

# 8-CHANNEL ELECTRONIC VOLUME WITH INPUT SELECTOR

## ■ GENERAL DESCRIPTION

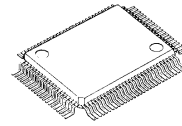
The **NJW1299** is a 8-channel electronic volume with Input Selector. It includes 14-in 4-out stereo audio selector, REC Output and Multi-channel inputs.

The **NJW1299** performs low noise and low distortion characteristics with resistance ladder circuit.

All of functions are controlled via three-wired serial bus. Selectable 2-Chip address is available for using two chips on same serial bus line.

The **NJW1299** is suitable for multi-channel audio system, such as AV amplifier, DVD receiver, and others.

## ■ PACKAGE OUTLINE

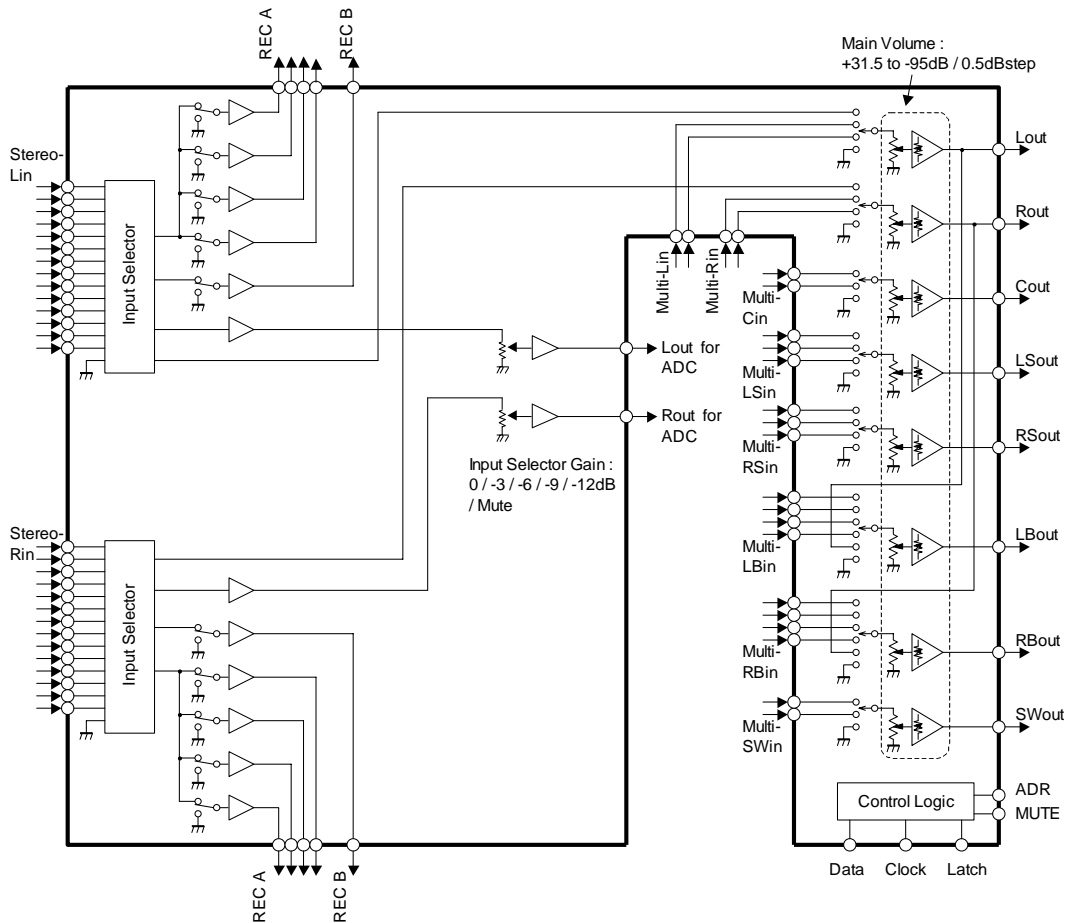


**NJW1299FC2**

## ■ FEATURES

- Operating Voltage ±4.5 to ±7.5V
- 3-Wired Serial Control Chip Address Select Function
- 14-input 4-output stereo selector
- Multi-Channel input (8ch x 2)
- Input Selector Gain Control Gain : 0/-3/-6/-9/-12dB
- Volume Main 8ch : +31.5 to -95dB / 0.5dB step, Mute
- Bi-CMOS Technology
- Package Outline QFP100-C2

