

DUAL AUDIO POWER AMPLIFIER

The KIA8200AH is dual audio power amplifier for consumer applications.

This IC provides an output power of 13 watts per channel (at $V_{CC}=28V$, $f=1kHz$, $THD=10\%$, $R_L=8\Omega$.)

It is suitable for power amplifier of TV and home stereo.

FEATURES

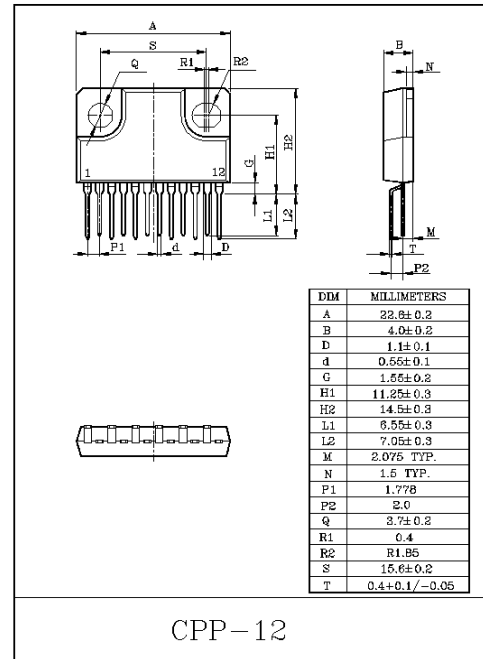
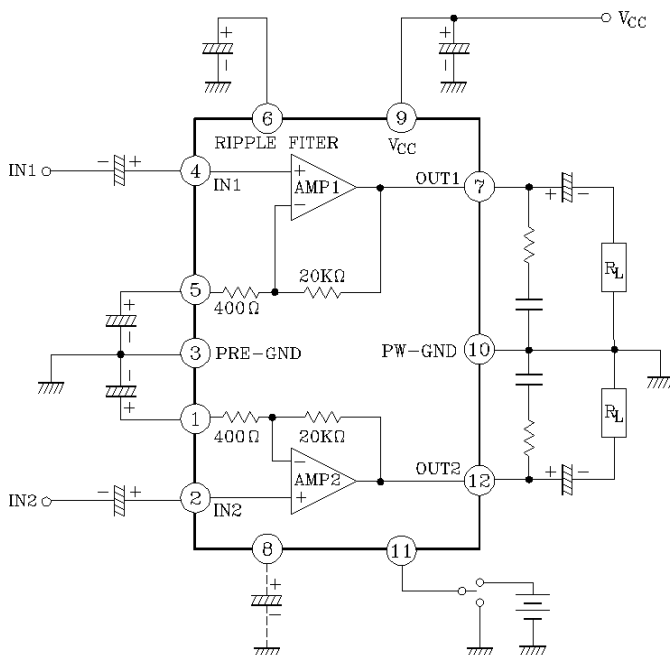
- High Output Power
: $P_{OUT}=13W/channel(Typ.)$
($V_{CC}=28V$, $R_L=8\Omega$, $f=1kHz$, $THD=10\%$)
- Low Noise
: $V_{NO}=0.14mV_{rms}(Typ.)$
($V_{CC}=28V$, $R_L=8\Omega$, $G_v=34dB$, $R_g=10k\Omega$, $BW=20Hz\sim 20kHz$)
- Very Few External Parts.
- Built-in Audio Muting Circuit.
- Built-in Thermal Shut Down Protector Circuit.
- Operating Supply Voltage. : $V_{CC(opr)}=10\sim 37V(T_a=25^\circ C)$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	37	V
Output Current (Peak/Ch)	$I_{O(peak)}$	2.5	A
Power Dissipation	P_D *	25	W
Operating Temperature	T_{opr}	-20~75	$^\circ C$
Storage Temperature	T_{stg}	-55~150	$^\circ C$

* : Derated above $T_a=25^\circ C$ in the proportion of $200mW/^\circ C$ for KIA8200AH

