

# AN7337NS

## 7-element graphic equalizer IC for Hi-Fi audio equipment

### ■ Overview

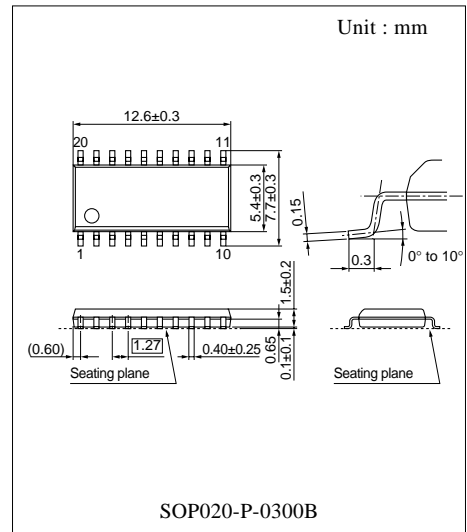
The AN7337NS is a graphic equalizer IC for high performance Hi-Fi audio equipment developed for deck. It incorporates an output buffer circuit and 7 resonance buffer circuits, and can set resonance frequency by external capacitor.

### ■ Features

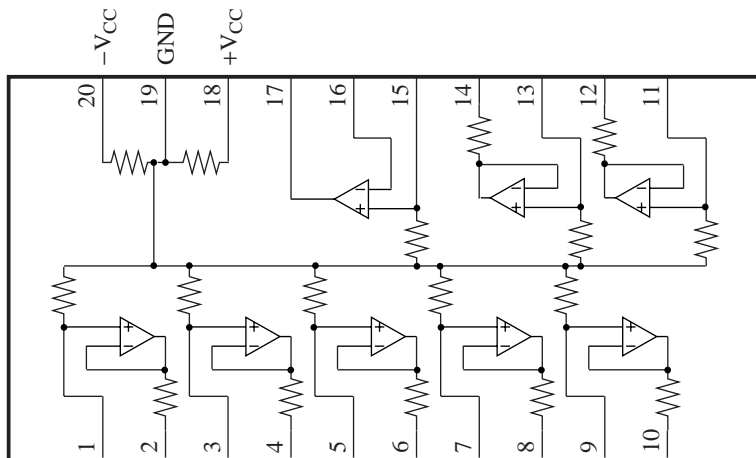
- Low distortion (max.: 0.03%)
- Low noise voltage (input short circuit: max.: 30  $\mu\text{V}[\text{rms}]$ )
- High output voltage (typ. 9.5 V)

### ■ Applications

- Mini-component stereo, system component stereo



### ■ Block Diagram



### ■ Pin Descriptions

Pin No.	Description	Pin No.	Description
1	In 1	11	In 6
2	NF 1	12	NF 6
3	In 2	13	In 7
4	NF 2	14	NF 7
5	In 3	15	Non-inverting input
6	NF 3	16	Inverting input
7	In 4	17	Output
8	NF 4	18	+ V <sub>CC</sub>
9	In 5	19	GND
10	NF 5	20	- V <sub>CC</sub>

### ■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	± 18	V
Supply current	I <sub>CC</sub>	± 50	mA
Power dissipation *2	P <sub>D</sub>	230	mW
Operating ambient temperature *1	T <sub>opr</sub>	-20 to +75	°C
Storage temperature *1	T <sub>stg</sub>	-55 to +125	°C

Note) \*1 : All items are at T<sub>a</sub> = 25°C, except for the operating ambient temperature and storage temperature.

\*2 : Referring to "■ Technical Information" for power dissipation at T<sub>a</sub> = 75°C, use the circuit under the conditions of the V<sub>CC</sub> × I<sub>CC</sub> is not exceeding the P<sub>D</sub>max.

### ■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V <sub>CC</sub>	± 4.0 to ± 18.0	V

### ■ Electrical Characteristics at V<sub>CC</sub> = ±15 V, T<sub>a</sub> = 25°C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Total circuit current	I <sub>CC</sub>	V <sub>IN</sub> = 0 mV	8	12	16	mA
Voltage gain FLAT	G <sub>V(FLAT)</sub>	f = 1 kHz, V <sub>IN</sub> = -10 dBm	-0.6	-0.3	0	dB
Voltage gain BOOST	G <sub>V (BOOST)</sub>	FLAT V <sub>O</sub> = 0 dB, V <sub>IN</sub> = -10 dBm	10.4	12.0	14.0	dB
Voltage gain CUT	G <sub>V(CUT)</sub>	FLAT V <sub>O</sub> = 0 dB, V <sub>IN</sub> = -10 dBm	-14.0	-12.0	-10.4	dB
Total harmonic distortion	THD	f = 1 kHz, V <sub>O</sub> = 1 V[rms]	-	0.002	0.03	%
Max. output voltage	V <sub>OM</sub>	f = 1 kHz, THD = 0.1%	8.0	9.5	-	V[rms]
Output noise voltage	V <sub>NO</sub>	Input short circuit DIN AUDIO	-	4	30	μV[rms]
Output noise voltage	V <sub>NOM</sub>	Input short circuit DIN AUDIO All Boost	-	31	100	μV[rms]

■ Electrical Characteristics at  $V_{CC} = \pm 15\text{ V}$ ,  $T_a = 25^\circ\text{C}$  (continued)

• Design reference data

Note) The following characteristics are the reference values for design and not guaranteed values.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Resonance frequency	$f_{O1}$	$V_{IN} = -10\text{ dBm}$ , $V_O = G_V\text{ PEAK}$	47.3	57	73.6	Hz
Resonance frequency	$f_{O2}$	$V_{IN} = -10\text{ dBm}$ , $V_O = G_V\text{ PEAK}$	93.3	113	145	Hz
Resonance frequency	$f_{O3}$	$V_{IN} = -10\text{ dBm}$ , $V_O = G_V\text{ PEAK}$	285	347	444	Hz
Resonance frequency	$f_{O4}$	$V_{IN} = -10\text{ dBm}$ , $V_O = G_V\text{ PEAK}$	0.851	1.04	1.32	kHz
Resonance frequency	$f_{O5}$	$V_{IN} = -10\text{ dBm}$ , $V_O = G_V\text{ PEAK}$	1.98	2.41	3.08	kHz
Resonance frequency	$f_{O6}$	$V_{IN} = -10\text{ dBm}$ , $V_O = G_V\text{ PEAK}$	5.23	6.37	8.14	kHz
Resonance frequency	$f_{O7}$	$V_{IN} = -10\text{ dBm}$ , $V_O = G_V\text{ PEAK}$	12.4	15.1	19.3	kHz

■ Technical Information

•  $P_D - T_a$  curves of SOP020-P-0300B

