

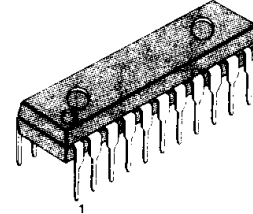
### 3-BAND DUAL GRAPHIC EQUALIZER AMPLIFIER

The KA22233 is a monolithic integrated circuit consisting of an operational amplifier, three resonant circuits with an active filter, and it is suitable for radio cassette recorders, car stereos or music centers and audio systems.

#### FEATURES

- Tone control with independent adjustment of each band through an external capacitor.
- Gain control through an external variable resistor.
- Increasing the bands by adding resonant circuit or using two KA22233 in series.
- Low noise ( $V_{NO} = 7\mu V$  Typ, at Flat).
- Low distortion (THD=0.02% Typ, at f=1KHz, Flat).
- Large allowable input ( $V_i = 2.3V$  Typ, at  $V_{CC} = 9V$ , f=1KHz, Flat).
- Wide operating supply voltage range:  $V_{CC} = 5V \sim 15V$

22 DIP



#### ORDERING INFORMATION

Device	Package	Operating Temperature
KA22233	22 DIP	- 20 ~ + 70°C

#### SCHEMATIC DIAGRAM

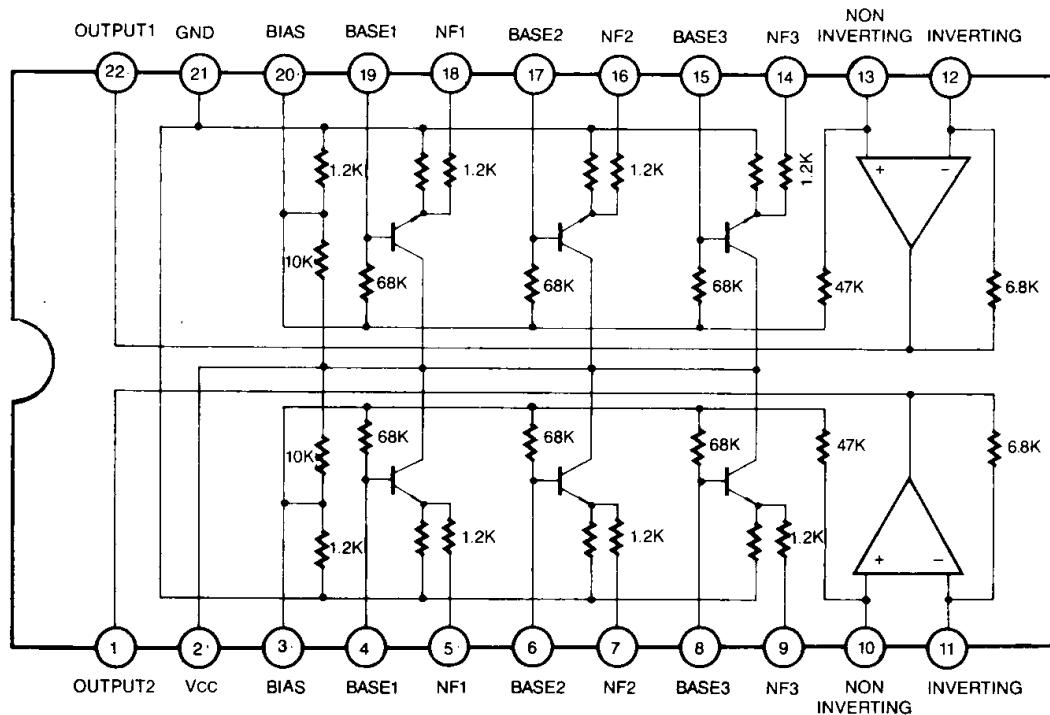


Fig. 1

ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Characteristic	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	20	V
Power Dissipation	$P_D$	700	mW
Operating Temperature	$T_{OPR}$	-20 ~ +70	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 ~ +125	$^\circ\text{C}$

## ELECTRICAL CHARACTERISTICS

( $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 9\text{V}$ ,  $R_G = 600\Omega$ ,  $R_L = 10\text{K}\Omega$ , unless otherwise specified)

