

ANALOG FUNCTION SWITCH

■ GENERAL DESCRIPTION

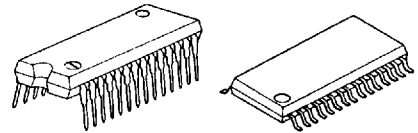
The NJU7313 is a dual 4-channel and quad 2-channel analog function switch especially suitable for input selector of audio equipments.

The high break down voltage analog switch controlled by 14-bit serial data of logic operating voltage(5V) can ON and OFF of $\pm 15V$ signal.

The analog switch is realized superior linearity of on resistance in all voltage range, low distortion and wide dynamic range.

Furthermore, the both of single and dual power supply application provides easy designing.

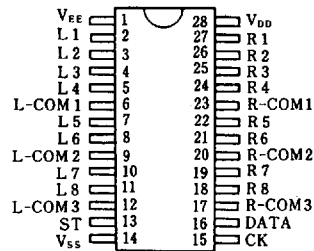
■ PACKAGE OUTLINE


NJU7313L
NJU7313M

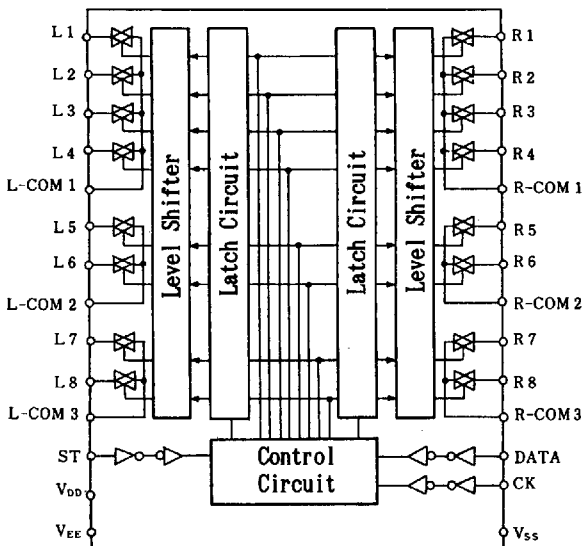
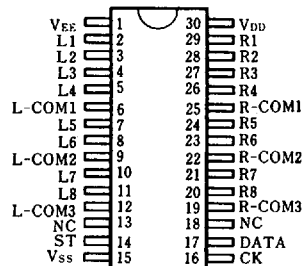
■ FEATURES

- Analog switch: dual 3 channel and quad 2 channel.
- High Break Down Voltage ----- $\pm 15V$.
- Low Distortion ----- THD: 0.002% (typ).
- Superior Linearity of ON Resistance.
- Serial Data Control.
- Package Outline SDIP 28 / DMP 30
- C-MOS Technology

■ PIN CONFIGURATION



■ BLOCK DIAGRAM


NJU7311L

NJU7311M

■ TERMINALS DESCRIPTION

NO.	SYMBOL	F U N C T I O N S	NO.	SYMBOL	F U N C T I O N S
1	V _{EE}	Negative voltage supply	15	CK	Clock input
2	L1	Analog switch input/output	16	DATA	Data input
3	L2		17	R-COM3	R7, R8 Common
4	L3		18	R8	Analog switch input/output
5	L4		19	R7	
6	L-COM1	L1, L2, L3, L4 Common	20	R-COM2	R5, R6 Common
7	L5	Analog switch input/output	21	R-COM2	Analog switch input/output
8	L6		22	R5	
9	L-COM2	L5, L6 Common	23	R-COM1	R1, R2, R3, R4 Common
10	L7	Analog switch input	24	R4	Analog switch input/output
11	L8		25	R3	
12	L-COM3	L7, L8 Common	26	R2	
13	ST	Chip enable	27	R1	
14	VSS	GND	28	VDD	Positive voltage supply

■ FUNCTIONAL DESCRIPTION

(1) Timing of DATA, CK, ST

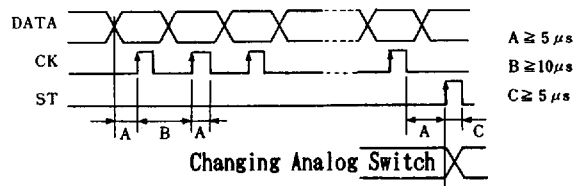
The Serial Input Data is input to internal shift register sequently synchronized by clock signal rising edge input from CK terminal(100 kHz max.).

