

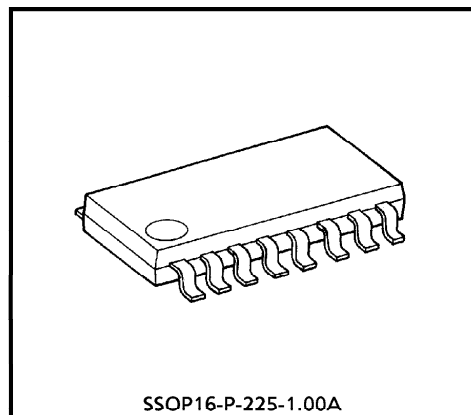
TA2062F

5 BAND GRAPHIC EQUALIZER

TA2062F is 5-Band graphic equalizer IC, which have 5 resonance circuit and an output buffer amplifier.
5 band graphic equalizer for one channel can be formed easily by externally connecting capacitors and variable resistors which fix f_0 (resonance frequency).
This is suitable for sound field control of Car Audio System.

FEATURES

- Few External Parts
- BOOST / CUT CONTROL RANGE : $\pm 12\text{dB}$
- Low Distortion
 - : THD = 0.001% (Typ.)
 - ($V_{CC} = 8\text{V}$, $f = 1.1\text{kHz}$, $V_{IN} = 1V_{rms}$, FLAT)
- Low Noise
 - : $V_{NO} = 3\mu V_{rms}$
 - ($V_{CC} = 8\text{V}$, $R_g = 0\Omega$, FLAT, BW = 20Hz~20kHz)
- Low Harmonic Distortion at Boost or Cut Mode
 - : 2nd and 3rd Harmonic Distortion are :
 - 2HD, 3HD $\leq 0.01\%$ (Typ.)
 - ($V_{CC} = 8\text{V}$, $V_{IN} = 1V_{rms}$, $\pm 6\text{dB}$ Boost or Cut, $f = 20\text{Hz} \sim 20\text{kHz}$)
- Maximum Output Voltage
 - : $V_{OM} = 2.3V_{rms}$ (Typ.)
 - ($V_{CC} = 8\text{V}$, $f = 1.1\text{kHz}$, THD = 1%, FLAT)
- Operating Supply Voltage Range
 - : $V_{CC} (\text{opr}) = 4 \sim 16\text{V}$ ($T_a = 25^\circ\text{C}$)

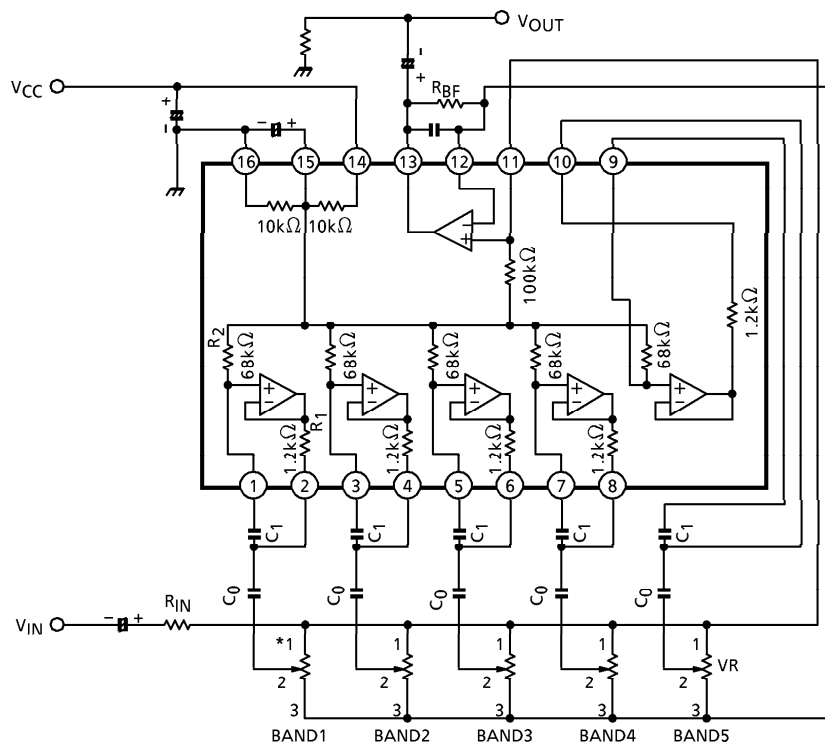


Weight : 0.14g (Typ.)

