

AN7379NSH

Dolby* B-type Noise Reduction Decoder for 1.5V Headphone Stereo

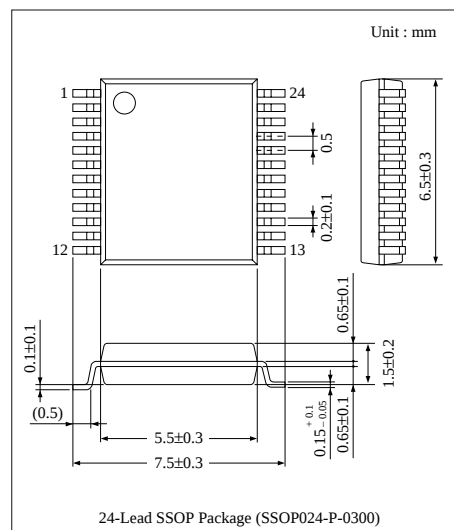
Overview

The AN7379NSH is an IC for Dolby B-type noise reduction playback suitable for 1.5V headphone stereo and incorporates multi-purpose buffer amp., GND switch and stand-by function in a single chip.

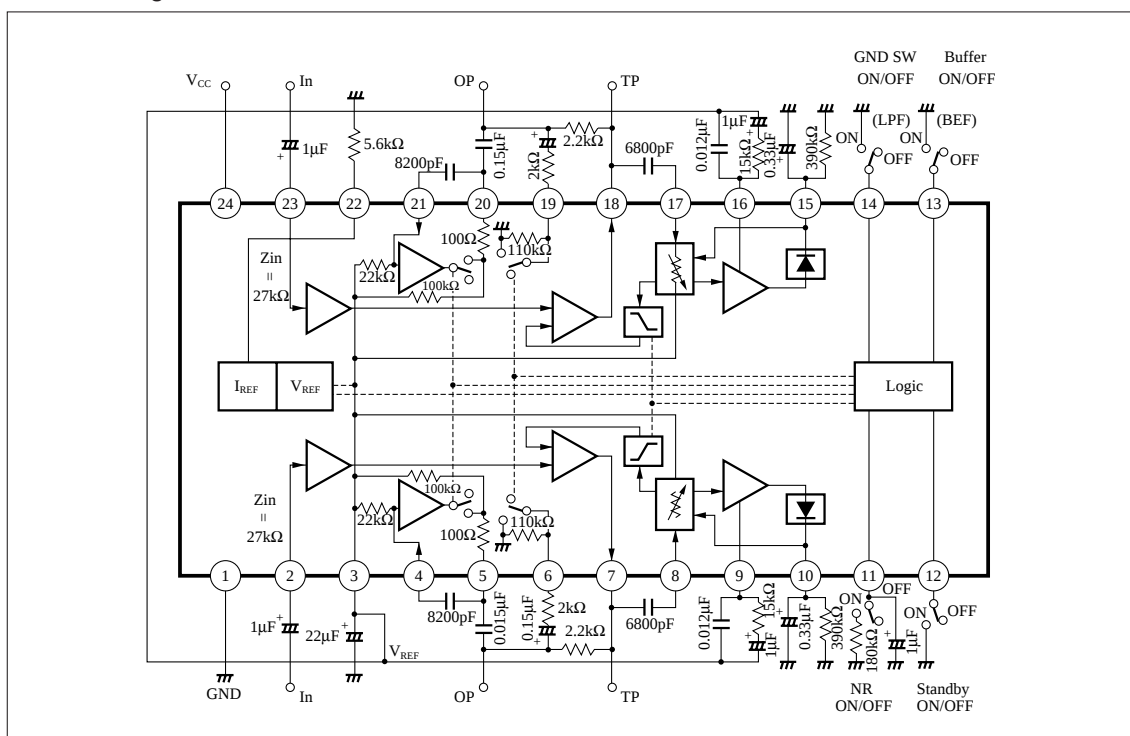
Features

- Operating voltage range : $V_{CC}=1.0$ to $3.6V$
Head room (Dolby Level +12dB) is guaranteed to 1.1V.
- Low consumption current : 1 total = 3.6mA
- Small number of parts
- Buffer amplifier with switches, GND switch pin
- Stand-by switches greatly saving the consumption current
- Small package : 0.5mm pitch 24-lead SOP type

*"Dolby" and double D symbols are trademarks of Dolby Laboratories Licensing Corporation. The use of this product requires the approval of Dolby Laboratories Licensing Corporation in advance.



