

# NJM2175

The NJM2175 integrated circuit is a monolithic bipolar IC designed for use in Dolby Pro Logic Surround system. The complete Dolby Pro Logic Surround Decoder can be realized with this IC and the following circuits: an input balance control, a delay line, output master level controller.

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Licensing and application information may be obtained from Dolby lab.

## ■ Functions

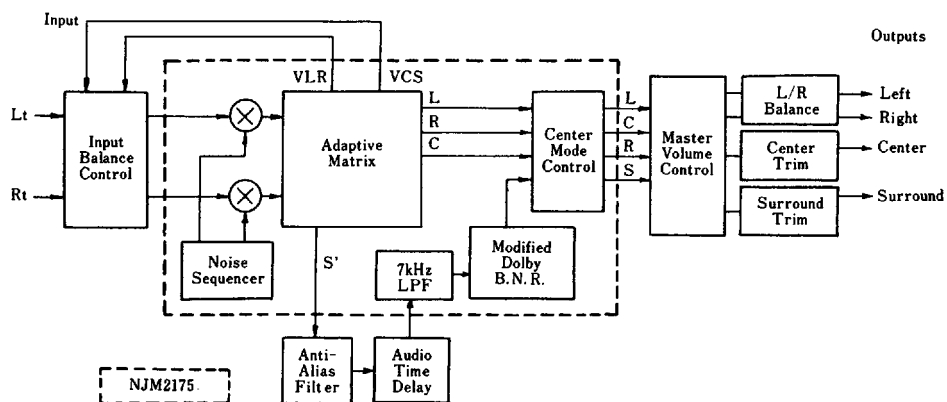
- Input buffer
- Noise sequencer;
  - a Noise generator, a sequencer controlled by external two bits
- Adaptive Matrix
- Center mode control;
  - ON/OFF, Normal/Phantom/Wideband
- 7kHz low-pass filter
- Modified B noise reduction
- Operating mode control;
  - 4ch(L, D, R, S), 3ch(L, C, R), 2ch(no processing)

## ■ Features

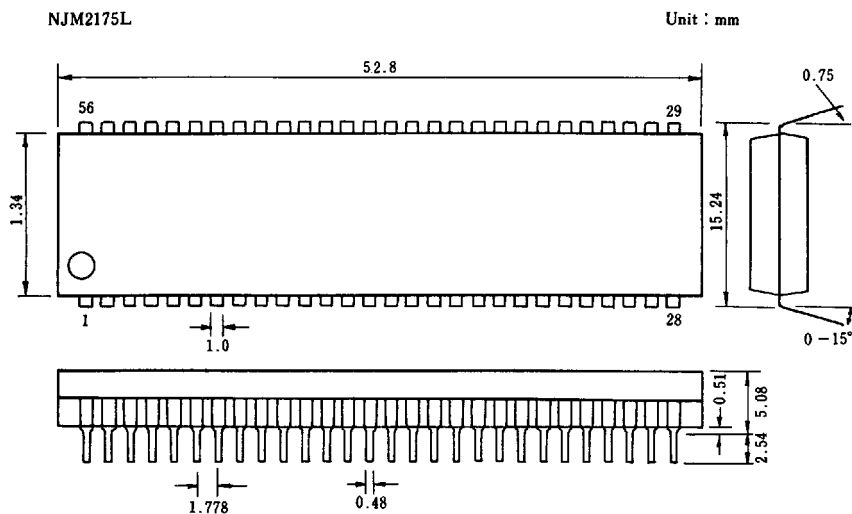
- package: QFP-44, SDIP-56
- Dolby operating level: 300mVrms
- Operating supply voltage range: 9 to 13V
- Lower supply current: 22mA typ.
- Internal mode control switches
- Small external parts count

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## ■ Active Surround Decoder Block Diagram