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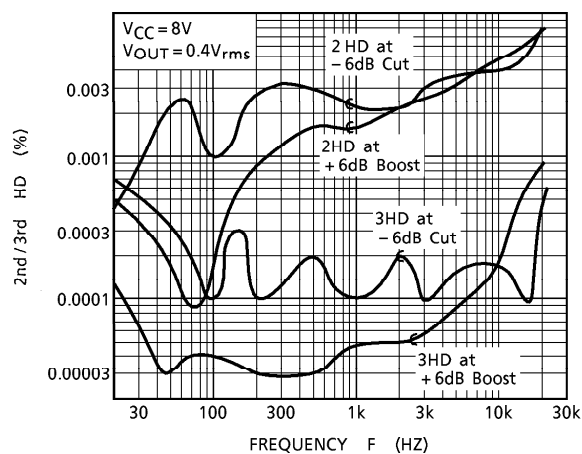
BLOCK DIAGRAM



*1 : CUT 2 : FLAT 3 : BOOST

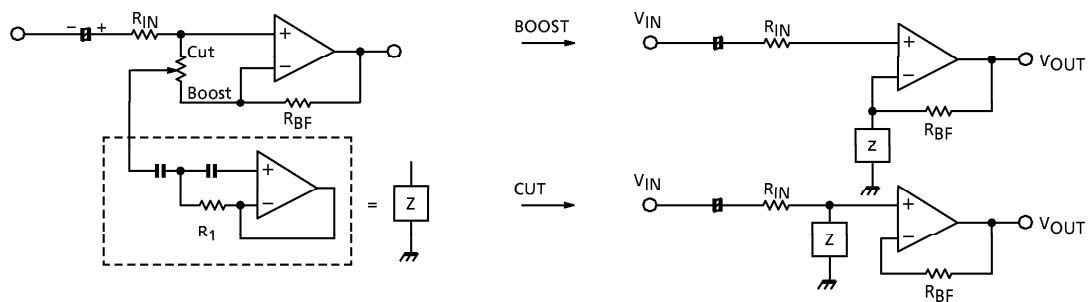
1. (2ND AND 3RD) HARMONIC DISTORTION AT 6dB BOOST OR CUT MODE

This IC is designed the 2nd and 3rd Harmonic Distortion are less than 0.01% at 6dB boost or cut between 20Hz and 20kHz.



(Fig-1)

2. ADJUSTMENT OF BOOST AND CUT AMOUNT



(Fig-2)

Boost and cut amount are decided as below.

$$\begin{aligned} \text{Boost : } G_V(\text{BOOST}) &= \frac{R_{BF} + Z}{Z} \left(\approx \frac{R_{BF} + R_1}{R_1} \right) \\ \text{Cut : } G_V(\text{CUT}) &= \frac{Z}{R_{IN} + Z} \left(\approx \frac{R_1}{R_{IN} + R_1} \right) \end{aligned}$$

It must be adjusted $R_{BF} = R_{IN}$ if Boost amount is same as cut amount.

In case signal source resistance R_g is large enough, it is necessary to be set $R_{BF} = R_{IN} + R_g$.

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	16	V
Power Dissipation	P_D	350	mW
Operating Temperature	T_{opr}	-40~85	°C
Storage Temperature (Note)	T_{stg}	-55~150	°C

