

9097247 TOSHIBA. ELECTRONIC

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TA7222AP

T-74-05-01

5.8W AUDIO POWER AMPLIFIER

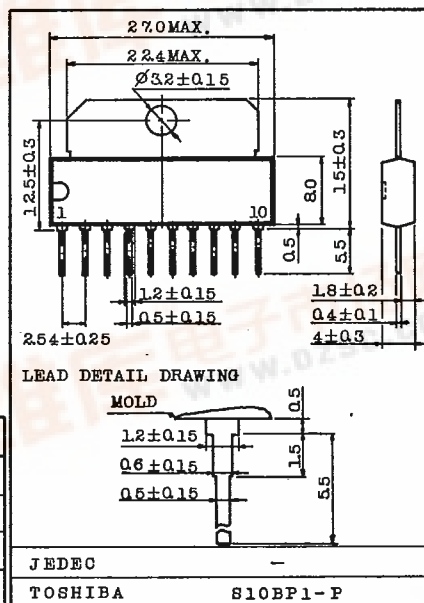
CAR STEREO CAR RADIO AUDIO OUTPUT

- . Very Few External Parts (Require 4 PCS Capacitor)
- . Adjustable Closed-Loop Gain
- . High Sustaining Over Voltage (Surge voltage up to 40V for 0.2sec. pin 1 to 8)
- . Excellent Ripple Rejection
- . High Power and Low Distortion :
 $P_{OUT}=5.8W(Typ.)$ at $V_{CC}=13.2V, R_L=4\Omega, THD=10\%$
 $THD=0.2\%(Typ.)$
- . Possible to Use for 2Ω Load :
 $P_{OUT}=9.3W(Typ.)$ at $V_{CC}=13.2V, THD=10\%$
- . Operating Supply Voltage Range : $V_{CC}=8 \sim 18V$
- . Audio Muting Circuit
- . Protection Circuit (for Load Short, Excessive Supply Voltage and Thermal Shut-down)

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Peak Supply Voltage (200ms)	VCC surge	40	V
D.C Supply Voltage	VCC(DC)	25	V
Operating Supply Voltage	VCC(ope)	18	V
Output Current (Peak)	IO(peak)	4.5	A
Power Dissipation (Tc=25°C)	Pd	12.5	W
Operating Temperature	Popr	-30 ~ 75	°C
Storage Temperature	Tstg	-55 ~ 150	°C

Unit in mm



ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{CC}=12.5V, R_L=4\Omega, R_g=600\Omega, f=1kHz, T_a=25^\circ C$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	ICCQ	-	-	-	40	80	mA
			$V_{CC}=18V$	-	45	100	
Output Power	POUT	-	THD=10%	-	5.2	-	W
			$V_{CC}=13.2V, THD=10\%$	5.0	5.8	-	
			$V_{CC}=13.2V, R_L=2\Omega, THD=10\%$	-	9.3	-	
Maximum Output Power	POM	-	$V_{CC}=13.2V, V_{IN}=100mV$	-	9.0	-	W
Total Harmonic Distortion	THD	-	POUT=1W	-	0.2	1.5	%
			POUT=100mW	-	0.36	1.0	
			POUT=1W, $R_L=2\Omega$	-	0.5	-	
Voltage Gain	Gv	-	-	51.5	53	54.5	dB
Input Resistance	RIN	-	-	-	34	-	kΩ
Output Noise Voltage	VNO	-	$R_g=10k\Omega, BW=50 \sim 20kHz$	-	0.9	2.0	mV

