

# AN7379NSH

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

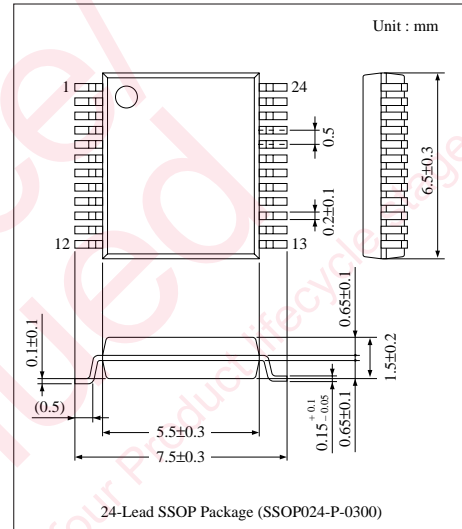
### ■ Overview

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.

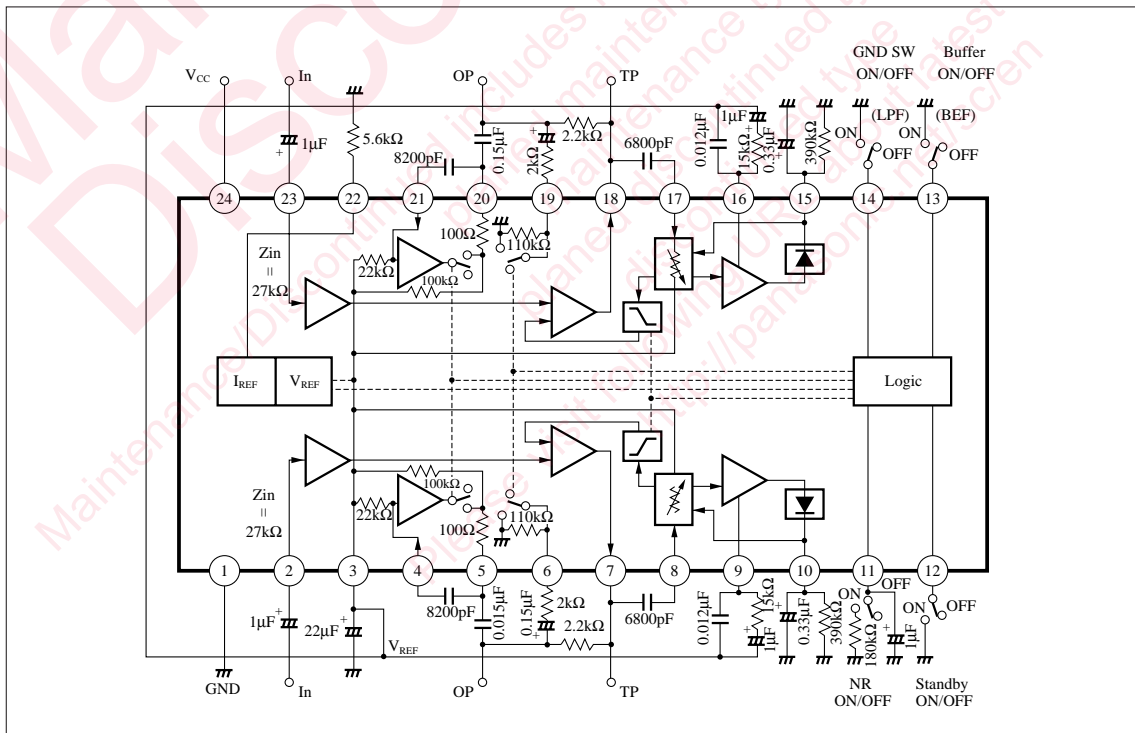
### ■ Features

- 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

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### ■ 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 <sub>REF</sub>	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 <sub>REF</sub>
11	NR ON/OFF	23	NR Decode Input
12	Stand-by ON/OFF	24	V <sub>CC</sub>

■ Absolute Maximum Ratings (T<sub>a</sub>=25°C)