BLOCK DIAGRAM



KIA8200AH

ELECTRICAL CHARACTERISTICS

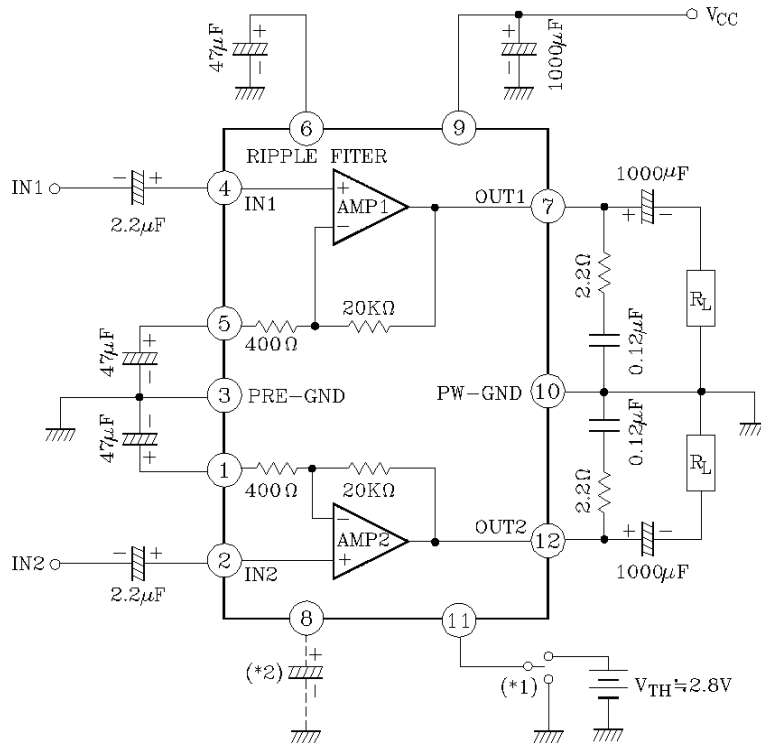
(Unless otherwise specified, $V_{CC}=28V$, $R_L=8\Omega$, $f=1kHz$, $T_a=25^\circ C$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I_{CCQ}	-	$V_{IN}=0$	-	50	105	mA
Output Power	$P_{OUT(1)}$	-	THD=10%	10	13	-	W
	$P_{OUT(2)}$	-	THD=1%	-	10	-	
Total Harmonic Distortion	THD	-	$P_{OUT}=2W$	-	0.04	0.2	%
Voltage Gain	G_V	-	$V_{OUT}=0.775V_{rms}$ (0dBm)	32.5	34.0	35.5	dB
Input Resistance	R_{IN}	-	-	-	30	-	k Ω
Ripple Rejection Ratio	R.R	-	$R_g=0$, $f_{ripple}=100Hz$, $V_{ripple}=0.775V_{rms}$ (0dBm)	-40	-50	-	dB
Output Noise Voltage	V_{NO}	-	$R_g=10k\Omega$, BW=20Hz~20kHz	-	0.14	0.3	mV $_{rms}$
Cross Talk.	C.T	-	$R_g=10\Omega$, $V_{OUT}=7.775V_{rms}$ (0dBm)	-	-70	-	dB
Muting Threshold Voltage	$V_{th\textcircled{1}}$	-	-	2.6	2.8	-	V

TYP. DC VOLTAGE OF EACH TERMINAL ($V_{CC}=28V$, $T_a=25^\circ C$)

TERMINAL No.	1	2	3	4	5	6	7	8	9	10	11	12
DC Voltage(V)	1.6	20m	GND	20m	1.6	9.4	13.0	5.0	V_{CC}	GND	2.8	13.0

TEST CIRCUIT



(*1) Mute on at $\textcircled{1}$ pin low

$V_{TH}=2.8V$ (Typ.), $V_{CC}=28V$, $T_a=25^\circ C$

(*2) The capacitor for reducing POP noise at mute ON.