AUDIO LINEAR IC

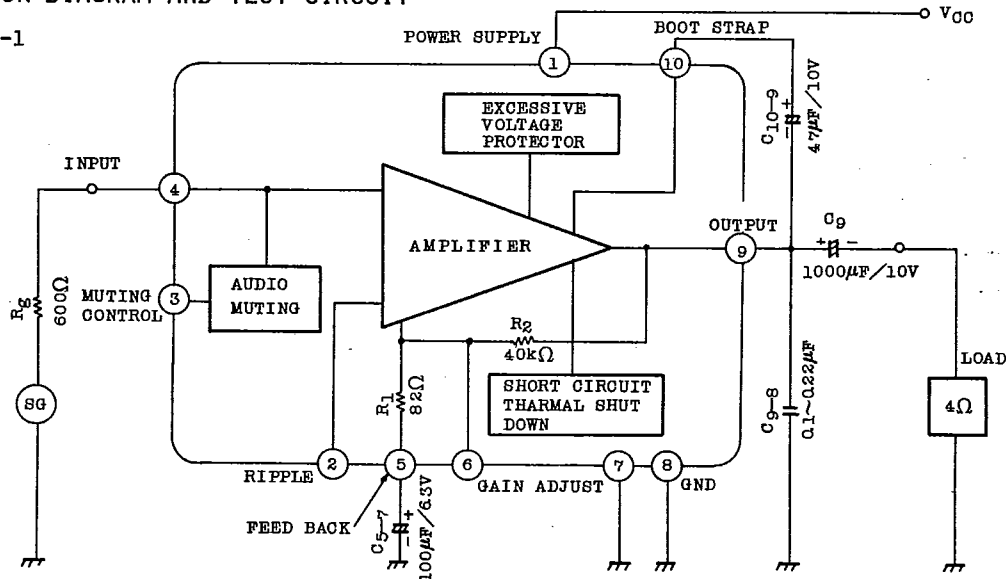


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BLOCK DIAGRAM AND TEST CIRCUIT

FIG-1



1. Terminal ⑦ is input stage GND, terminal ⑧ is output stage GND.
 2. Closed-loop voltage gain of the amplifier is determined by the ratio ; $(R_1+R_2)/R_1$. TA7222AP is fixed at typically 53.0 dB for designing minimum external components.
 - . When higher closed loop gain is desired, the gain can be increased by connecting a resistor between pin ⑤ and pin ⑥ . Open loop gain is obtained by shortening pin ⑤ and pin ⑥ .
 - . When lower closed loop gain is desired, the following two ways can be used.
 - A. Series connecting a resistor and a capacitor between pin ⑥ and pin ⑨ .
 - B. Series adding a resistor to pin ⑤.
- Both A and B, lower closed loop gain than 40 dB is not recommended. And also, ripple rejection ratio is decreased by using B configuration in such a case, connecting a capacitor from pin ② to ground is recommended. (Fig.2,3,4 show these ways.)
3. For applications requiring high ripple rejection ratio, an excellent supply voltage ripple rejection is obtained by connecting a capacitor (recommended value 4.7μF) between pin ② and ground. (R.R-f shows these characteristics)
 4. Terminal ③ is Audio Muting Control Input.
 - . When control input is low state (; open or below 0.3V), muting circuit does not operate, OFF.
 - . When control input is high state (; above 1.0V), muting circuit, then, operates, ON. (Refer to Fig.5)

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APPLICATION CIRCUIT

HIGHER CLOSED LOOP GAIN CIRCUIT

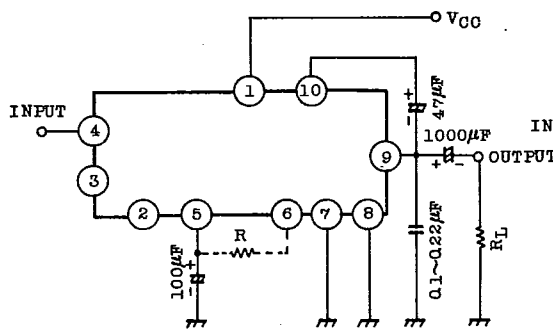


FIG-2

LOWER CLOSED LOOP GAIN CIRCUIT (A)

