 Panasonic

AN7389S

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

■ Overview

The AN7389S is an IC for Dolby B-type noise reduction playback suitable for 1.5V headphone stereo and incorporates multi-purpose 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 : I_{tot} = 3.6mA
- Small number of parts
- Multi-purpose GND switch pin
- Stand-by switches greatly saving the consumption current
- Small package

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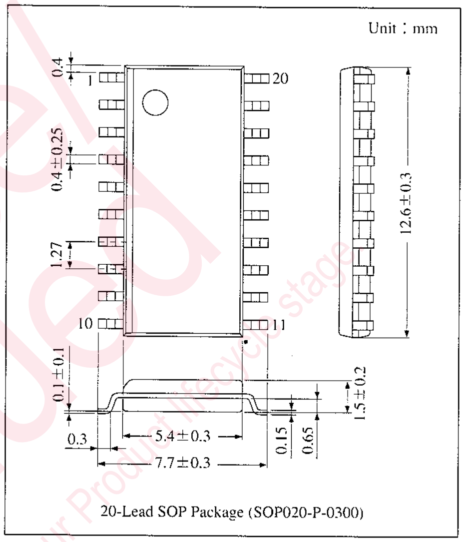
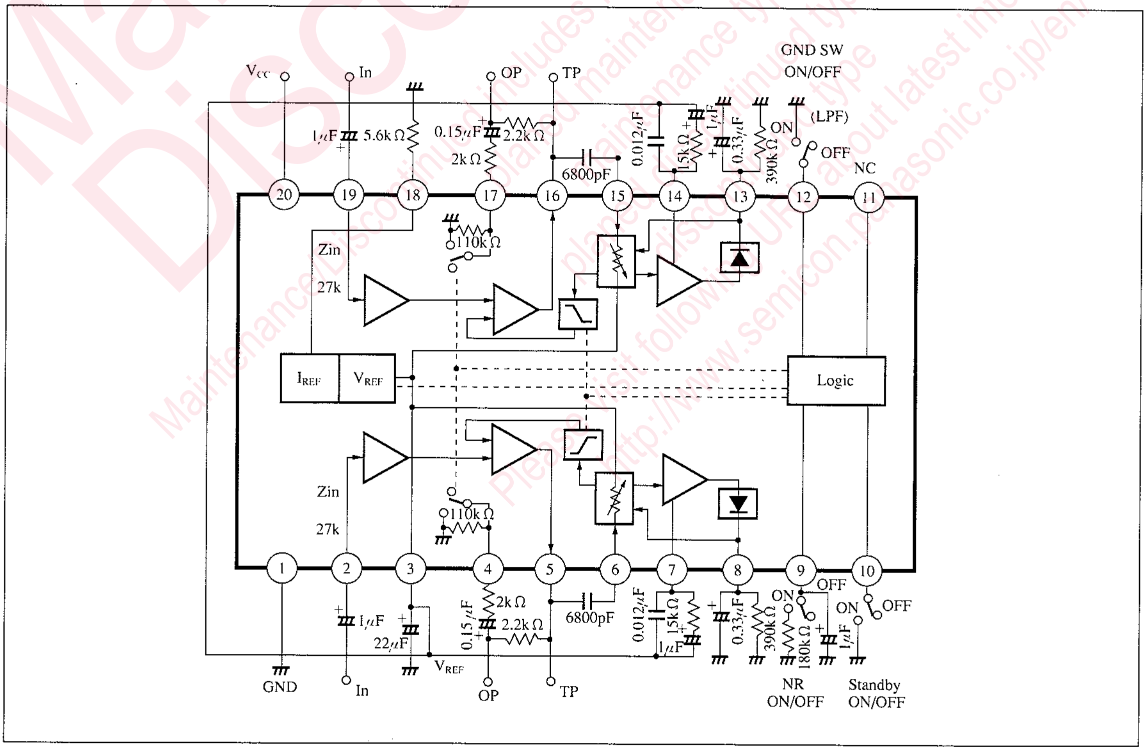


20-Lead SOP Package (SOP020-P-0300)

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	4.5	V
Supply Current	I_{CC}	10	mA
Power Dissipation (Ta=75℃)	P_D	45	mW
Operating Ambient Temperature	T_{opr}	−25 ~ +75	℃
Storage Temperature	T_{stg}	−55 ~ +125	℃

■ Recommended Operating range (Ta=25℃)

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.