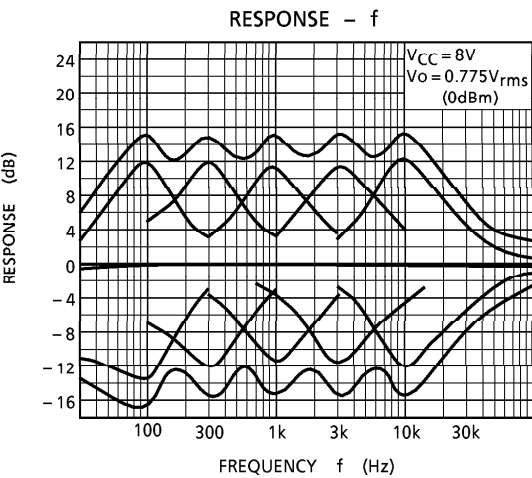
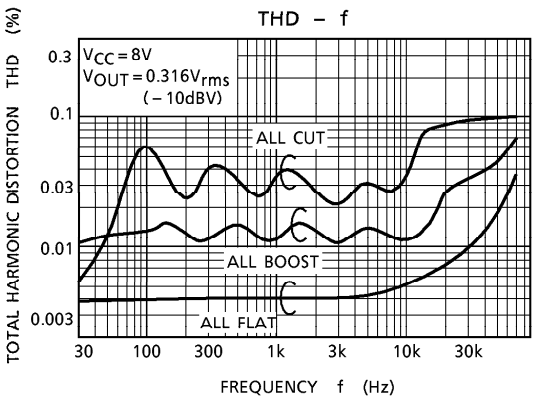
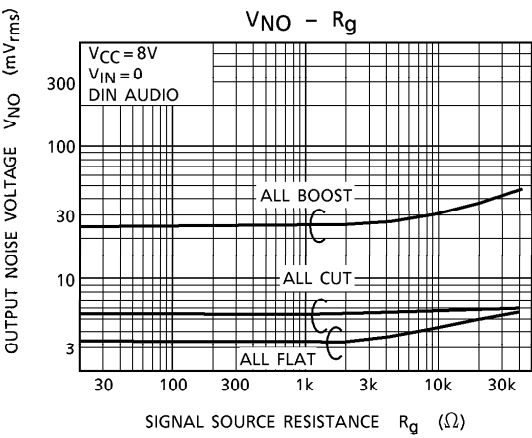
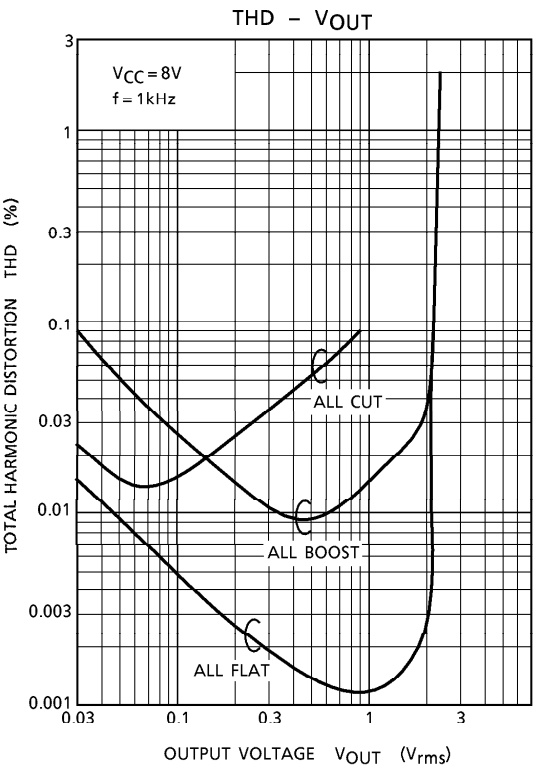
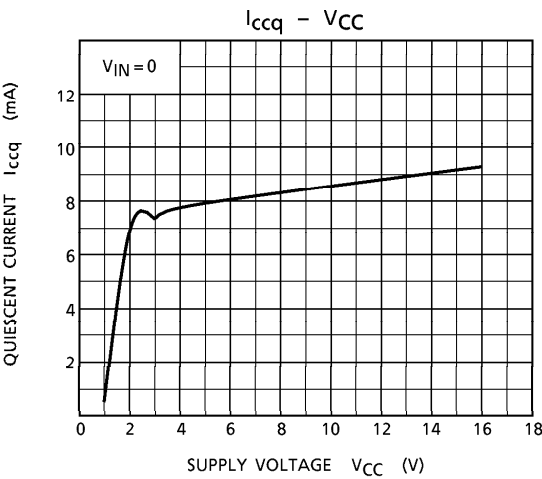
(Note) Derated above $T_a = 25^\circ\text{C}$ in the proportion of $2.8\text{mW}/^\circ\text{C}$.

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{CC} = 8\text{V}$, $f = 1.1\text{kHz}$, $R_L = 10\text{k}\Omega$, $T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I_{ccq}	—	$V_{IN} = 0$	—	9	15	mA
Voltage Gain	G_V (FLAT)	—	$V_{OUT} = 1V_{rms}$	-1.5	0	+1.5	dB
	G_V (BST)	—	$V_{OUT} = 1V_{rms}$, $f = 110\text{Hz}$	10	12	14	
			$V_{OUT} = 1V_{rms}$, $f = 340\text{Hz}$	10	12	14	
			$V_{OUT} = 1V_{rms}$, $f = 1.1\text{kHz}$	10	12	14	
			$V_{OUT} = 1V_{rms}$, $f = 3.4\text{kHz}$	10	12	14	
			$V_{OUT} = 1V_{rms}$, $f = 11\text{kHz}$	10	12	14	
	G_V (CUT)	—	$V_{OUT} = 1V_{rms}$, $f = 110\text{Hz}$	-14	-12	-10	
			$V_{OUT} = 1V_{rms}$, $f = 340\text{Hz}$	-14	-12	-10	
			$V_{OUT} = 1V_{rms}$, $f = 1.1\text{kHz}$	-14	-12	-10	
			$V_{OUT} = 1V_{rms}$, $f = 3.4\text{kHz}$	-14	-12	-10	
			$V_{OUT} = 1V_{rms}$, $f = 11\text{kHz}$	-14	-12	-10	
Total Harmonic Distortion	THD (FLT)	—	$V_{OUT} = 1V_{rms}$	—	0.001	0.01	%
Output Noise Voltage	V_{NO} (FLT)	—	$R_g = 620\Omega$, $V_{IN} = 0$ $BW = 20\text{Hz} \sim 20\text{kHz}$	—	3	8	μV_{rms}
Maximum Output Voltage	V_{OM}	—	THD = 1%	1.8	2.3	—	V_{rms}