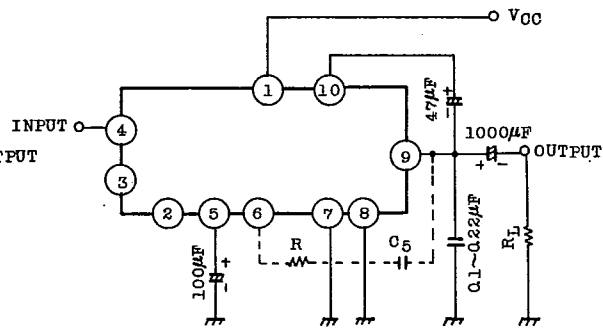
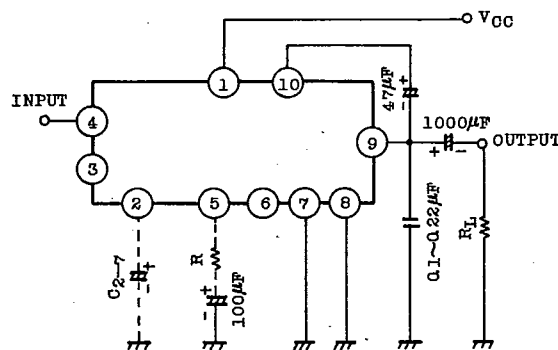


FIG-3

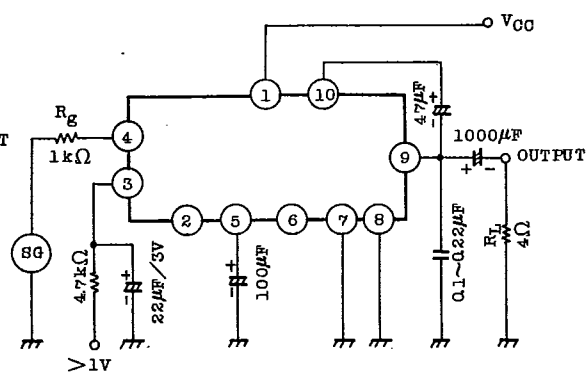
LOWER CLOSED LOOP GAIN CIRCUIT (B)



Note : Capacitor C_{2-7} must be used when high ripple rejection ratio is requested.

FIG-4

AUDIO MUTING CIRCUIT



Note : Power output reduction level
-40dB at $R_g=1k\Omega$
-35dB at $R_g=0$

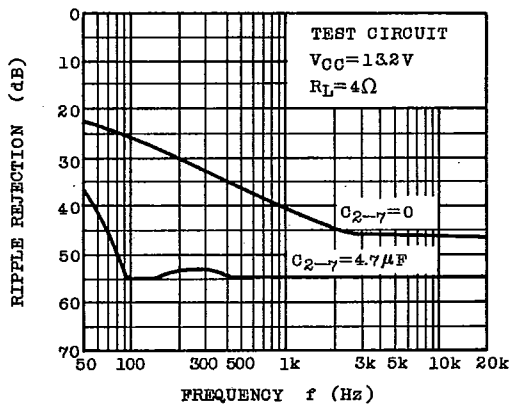
FIG-5

AUDIO LINEAR IC

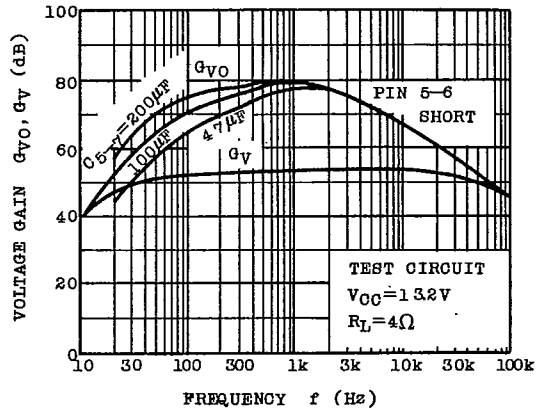
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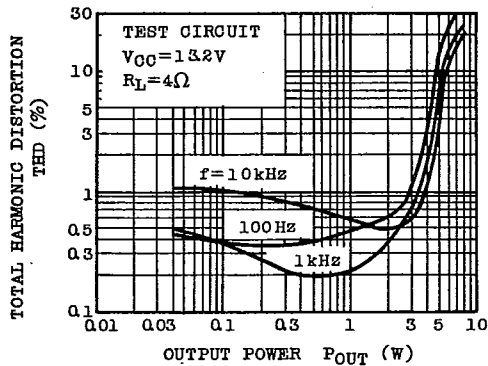
RIPPLE REJECTION - f