## ■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATING (Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Power Supply Voltage	V <sub>+/-</sub>	+8/-8	V
Maximum Input Voltage	V <sub>IM</sub>	V <sub>+/-</sub>	V
Power Dissipation	P <sub>D</sub>	1600 NOTE: EIA/JEDEC STANDARD Test board (76.2x114.3x1.6mm, 2layer, FR-4) mounting	mW
Operating Temperature Range	Topr	-40 to +75	°C
Storage Temperature Range	Tstg	-40 to +150	°C

## ■ ELECTRICAL CHARACTERISTICS (Ta=25°C, V<sup>+</sup>/V<sup>-</sup>=±7V, RL=47kΩ, Volume=0dB)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>◆ Power Supply</b>						
Operating Voltage	V <sub>+/-</sub>		±4.5	±7.0	±7.5	V
Supply Current 1	I <sub>CC</sub>	No signal	-	55	65	mA
Supply Current 2	I <sub>EE</sub>	No signal	-	55	65	mA
<b>◆ Input/Output Characteristics (Output)</b>						
Maximum Output Voltage	V <sub>OM</sub>	f=1kHz, THD=1% Volume=0dB	3.6	4.2	-	Vrms
Maximum Input Voltage	V <sub>IM</sub>	f=1kHz, THD=1% Volume=-20dB	4.8	-	-	Vrms
Voltage Gain 1	G <sub>V1</sub>	V <sub>IN</sub> =2Vrms, f=1kHz Volume=0dB	-0.7	0	+0.7	dB
Voltage Gain 2	G <sub>V2</sub>	V <sub>IN</sub> =100mVrms, f=1kHz Volume=+15dB	+14	+15	+16	dB
Voltage Gain Error	ΔG <sub>V</sub>	V <sub>IN</sub> =2Vrms, f=1kHz Volume=0dB	-0.5	0	0.5	dB
Maximum Attenuation	A <sub>TT</sub>	f=1kHz, V <sub>IN</sub> =2Vrms Volume=Mute, A-weight	-	-120	-	dB
Attenuation Error	ΔA <sub>TT</sub>	f=1kHz, V <sub>IN</sub> =2Vrms Volume=-60dB	-1	0	1	dB
Output Noise1	V <sub>NO1</sub>	Volume=0dB, Rg=0, A-weight	-	-118 (1.26μ)	-	dBV (Vrms)
Output Noise2	V <sub>NO2</sub>	Volume=-95dB, Rg=0, A-weight	-	-118 (1.26μ)	-108 (4μ)	dBV (Vrms)