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APPLICATION INFORMATION

(1) Voltage Gain

The closed loop voltage gain is determined by R_1 , R_2

$$G_V = 20 \log \frac{R_1 + R_2}{R_2} \text{ (dB)}$$

$$= 20 \log \frac{20\text{k}\Omega + 400\Omega}{400\Omega} = 34\text{(dB)}$$

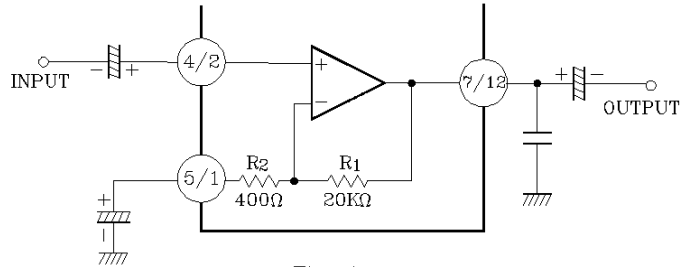


Fig. 1

(2) Amplifier with gain < 34dB

$$G_V = 20 \log \frac{R_1 + R_2 + R_3}{R_2 + R_3} \text{ (dB)}$$

When $R_3 = 220\Omega$

$G_V \approx 30\text{(dB)}$
is given.

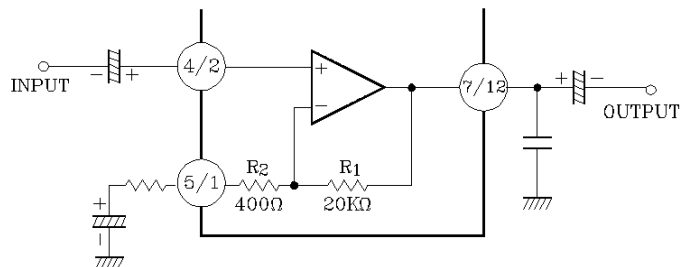


Fig. 2

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Muting

(1) Audio muting

This IC is possible to make audio muting operation by using ⑩pin muting terminal.

In Fig.3, the equivalent circuit in the muting circuit section is shown.

By means of reducing the voltage of ⑩pin down to 2.8V or less in Fig.3, Q₁ is turned ON and the base voltage of Q₂ in the differential circuit fabricated with Q₂ and Q₃.

Therefore, with the voltage reduction of ⑩pin, the input circuits of dummy of input terminal and that in the dotted line operate and cut-off the input signal.

After muting, the bias circuit continues its operation and the power supply current of quiescent time.

⑧pin, the capacitor terminal for reducing the pop noise can reduce the pop noise through making the time constant longer by means of inserting the capacitor externally.

In the case this terminal is not used, short ⑧pin with ⑩pin.

The voltage of ⑩pin set up to 4V or more.

(2) IC internal muting at V_{CC} OFF

When V_{CC}=8V or less at V_{CC} off, the detection circuit at V_{CC} off is operated. And the base voltage of Q₁ is reduced and the muting operation is mode.

