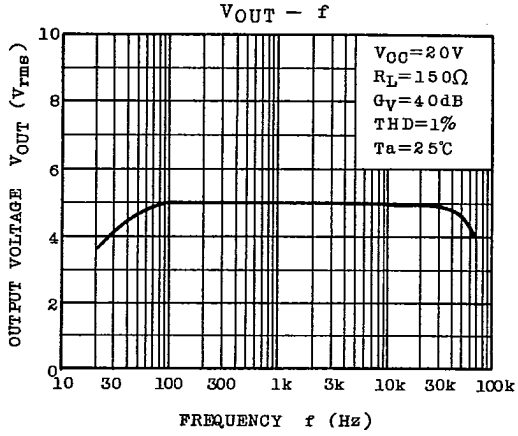
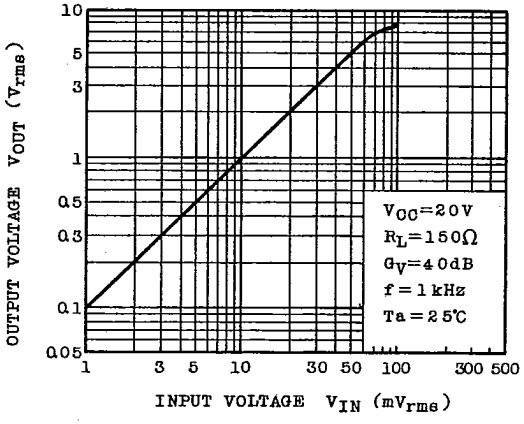
G_{VO}, G_V – f