Block Diagram



Pin Description

Pin No.	Pin Name	Pin No.	Pin Name
1	GND	13	Buffer Amp. ON/OFF
2	NR Decode Input	14	GND Switch ON/OFF
3	V _{REF}	15	Control Voltage
4	Buffer Amp. Input	16	Weighting Amp. Filter
5	Buffer Amp. Output	17	Side Chain Filter
6	GND Switch	18	NR Decode Output
7	NR Decode Output	19	GND Switch
8	Side Chain Filter	20	Buffer Amp. Output
9	Weighting Amp. Filter	21	Buffer Amp. Input
10	Control Voltage	22	I _{REF}
11	NR ON/OFF	23	NR Decode Input
12	Stand-by ON/OFF	24	V _{CC}

Absolute Maximum Ratings (Ta=25°C)

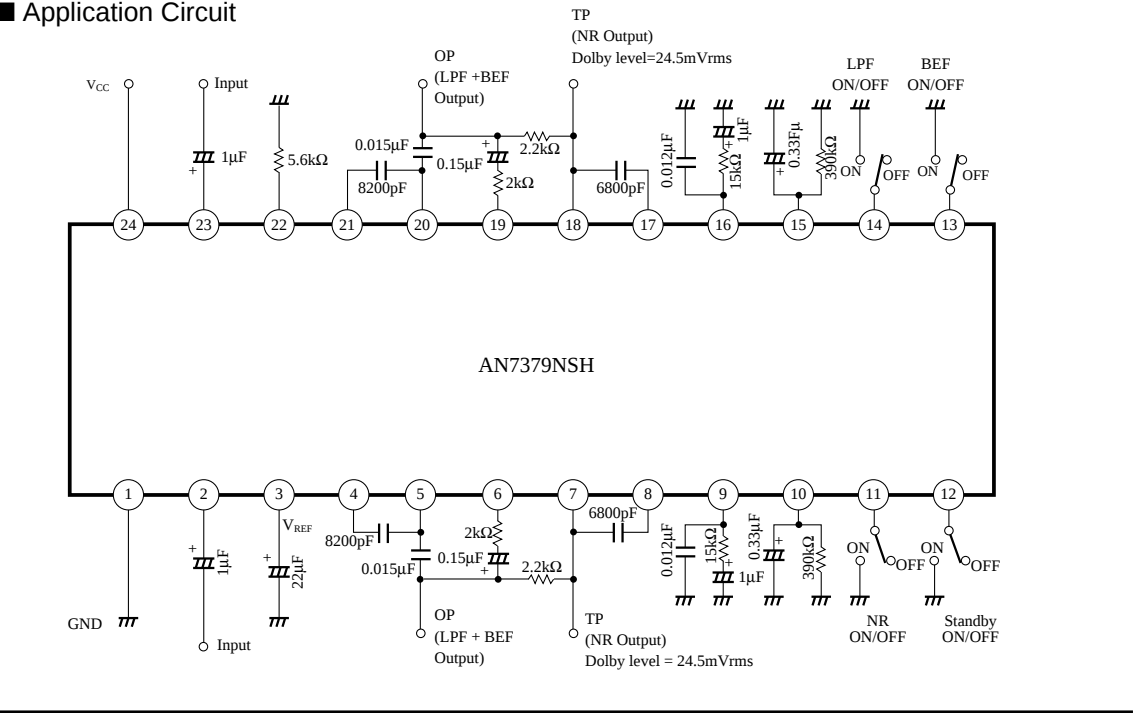
Parameter	Symbol	Rating	Unit
Supply Voltage	V _{CC}	4.5	V
Supply Current	I _{CC}	10	mA
Power Dissipation (Ta =75°C)	P _D	45	mW
Operating Ambient Temperature	T _{opr}	-25 ~ + 75	°C
Storage Temperature	T _{stg}	-55 ~ + 125	°C

Recommended Operating Range (Ta= 25°C)

Parameter	Symbol	Range
Operating Supply Voltage Range	V _{CC}	1V ~ 3.6V

Note) The minimum operating voltage to conform to the standards of Dolby B type NR is 1.1V.