**■ ELECTRICAL CHARACTERISTICS (Ta=25°C, V+/V- =±7V, RL=47kΩ, Volume=0dB)**

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>◆ Input/Output Characteristics (Output)</b>						
Total Harmonic Distortion 1	T.H.D.1	f=1kHz, V <sub>IN</sub> =200mVrms, VOL=0dB, Gain=0dB, BW=400Hz-30kHz	-	0.001	-	%
Total Harmonic Distortion 2	T.H.D.2	f=10kHz, V <sub>IN</sub> =200mVrms, VOL=0dB, Gain=0dB, BW=400Hz-30kHz	-	0.001	-	%
Total Harmonic Distortion 3	T.H.D.3	f=1kHz, V <sub>IN</sub> =2Vrms, VOL=0dB, Gain=0dB, BW=400Hz-30kHz	-	0.002	-	%
Total Harmonic Distortion 4	T.H.D.4	f=10kHz, V <sub>IN</sub> =2Vrms, VOL=0dB, Gain=0dB, BW=400Hz-30kHz	-	0.003	-	%
Total Harmonic Distortion 5	T.H.D.5	f=1kHz, V <sub>IN</sub> =200mVrms, VOL=0dB, Gain=+15dB, BW=400Hz-30kHz	-	0.001	-	%
Total Harmonic Distortion 6	T.H.D.6	f=10kHz, V <sub>IN</sub> =200mVrms, VOL=0dB, Gain=+15dB, BW=400Hz-30kHz	-	0.001	-	%
Total Harmonic Distortion 7	T.H.D.7	f=1kHz, V <sub>IN</sub> =2Vrms, VOL=-18dB, Gain=0dB, BW=400Hz-30kHz	-	0.002	0.02	%
Total Harmonic Distortion 8	T.H.D.8	f=10kHz, V <sub>IN</sub> =2Vrms, VOL=-18dB, Gain=0dB, BW=400Hz-30kHz	-	0.002	-	%
Cross Talk 1	CT1	f=1kHz, V <sub>IN</sub> =2Vrms, A-weight Volume=0dB, Rg=0Ω	-	-120	-	dB
Cross Talk 2	CT2	f=20kHz, V <sub>IN</sub> =2Vrms, Volume=0dB, Rg=0Ω	-	-100	-	dB
Channel Separation 1	CS1	f=1kHz, V <sub>IN</sub> =2Vrms, A-weight Volume=0dB, Rg=0Ω	-	-110	-90	dB
Channel Separation 2	CS2	f=20kHz, V <sub>IN</sub> =2Vrms, Volume=0dB, Rg=0Ω	-	-90	-	dB
<b>◆ Input/Output Characteristics (REC output)</b>						
REC Out Voltage Gain	G <sub>VREC</sub>	V <sub>IN</sub> =2Vrms, f=1kHz	-0.5	0	0.5	dB
REC Out Output Noise	V <sub>NOREC</sub>	Rg=0, A-weight	-	-118 (1.26μ)	-	dBV (Vrms)
REC Out Total Harmonic Distortion 1	T.H.D <sub>REC1</sub>	f=1kHz, V <sub>IN</sub> =2Vrms, BW=400Hz-30kHz	-	0.001	0.05	%
REC Out Total Harmonic Distortion 2	T.H.D <sub>REC2</sub>	f=1kHz, V <sub>IN</sub> =1Vrms, BW=400Hz-30kHz	-	0.0003	-	%
REC Out Maximum Attenuation	A <sub>TTREC</sub>	f=1kHz, V <sub>IN</sub> =2Vrms REC Out=Mute, A-weight	-	-120	-	dB

■ ELECTRICAL CHARACTERISTICS (Ta=25°C, V<sup>+</sup>/V<sup>-</sup>=±7V, RL=47kΩ, Volume=0dB)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>◆ Input Selector Gain Control Characteristics</b>						
Input Selector Gain Control Voltage Gain 1	G <sub>VINC1</sub>	f=1kHz, V <sub>IN</sub> =2Vrms, Input Selector Gain = 0dB	-1.0	0	+1.0	dB
Input Selector Gain Control Voltage Gain 2	G <sub>VINC2</sub>	f=1kHz, V <sub>IN</sub> =2Vrms, Input Selector Gain = -6dB	-7.0	-6.0	-5.0	dB
Input Selector Gain Control Voltage Gain 3	G <sub>VINC3</sub>	f=1kHz, V <sub>IN</sub> =2Vrms, Input Selector Gain = -12dB	-13.0	-12.0	-11.0	dB
<b>◆ Logic Control Characteristics</b>						
High Level Input Voltage	V <sub>IH</sub>	DATA, CLOCK, LATCH, ADR, MUTE Terminal Input	2.5	-	V <sup>+</sup>	V
Low Level Input Voltage	V <sub>IL</sub>	DATA, CLOCK, LATCH, ADR, MUTE Terminal Input	0	-	1.5	V

[CAUTION]

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