

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.

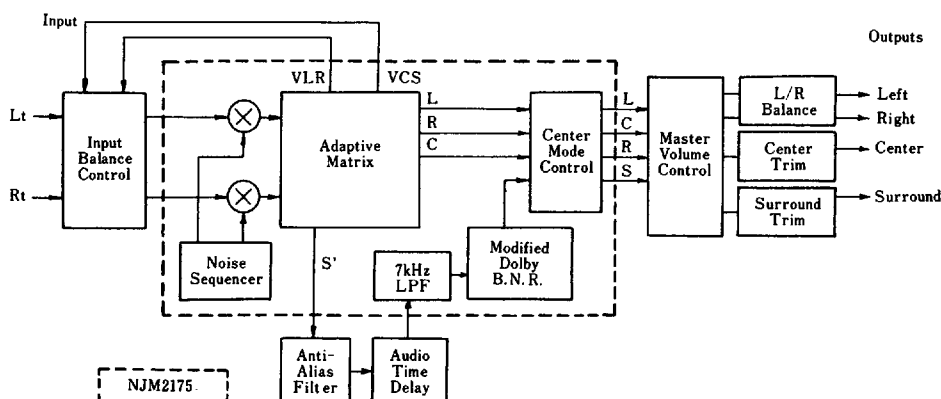
■ Functions

- 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)

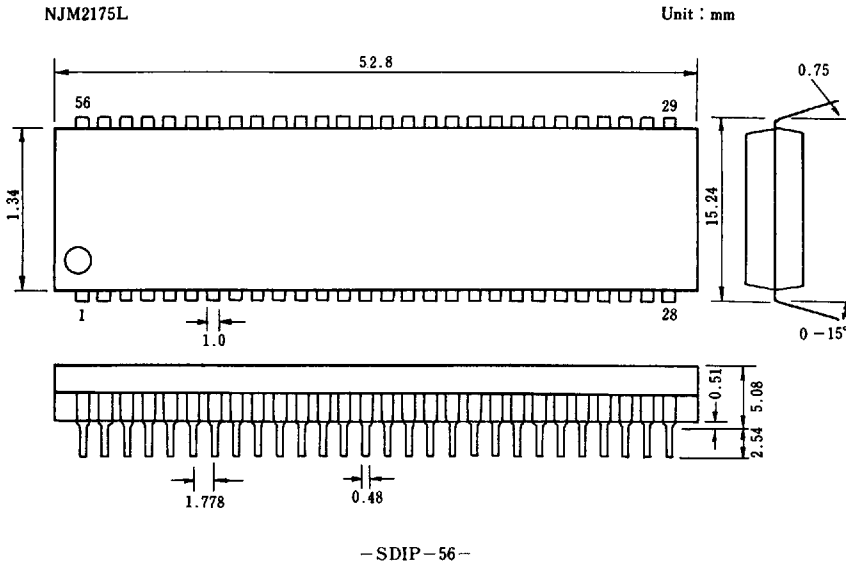
■ Features

- 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

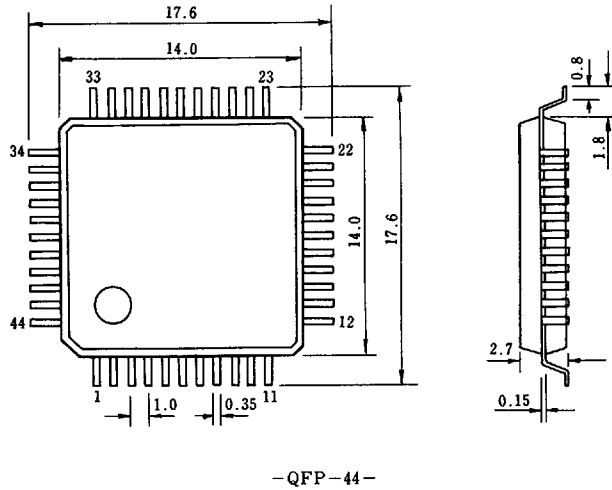
■ Active Surround Decoder Block Diagram



■ Package Outline



NJM2175F



■ Abusolute Maximum Ratings at Ta=25℃

Supply Voltage	V ⁺	15V
Power Dissipation	P _D	700mW
Operating Temperature	T _{opr}	-20~+70℃
Storage Temperature	T _{stg}	-40~+125℃

■ Electrical Characteristics (Ta=25℃, V⁺=12V, V_{IN}=300mVrms/1kHz, Unless otherwise specified.)

☐ Overall

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

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Decode Responce	Dec1	V _{IN} =0dB, f=1kHz	-1.6	-0.1	1.4	dB
	Dec2	V _{IN} =15dB, f=1.4kHz	-3.0	-1.5	0	dB
	Dec3	V _{IN} =20dB, f=1.4kHz	-4.9	-3.4	-1.9	dB
	Dec4	V _{IN} =40dB, f=5kHz	-6.8	-5.3	-3.8	dB
T.H.D	THD-NR	V _{IN} =0dB, f=1kHz		0.07	0.3	%
Headroom	Hr-NR	V ⁺ =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 _{no}		-16	-14	-12	dB
Output Noise Level Accuracy relative to Cch						
Lch	V _{no} -L		-0.5	0.0	0.5	dB
Rch	V _{no} -R		-0.5	0.0	0.5	dB
S'ch	V _{no} -S'		-0.5	0.0	0.5	dB

□ Adaptive Matrix

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Level Accuracy ralative 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=VIN. R is no signal.	25.0	40.0		dB
Matrix Rejection relative to Rch L.C.S' ch out	MrR	R=VIN. L is no signal.	25.0	40.0		dB
Matrix Rejection relative to Cch L.R.S' ch out	MrC	L=R=-3dB VIN.	25.0	40.0		dB
Matrix Rejection relative to S'ch L.R.C ch out	MrS'	L=R=-3dB VIN.	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