Application Circuit



■ Electrical Characteristics (Ta=25°C, V_{CC} = 1.2V, Dolby Reference Level ; 24.5mVrms (−30dBm) at TP)

Parameter		Symbol	Condition					min.	typ.	max.	Unit
			NR	LPF	BPF	f Hz	Others				
Total Circuit Current	Standby OFF	I _{CC1}	OFF	OFF	OFF	—	No signals	2.8	3.8	5.0	mA
	Standby OFF	I _{CC2}	ON	OFF	OFF	—	No signals	2.8	3.9	5.1	mA
	Standby ON	I _{CC3}	OFF	OFF	ON	—	No signals	—	0	0.5	mA
Standard Input Level ^{Note 1)}		V _{in}	OFF	OFF	OFF	1k	V _O = 24.5mVrms	20	23	26	mVrms
Channel Balance		CB	OFF	OFF	OFF	1k	Channel Ratio	−1	0	−1	dB
NR–Decode Characteristics ^{Note 2)}	(1)	NRD1	ON	OFF	OFF	10k	V _{in} = −29.6dB Theoretical NRD = V _O +40dB	−2	0	2	dB
	(2)	NRD2	ON	OFF	OFF	1k	V _{in} = −23.9dB Theoretical NRD = V _O +30dB	−2	0	2	dB
	(3)	NRD3	ON	OFF	OFF	1k	V _{in} = −15.8dB Theoretical NRD = V _O +20dB	−2.5	0	2.5	dB
	(4)	NRD4	ON	OFF	OFF	10k	V _{in} = −17.4dB Theoretical NRD = V _O +20dB	−2.5	0	2.5	dB
	(5)	NRD5	ON	OFF	OFF	10k	V _{in} = 0.4dB Theoretical NRD = V _O dB	−2	0	2	dB
Total Harmonics Distortion ^{Note 3)}	(1)	THD1	OFF	ON	ON	1k	V _{in} = +10dB	—	0.2	0.5	%
	(2)	THD2	ON	OFF	OFF	1k	V _{in} = +10dB	—	0.3	0.8	%
Signal Handling ^{Note 3)}	(3)	THD3	ON	OFF	OFF	1k	V _{in} = +12dB	—	0.3	1.0	%
S/N Ratio ^{Note 4)}		S/N	ON	OFF	OFF	—	R _g = 5.6kΩ CCIR/ARM – Filter	70	72	—	dB
Filter Characteristics ^{Note 5)}	(1)	G _{V1}	OFF	OFF	OFF	1k	V _{in} = 0dB	−1.5	−0.5	0.5	dB
	(2)	G _{V2}	OFF	ON	ON	1k	V _{in} = 0dB	−8	−6.5	−5	dB
	(3)	G _{V3}	OFF	ON	ON	5.5k	V _{in} = 0dB	−20	−17	−12	dB
Channel Crosstalk	NR : OFF	CT1	ON	OFF	OFF	1k	V _{in} = 0dB	—	50	—	dB
	NR : ON	CT1	OFF	OFF	OFF	1k	V _{in} = 0dB	—	50	—	dB

Note 1) Adjust input level for output level equal to 24.5mVrms, and set the reference input level to 0dB.

Note 2) Output level as compared with Standard 0dB = 24.5mVrms..Measurement point : TP

Note 3) Measurement point : OP

Note 4) Measurement point : TP

Note 5) Measurement point as compared with 24.5mVrms : Output level at OP