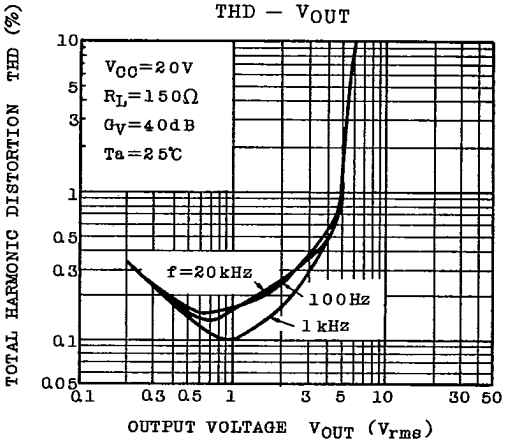
V_{OUT} – f



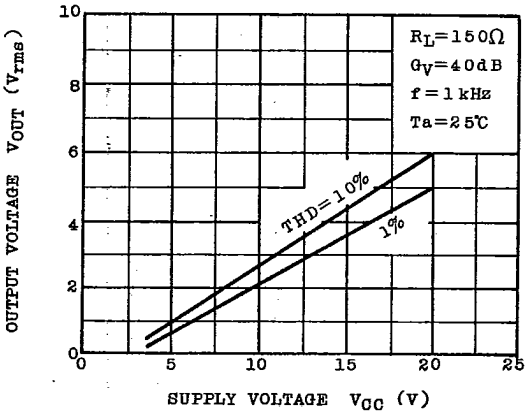
V_{OUT} – V_{IN}



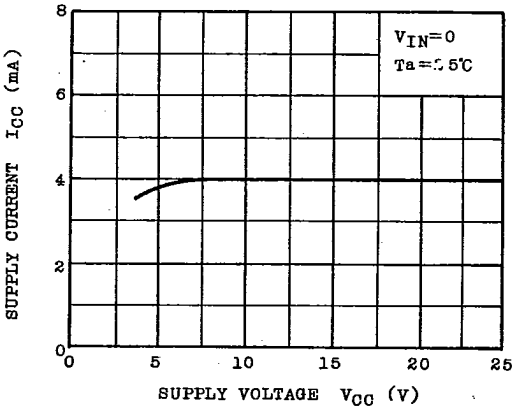
THD – V_{OUT}



V_{OUT} – V_{CC}



I_{CC} – V_{CC}



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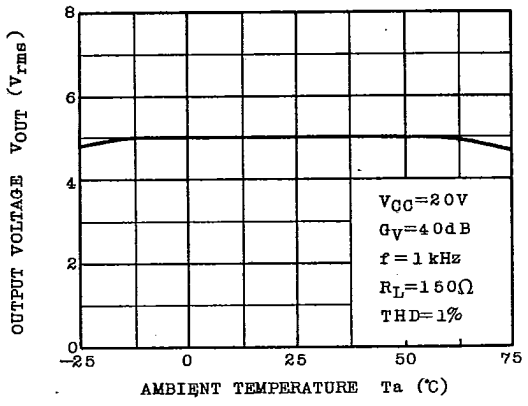
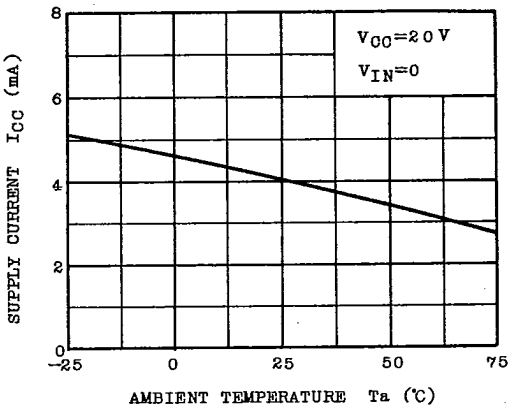
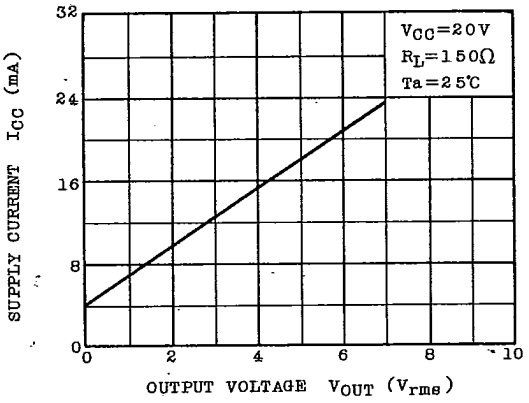
V_{OUT} – Ta