The Serial Input Data in the shift register is transferred to latch circuit and renew by synchronized rising edge of Chip enable signal input from ST terminal.

(Timing Chart)

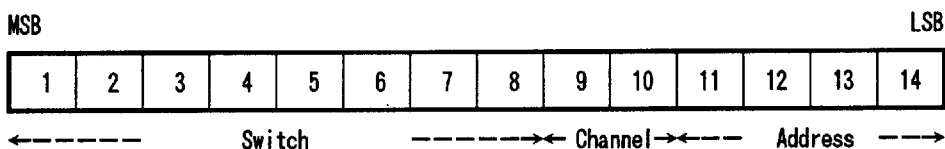


(Detailed Timing)



(2) Data Format

The 14-bit serial data strings format from MSB to LSB are 8-bit analog switch control data, 2-bit right and left channel selection data and 4-bit address data.



[illegible]

Bit9 and 10 select the channel.

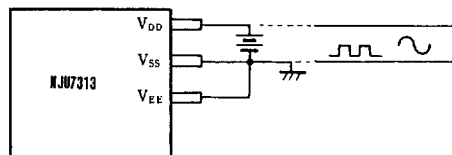
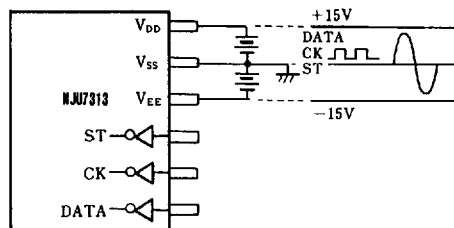
bit9	bit10	CHANNEL
1	1	L and R
1	0	R only
0	1	L only

Bit11 to 14 select the address. This address select is used for chip selection when this LSI is connected to the common bus line.

Type No.	bit11	bit12	bit13	bit14
NJU7311	0	0	0	0
NJU7312	1	0	0	0
NJU7313	0	1	0	0

Furthermore, the CK, DATA and ST terminals can direct interface with 5V operated family, because of its input threshold level is adjusted.

Single Power Supply (+)



ABSOLUTE MAXIMUM RATINGS

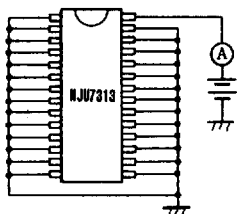
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD} - V_{EE}$ $V_{DD} - V_{SS}$ $V_{EE} - V_{SS}$	34 +17 -17	V
Input Voltage	V_{IN}	$V_{SS}-0.3 \sim V_{DD}+0.3$	V
Power Dissipation	P_D	300	mW
Operating Temperature	T_{opr}	-30 ~ +75	°C
Storage Temperature	T_{stg}	-40 ~ +125	°C

ELECTRICAL CHARACTERISTICS

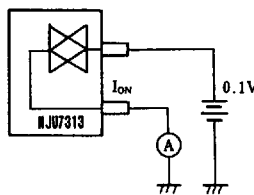
 $(V_{DD}=+16V, V_{SS}=0V, V_{EE}=-16V, T_a=25^{\circ}C)$

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	$V_{DD}-V_{SS}$ $V_{EE}-V_{SS}$		8 -16		16 -8	V
Operating Current	I_{DD}	$V_{DD}=+16V, V_{EE}=-16V, V_{SS}=0V$			3	mA
Back-Up Voltage	V_B		4		16	V
Back-Up Current	I_B	$V_{DD}=+4V, V_{SS}=V_{EE}=0V, \text{Circ.1}$			10	μA
High-Level Input Voltage	V_{IH}	CK, DATA, ST Terminals	4		16	V
Low-Level Input Voltage	V_{IL}	CK, CATA, ST Terminals	0		1	V
Min. Operating Pulse Width	t_{MIN}		5			μS
Switch ON Resistance	R_{ON}	Circ.2		100	200	Ω
Total Harmonic Distortion	THD	$f_{IN}=20 \sim 20kHz, V_{IN}=1V_{rms}$ Circ.3		0.002	0.005	%

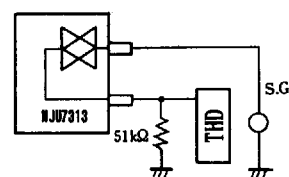
MEASUREMENT CIRCUIT DIAGRAMS



(Circ.1)



(Circ.2)



(Circ.3)