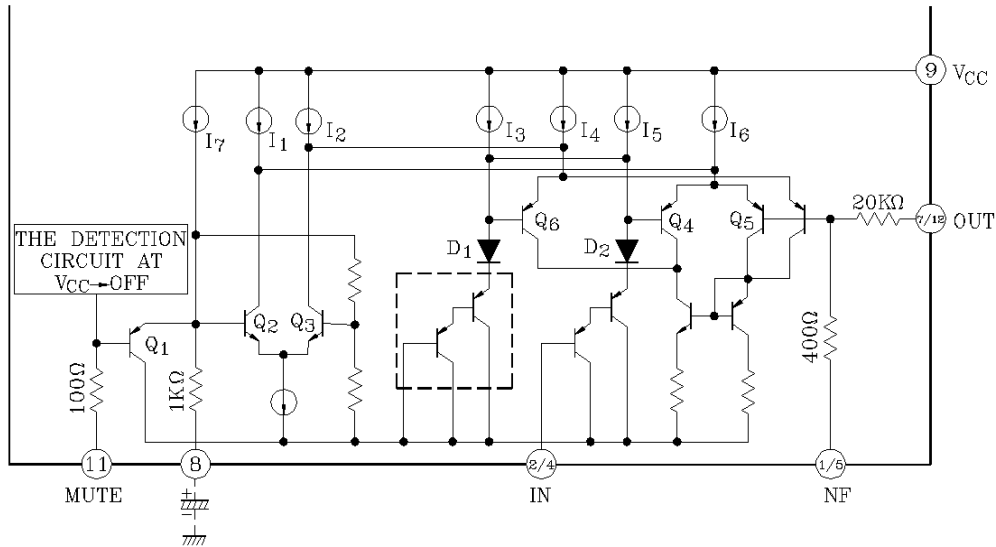