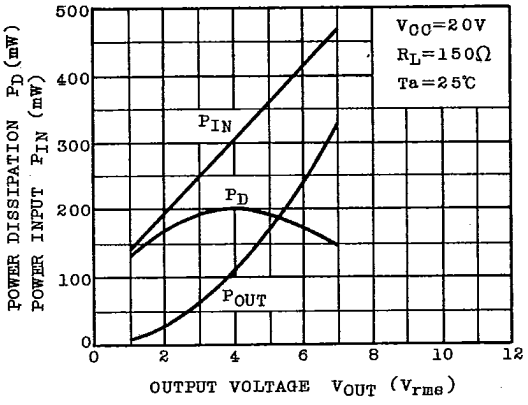
I_{CC} – Ta



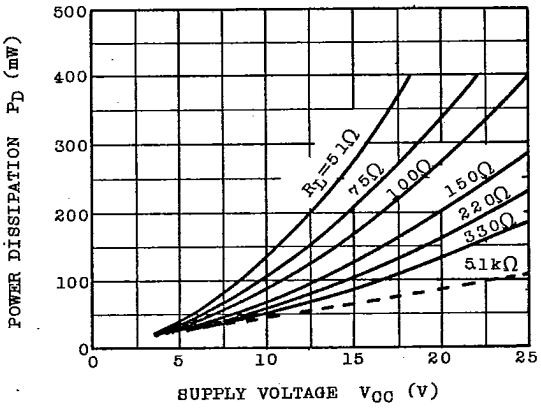
I_{CC} – V_{OUT}



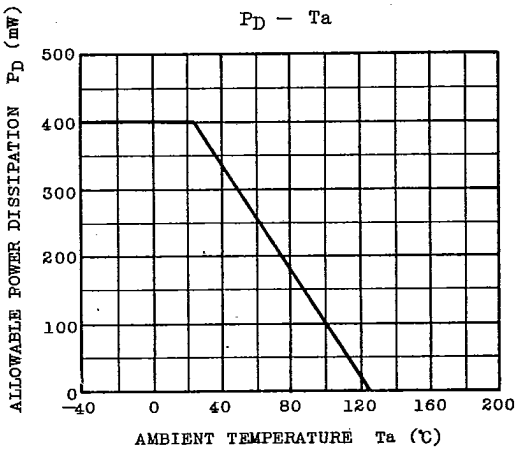
P_{IN}, P_D – V_{OUT}



P_D – V_{CC}



P_D – Ta



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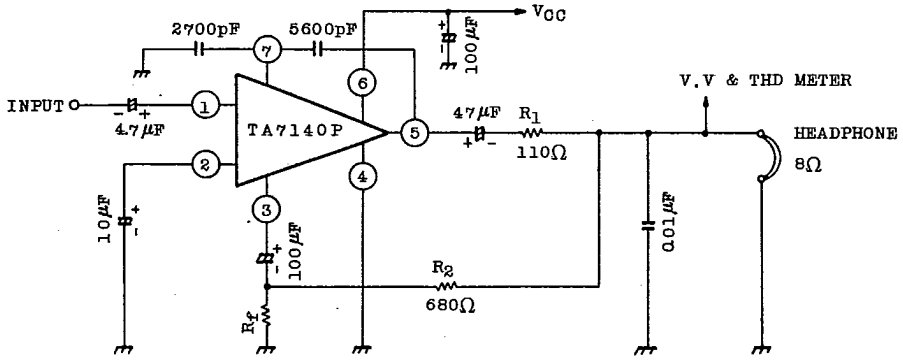
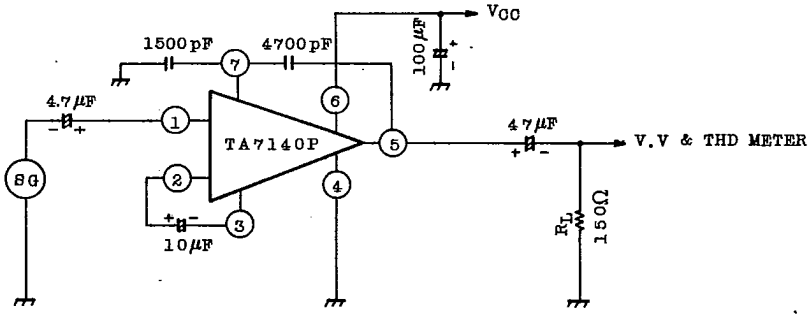
APPLICATION CIRCUIT

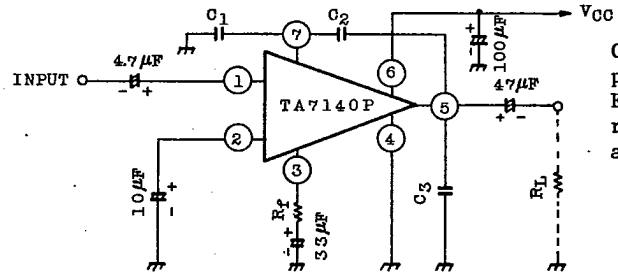
1. HEADPHONE AMPLIFIER



2. BUFFER AMPLIFIER (G_V=9dB)



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 [Ω]	100	330	1.1k	4.7k	∞(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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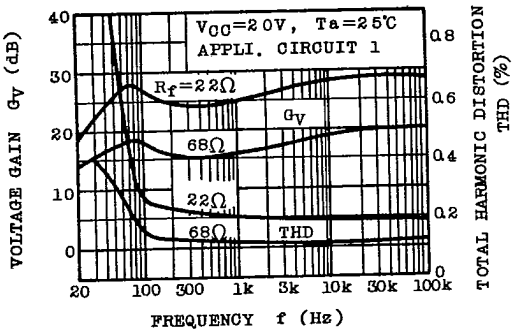
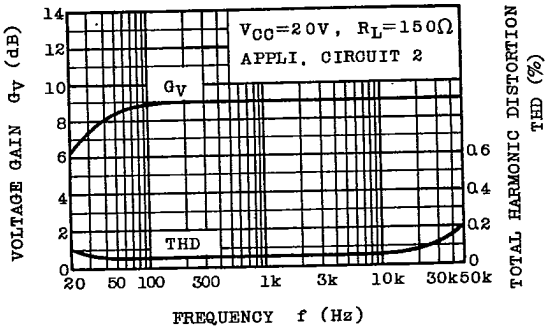
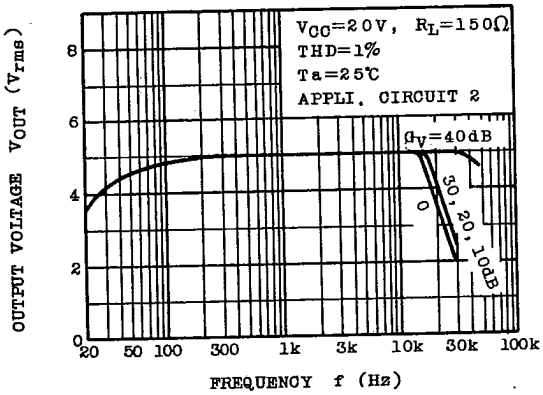
G_V, THD – f



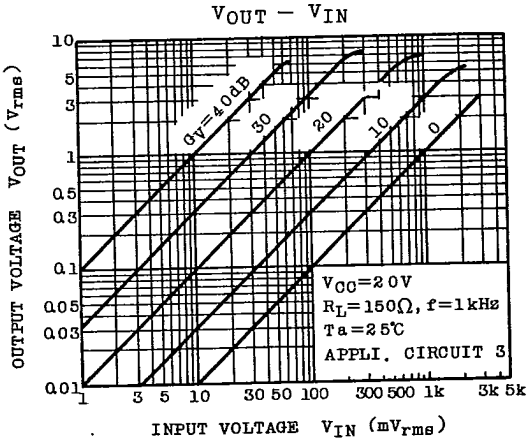
G_V, THD – f



V_{OUT} – f



V_{OUT} – V_{IN}



G_V – f