Characteristic	Symbol	Test		Min	Typ	Max	Unit
		f (Hz)	Conditions				
Quiescent Circuit Current	$I_{CCQ}$		$V_i = 0$	5.0	7.2	10.0	mA
Voltage Gain	Flat $G_V$ (Flat)	1K	$V_i = -10\text{dBm}$	-2.5	-0.5	+1.5	dB
		108					
	Boost $G_V$ (Boost)	1.08K	$V_i = -10\text{dBm}$	10.5	12.5	14.5	dB
		10.8K					
Cut $G_V$ (Cut)	108						
	1.08K	$V_i = -10\text{dBm}$	-14.5	-12.5	-10.5	dB	
Total Harmonic Distortion	THD	10.8K					
		1K	$V_i = 1\text{V}$		0.02	0.1	%
Output Noise Voltage	$V_{NO}$	Flat, Input Short $BW(-3\text{dB}) = 10\text{Hz} \sim 30\text{KHz}$			7.0	30	$\mu\text{V}$
Channel Balance	CB	1K	$V_i = 1\text{V}$	-2.0	0	+2.0	dB
Cross Talk	CT	1K	$V_i = 1\text{V}$		70		dB

TEST CIRCUIT

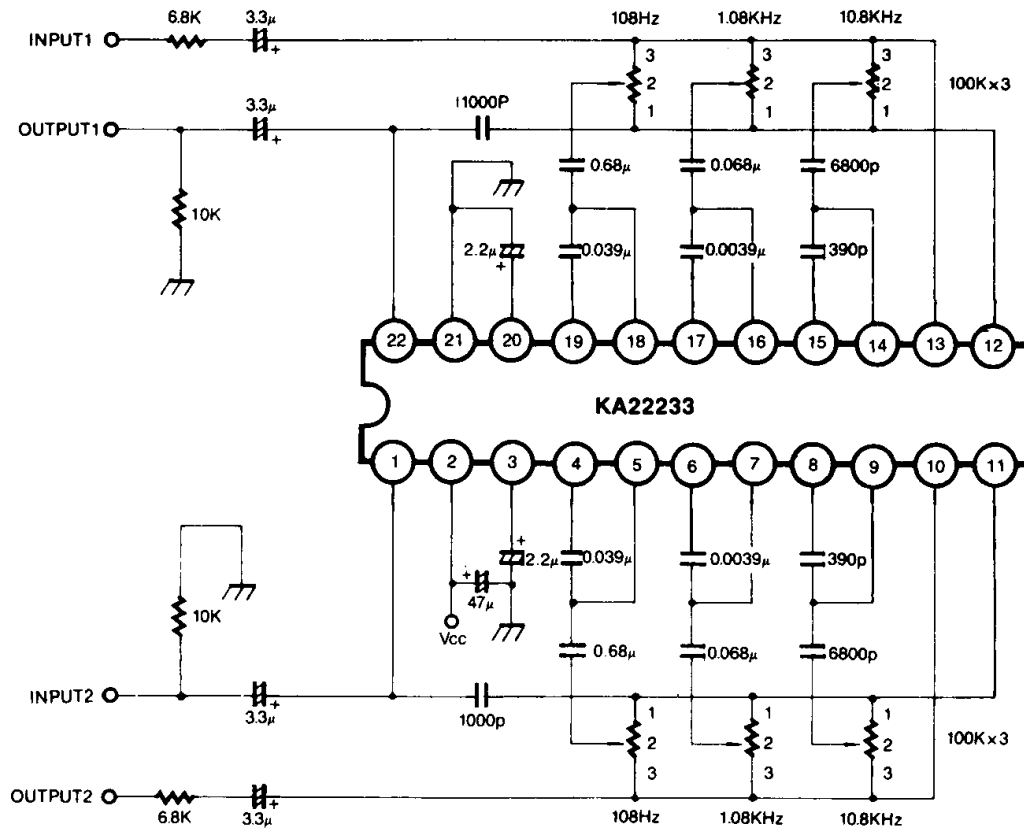
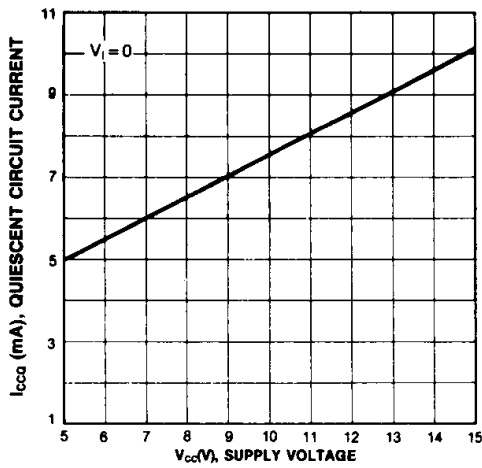