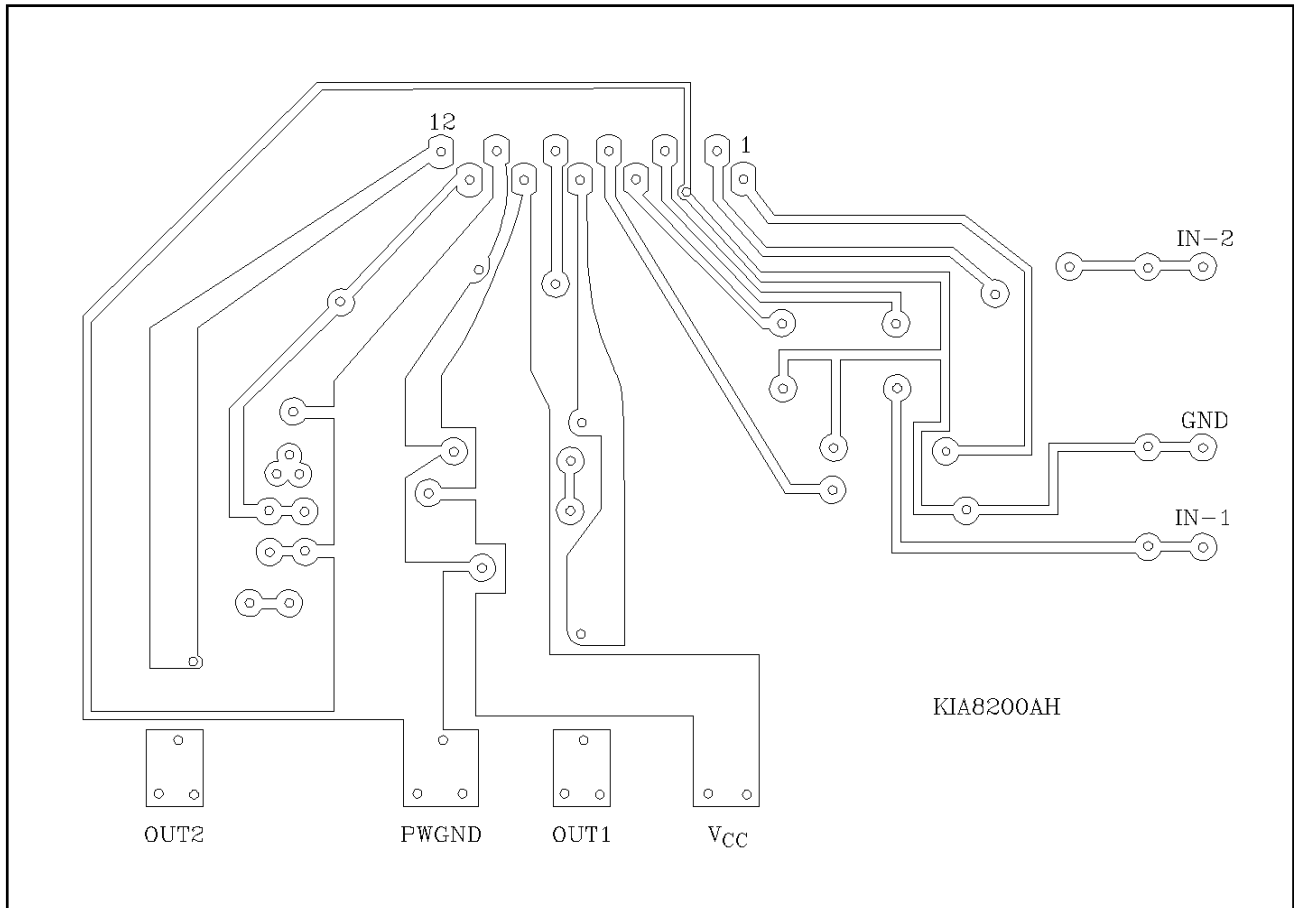


