

ANALOG FUNCTION SWITCH

■ GENERAL DESCRIPTION

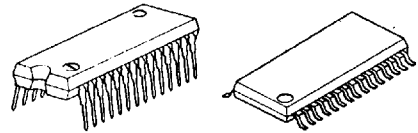
The NJU7311 is a hexad 2-channel and dual 1-channel analog function switch especially suitable for input selector of audio equipments.

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



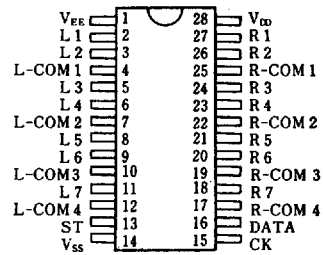
NJU7311L

NJU7311M

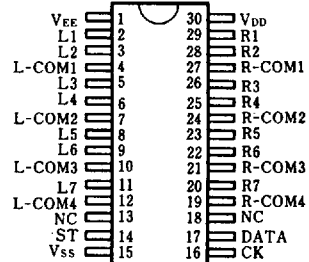
■ FEATURES

- Analog switch: hexad 2 channel and dual 1 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

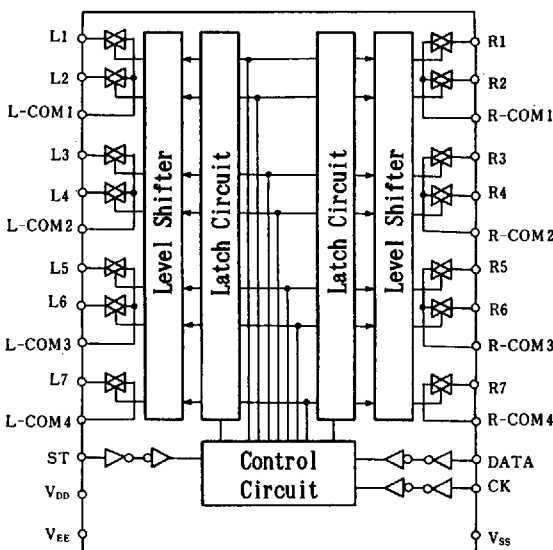


NJU7311L



NJU7311M

■ BLOCK DIAGRAM



**TERMINALS DESCRIPTION**

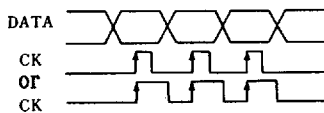
NO.	SYMBOL	FUNCTIONS	NO.	SYMBOL	FUNCTIONS
1	V <sub>EE</sub>	Negative Voltage Supply	15	CK	Clock input
2	L1	Analog switch input/output	16	DATA R-COM4	Data input
3	L2				
4	L-COM1	L1, L2 Common	18	R7	Analog switch input/output
5	L3 L4	Analog switch input/output	19	R-COM3	R5, R6 Common
6			20 21	R6 R5	Analog switch input/output
7	L-COM2	L3, L4 Common			
8	L5 L6	Analog switch input/output	22	R-COM2	R3, R4 Common
9			23 24	R4 R3	Analog switch input/output
10	L-COM3	L5, L6 Common			
11	L7	Analog switch input/output	25	R-COM1	R1, R2 Common
12	L-COM4	L7 Common	26	R2	Analog switch input/output
13	ST	Chip enable	27	R1	
14	VSS	GND	28	VDD	Positive voltage supply

**FUNCTIONAL DESCRIPTION**
**(1) Timing of DATA, CK, ST**

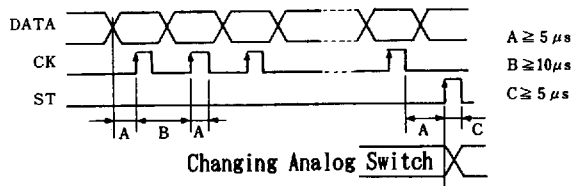
The Serial Input Data is input to internal shift register sequentially synchronized by clock signal rising edge input from CK terminal (100 kHz max.).

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.

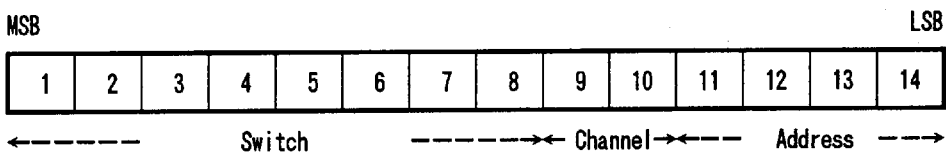
(Timing Chart)



(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.





## ■ ABSOLUTE MAXIMUM RATINGS

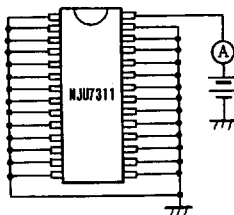
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD} - V_{EE}$ $V_{DD} - V_{SS}$ $V_{EE} - V_{SS}$	34 +17 -17	V
Input Voltage	$V_{IN}$	$V_{SS}-0.3 \sim V_{DD}+0.3$	V
Power Dissipation	$P_D$	300	mW
Operating Temperature	$T_{opr}$	-30 ~ +75	°C
Storage Temperature	$T_{stg}$	-40 ~ +125	°C

## ■ ELECTRICAL CHARACTERISTICS

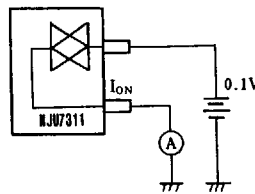
 ( $V_{DD}=+16V$ ,  $V_{SS}=0V$ ,  $V_{EE}=-16V$ ,  $T_a=25^\circ C$ )

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	$I_B$	$V_{DD}=+4V, V_{SS}=V_{EE}=0V$ , Circ.1			10	$\mu A$
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			$\mu S$
Switch ON Resistance	$R_{ON}$	Circ.2		100	200	$\Omega$
Total Harmonic Distortion	THD	$f_{IN}=20 \sim 20kHz, V_{IN}=1V_{rms}$ Circ.3		0.002	0.005	%

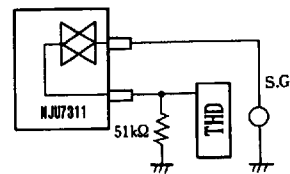
## ■ MEASUREMENT CIRCUIT DIAGRAMS



( Circ.1 )



( Circ.2 )



( Circ.3 )