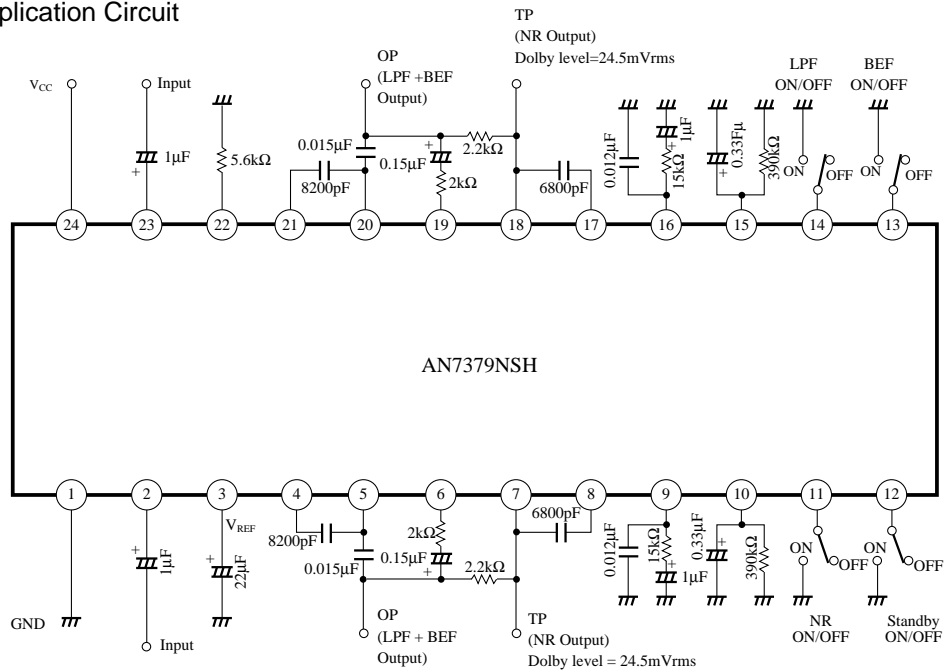
Parameter	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub>	4.5	V
Supply Current	I <sub>CC</sub>	10	mA
Power Dissipation (T <sub>a</sub> =75°C)	P <sub>D</sub>	45	mW
Operating Ambient Temperature	T <sub>opr</sub>	-25 ~ + 75	°C
Storage Temperature	T <sub>stg</sub>	-55 ~ + 125	°C

■ Recommended Operating Range (T<sub>a</sub>= 25°C)

Parameter	Symbol	Range
Operating Supply Voltage Range	V <sub>CC</sub>	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<sub>CC</sub> = 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 <sub>CC1</sub>	OFF	OFF	OFF	—	No signals	2.8	3.8	5.0	mA	
	Standby OFF	I <sub>CC2</sub>	ON	OFF	OFF	—	No signals	2.8	3.9	5.1	mA	
	Standby ON	I <sub>CC3</sub>	OFF	OFF	ON	—	No signals	—	0	0.5	mA	
Standard Input Level <sup>Note 1)</sup>		V <sub>in</sub>	OFF	OFF	OFF	1k	V <sub>O</sub> = 24.5mVrms	20	23	26	mVrms	
Channel Balance		CB	OFF	OFF	OFF	1k	Channel Ratio	-1	0	-1	dB	
NR-Decode Characteristics <sup>Note 2)</sup>	(1)	NRD1	ON	OFF	OFF	10k	V <sub>in</sub> = -29.6dB Theoretical NRD = V <sub>O</sub> +40dB	-2	0	2	dB	
	(2)	NRD2	ON	OFF	OFF	1k	V <sub>in</sub> = -23.9dB Theoretical NRD = V <sub>O</sub> +30dB	-2	0	2	dB	
	(3)	NRD3	ON	OFF	OFF	1k	V <sub>in</sub> = -15.8dB Theoretical NRD = V <sub>O</sub> +20dB	-2.5	0	2.5	dB	
	(4)	NRD4	ON	OFF	OFF	10k	V <sub>in</sub> = -17.4dB Theoretical NRD = V <sub>O</sub> +20dB	-2.5	0	2.5	dB	
	(5)	NRD5	ON	OFF	OFF	10k	V <sub>in</sub> = 0.4dB Theoretical NRD = V <sub>O</sub> dB	-2	0	2	dB	
Total Harmonics Distortion <sup>Note 3)</sup>	(1)	THD1	OFF	ON	ON	1k	V <sub>in</sub> = +10dB	—	0.2	0.5	%	
	(2)	THD2	ON	OFF	OFF	1k	V <sub>in</sub> = +10dB	—	0.3	0.8	%	
Signal Handling <sup>Note 3)</sup>		(3)	THD3	ON	OFF	OFF	1k	V <sub>in</sub> = +12dB	—	0.3	1.0	%
S/N Ratio <sup>Note 4)</sup>		S/N	ON	OFF	OFF	—	R <sub>g</sub> = 5.6kΩ CCIR/ARM – Filter	70	72	—	dB	
Filter Characteristics <sup>Note 5)</sup>	(1)	G <sub>V1</sub>	OFF	OFF	OFF	1k	V <sub>in</sub> = 0dB	-1.5	-0.5	0.5	dB	
	(2)	G <sub>V2</sub>	OFF	ON	ON	1k	V <sub>in</sub> = 0dB	-8	-6.5	-5	dB	
	(3)	G <sub>V3</sub>	OFF	ON	ON	5.5k	V <sub>in</sub> = 0dB	-20	-17	-12	dB	
Channel Crosstalk	NR : OFF	CT1	ON	OFF	OFF	1k	V <sub>in</sub> = 0dB	—	50	—	dB	
	NR : ON	CT1	OFF	OFF	OFF	1k	V <sub>in</sub> = 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

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