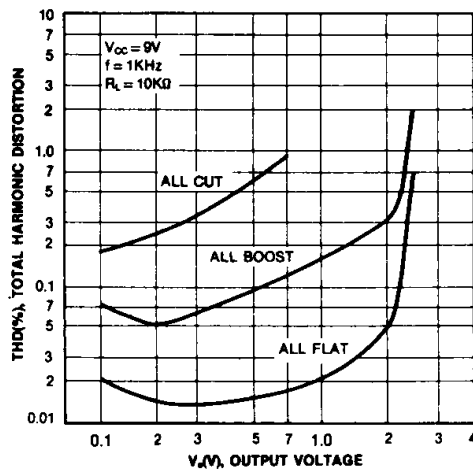
Fig. 2

Note: Volume Function  
 Position 1: Boost  
 Position 2: Flat  
 Position 3: Cut

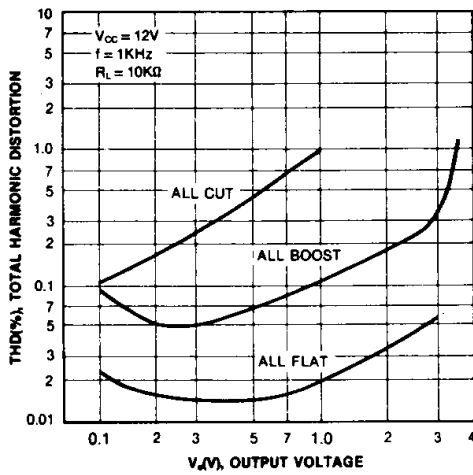
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



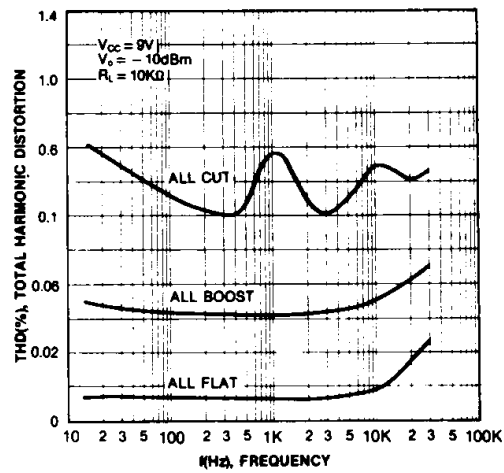
TOTAL HARMONIC DISTORTION-OUTPUT VOLTAGE



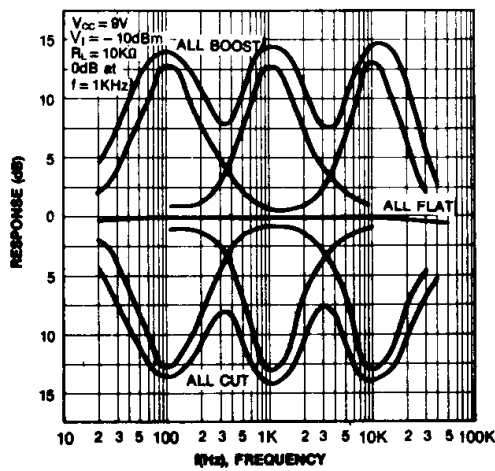
TOTAL HARMONIC DISTORTION-OUTPUT VOLTAGE



TOTAL HARMONIC DISTORTION-FREQUENCY



FREQUENCY RESPONSE



TOTAL HARMONIC DISTORTION, AMBIENT TEMPERATURE, QUIESCENT CIRCUIT CURRENT