Fig. 3

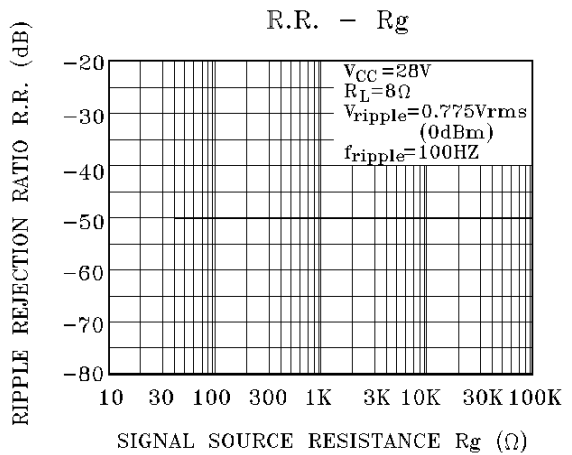
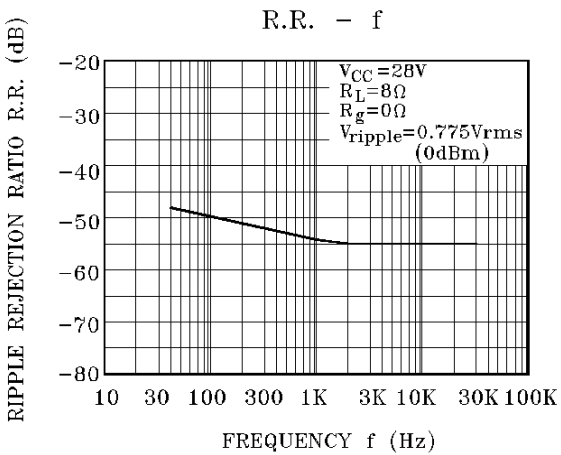
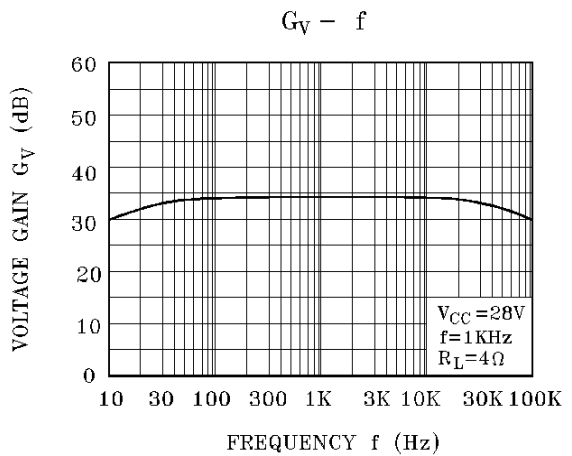
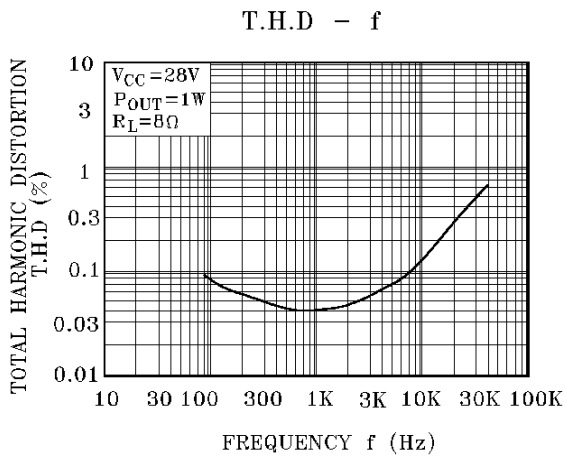
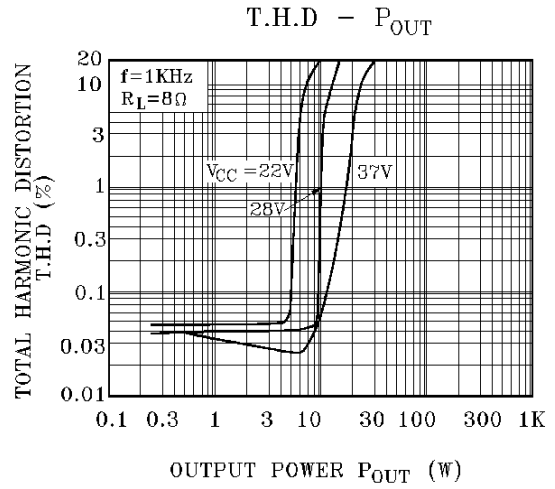
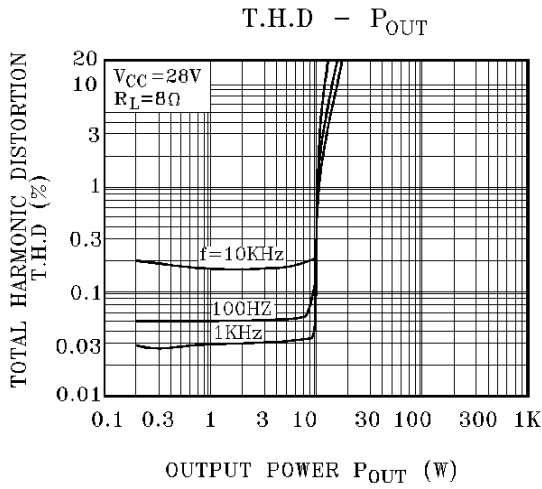
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(3) Standard PCB KIA8200AH