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

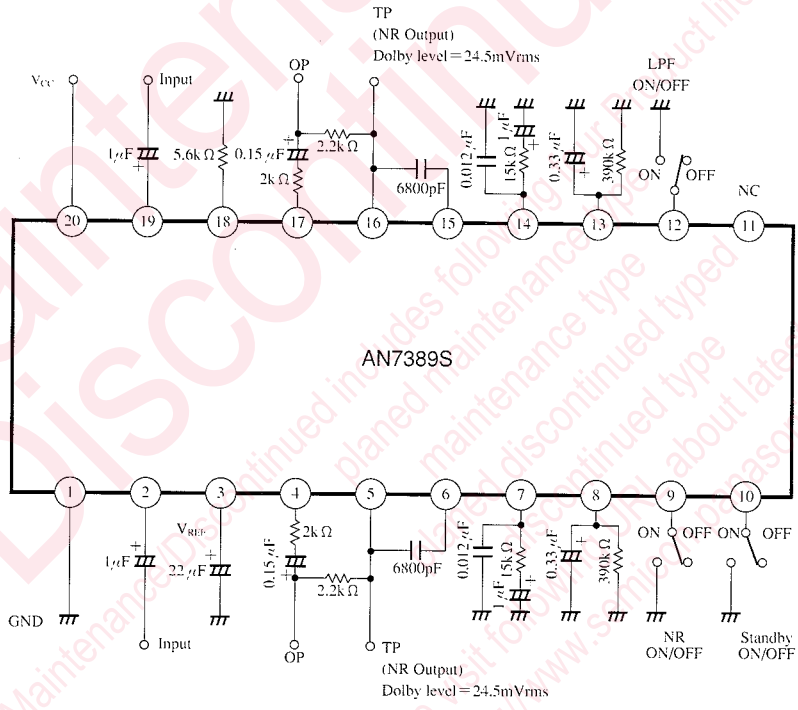
Parameter			Symbol	Condition				min.	typ.	max.	Unit
				NR	LPF	f (Hz)	Others				
Total Circuit Current	Standby OFF		I_{CC1}	OFF	OFF	—	No signals	2.8	3.8	5.0	mA
	Standby OFF		I_{CC2}	ON	OFF	—	No signals	2.8	3.9	5.1	mA
	Standby ON		I_{CC3}	OFF	OFF	—	No signals	—	0	0.5	mA
Standard Input Level Note 1)			V_{in}	OFF	OFF	1k	V_O=24.5mVrms	20	23	26	mVrms
Channel Balance			CB	OFF	OFF	1k	Channel Ratio	−1	0	−1	dB
NR-Decode Characteristics Note 2)		(1)	NRD1	ON	OFF	10k	V_{in}=−29.6dB Theoretical NRD =V_O+40dB	−2	0	2	dB
		(2)	NRD2	ON	OFF	1k	V_{in}=−23.9dB Theoretical NRD =V_O+30dB	−2	0	2	dB
		(3)	NRD3	ON	OFF	1k	V_{in}=−15.8dB Theoretical NRD =V_O+20dB	−2.5	0	2.5	dB
		(4)	NRD4	ON	OFF	10k	V_{in}=−17.4dB Theoretical NRD =V_O+20dB	−2.5	0	2.5	dB
		(5)	NRD5	ON	OFF	10k	V_{in}=0.4dB Theoretical NRD =V_OdB	−2	0	2	dB
Total Harmonics Distortion Note 3)		(1)	THD1	OFF	ON	1k	V_{in}=+10dB	—	0.2	0.5	%
		(2)	THD2	ON	OFF	1k	V_{in}=+10dB	—	0.3	0.8	%
Signal Handling Note 3)		(3)	THD3	ON	OFF	1k	V_{in}=+12dB	—	0.3	1.0	%
S/N Ratio Note 4)			S/N	ON	OFF	—	R_g=5.6kΩ CCIR/ARM− FILTER	70	72	—	dB
Filter Characteristics Note 5)		(1)	G_{V1}	OFF	OFF	1k	V_{in}=0dB	−1.5	−0.5	0.5	dB
		(2)	G_{V2}	OFF	ON	1k	V_{in}=0dB	−8	−6.5	−5	dB
Channel Crosstalk	NR : OFF		CT1	ON	OFF	1k	V_{in}=0dB	—	50	—	dB
	NR : ON		CT1	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 Standard0dB=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

■ Pin Description

Pin No.	Pin Name	Pin No.	Pin Name
1	GND	11	NC
2	NR Decode Input	12	GND Switch ON/OFF
3	V_{REF}	13	Control Voltage
4	GND Switch	14	Weighting Amp. Filter
5	NR Decode Output	15	Side Channel Filter
6	Side Channel Filter	16	NR Decode Output
7	Weighting Amp. Filter	17	GND Switch
8	Control Voltage	18	I_{REF}
9	NR ON/OFF	19	NR Decode Input
10	Stand-by ON/OFF	20	V_{CC}

■ Application Circuit [AN7374K]



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