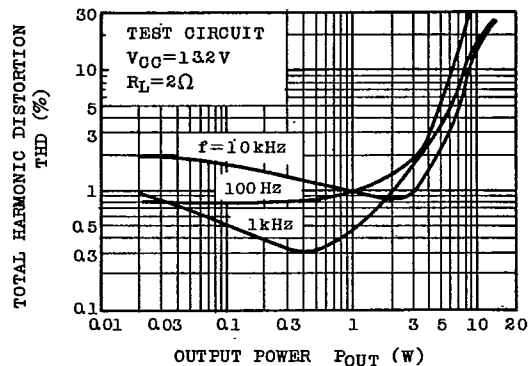
$G_{VO}, G_V - f$



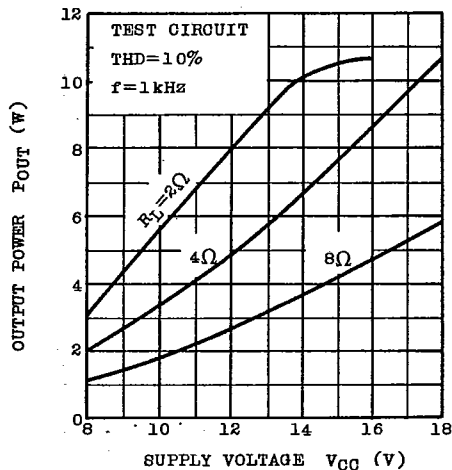
THD - P_{OUT}



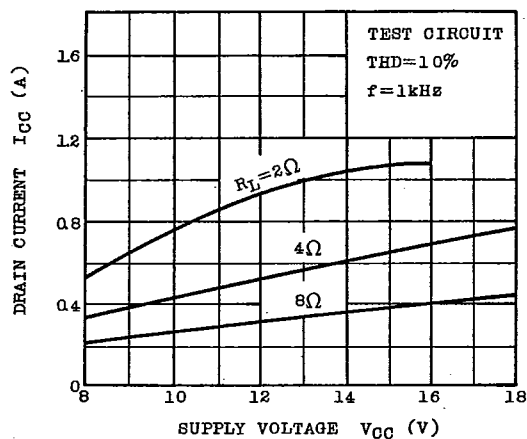
THD - P_{OUT}



P_{OUT} - V_{CC}

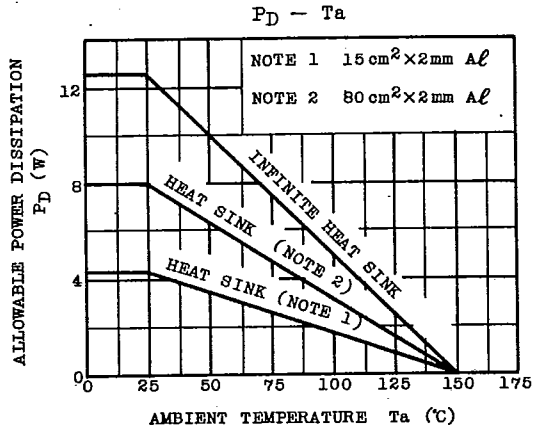
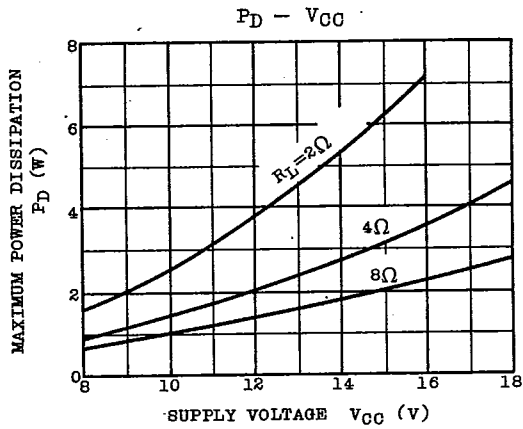


I_{CC} - V_{CC}



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