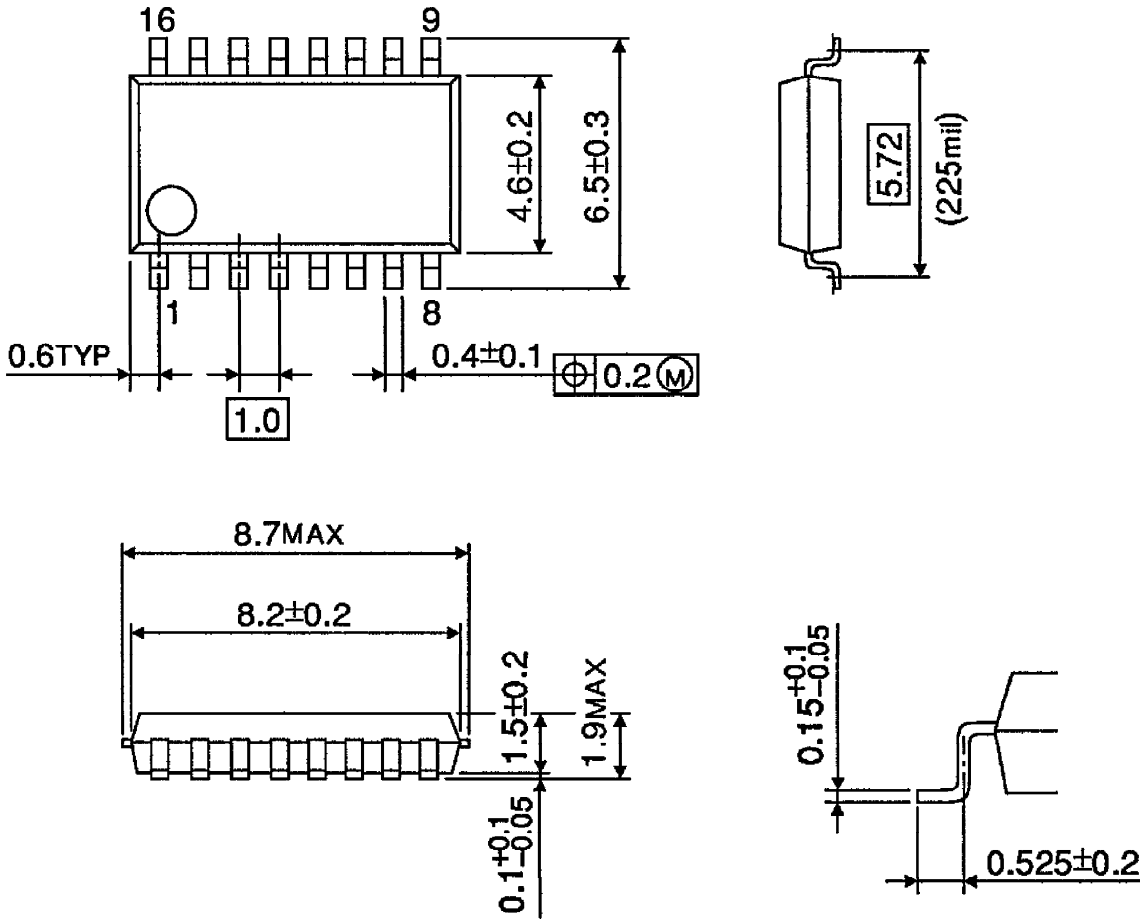
- $$f_0 = \frac{1}{2\pi\sqrt{C_0 \cdot C_1 \cdot R_1 \cdot R_2}} \quad (R_1 = 1.2k\Omega, R_2 = 68k\Omega \text{ on chip resistor})$$

1997-08-28 5/7



OUTLINE DRAWING
SSOP16-P-225-1.00A

Unit : mm



Weight : 0.14g (Typ.)