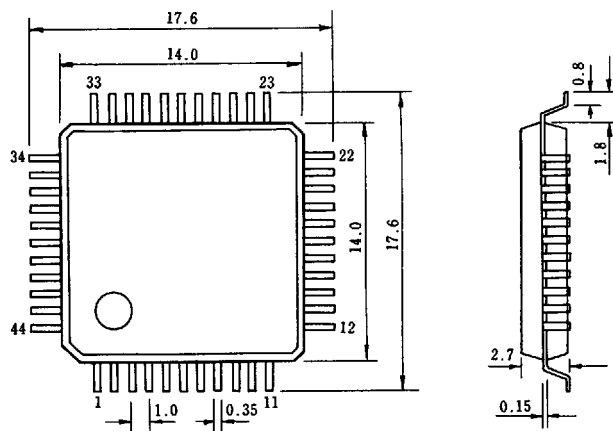
## ■ Package Outline



-SDIP-56-

NJM2175F

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-QFP-44-

**■ Absolute Maximum Ratings at Ta=25°C**

Supply Voltage	V <sup>+</sup>	15V
Power Dissipation	P <sub>D</sub>	700mW
Operating Temperature	T <sub>opr</sub>	-20~+70°C
Storage Temperature	T <sub>stg</sub>	-40~+125°C

**■ Electrical Characteristics** (Ta=25°C, V<sup>+</sup>=12V, V<sub>IN</sub>=300mVrms/1kHz, Unless otherwise specified.) Overall

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Current	I <sub>CC</sub>	No signal	15.0	22.0	28.0	mA
Reference Voltage	V <sub>ref</sub>	No signal	3.5	3.9	4.3	V
Control SW Threshold						
2ch Mode	V <sub>C-2ch</sub>	MODE-CNT PIN	0.8	1.4	2.0	V
3ch Mode	V <sub>C-3ch</sub>	MODE-CNT PIN		Open		
4ch Mode	V <sub>C-4ch</sub>	MODE-CNT PIN	3.0	3.4	3.8	V
Center on/off	V <sub>C-cen</sub>	CENTER-CNT PIN	0.8	1.4	2.0	V
Noise Seq. on/off	V <sub>C-nsE</sub>	NOISE-CNT-E-PIN	2.2	2.8	3.2	V
Noise Seq. Control	V <sub>C-nsA</sub>	NOISE-CNT-A-PIN	2.2	2.6	3.2	V
	V <sub>C-nsB</sub>	NOISE-CNT-B-PIN	2.2	2.6	3.2	V

 Modified B Noise Rejection (0dB Reference is 300mV/100Hz at S-OUT)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Decode Response	Dec1	V <sub>IN</sub> =0dB, f=1kHz	-1.6	-0.1	1.4	dB
	Dec2	V <sub>IN</sub> =15dB, f=1.4kHz	-3.0	-1.5	0	dB
	Dec3	V <sub>IN</sub> =20dB, f=1.4kHz	-4.9	-3.4	-1.9	dB
	Dec4	V <sub>IN</sub> =40dB, f=5kHz	-6.8	-5.3	-3.8	dB
T.H.D	THD-NR	V <sub>IN</sub> =0dB, f=1kHz		0.07	0.3	%
Headroom	Hr-NR	V <sup>+</sup> =9V at T.H.D=1%	15.5	17.0		dB
SN Ratio	SN-NR	Rg=0, weighted CCIR/ARM	76	81		dB

 Noise sequencer

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Noise level	V <sub>no</sub>		-16	-14	-12	dB
Output Noise Level Accuracy relative to Cch						
Lch	V <sub>no-L</sub>		-0.5	0.0	0.5	dB
Rch	V <sub>no-R</sub>		-0.5	0.0	0.5	dB
S'ch	V <sub>no-S'</sub>		-0.5	0.0	0.5	dB

Adaptive Matrix

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Level Accuracy relative to Cch L.R.S' ch out	Vola		-0.5	0.0	0.5	dB
Matrix Rejection relative to Lch R.C.S' ch out	MrL	L=V <sub>IN</sub> . R is no signal.	25.0	40.0		dB
Matrix Rejection relative to Rch L.C.S' ch out	MrR	R=V <sub>IN</sub> . L is no signal.	25.0	40.0		dB
Matrix Rejection relative to Cch L.R.S' ch out	MrC	L=R=-3dB V <sub>IN</sub> .	25.0	40.0		dB
Matrix Rejection relative to S'ch L.R.C ch out	MrS'	L=R=-3dB V <sub>IN</sub> .	25.0	40.0		dB
T.H.D L.R.C.S'ch out	THDA			0.02	0.10	%
Headroom L.R.C.S'ch out	HrA	V* =9V at T.H.D=1%	15.0	15.7		dB
Signal to Noise Ratio L.R.C.S'ch out	SNA	Rg=0, weighted CCIR/ARM	78.0	83.0		dB