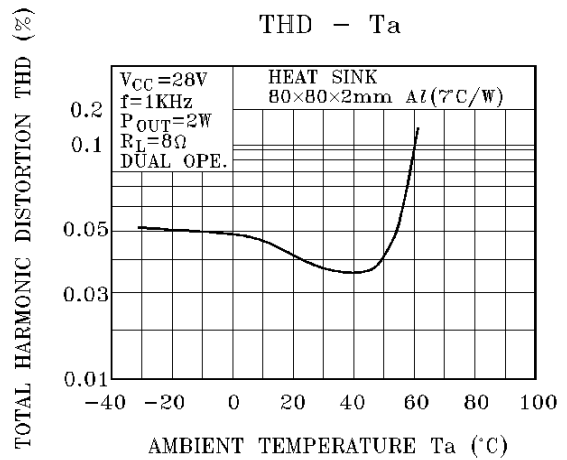
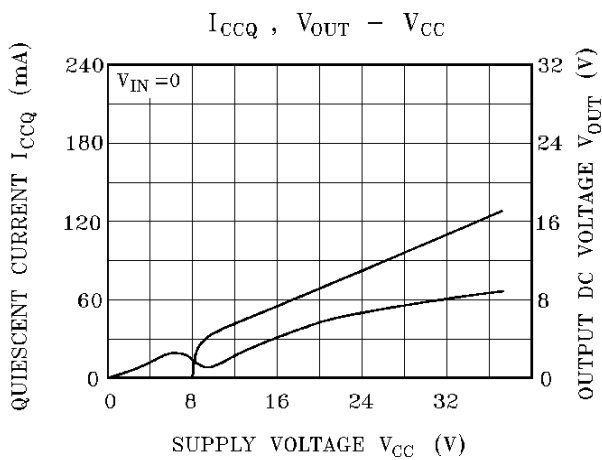
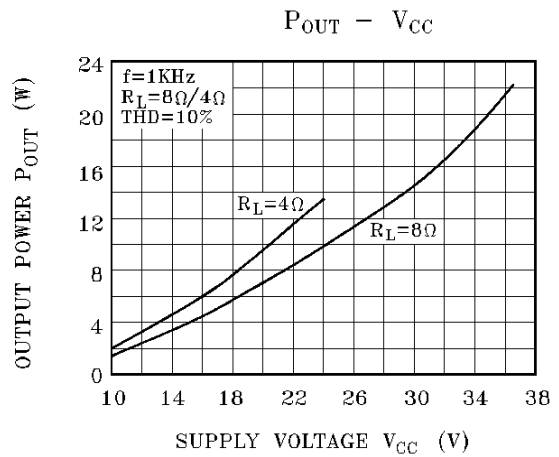
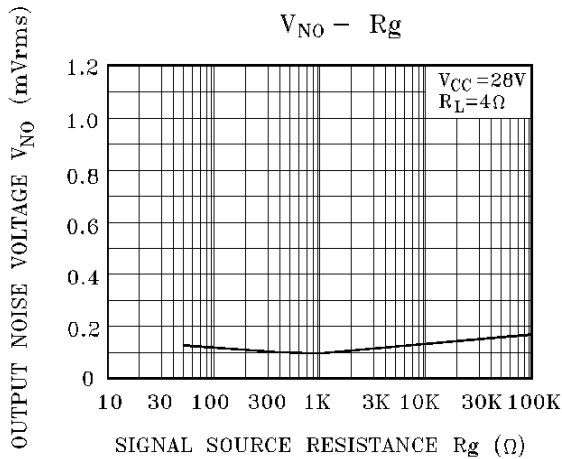
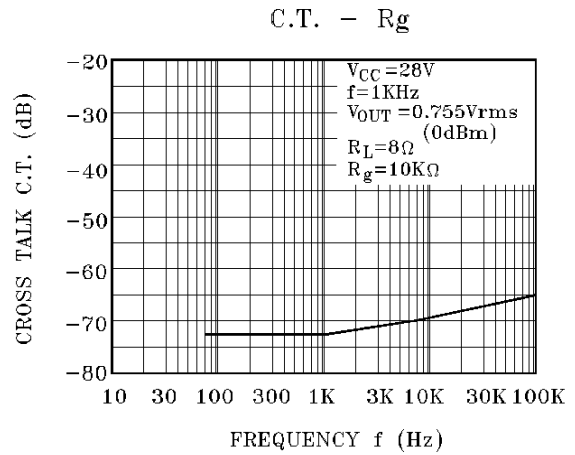
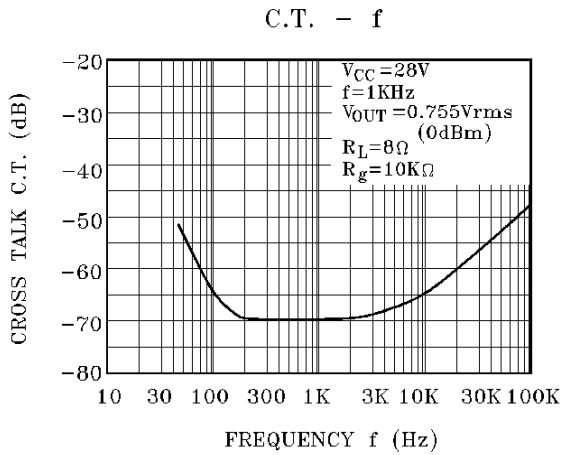


(BOTTOM VIEW)

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