

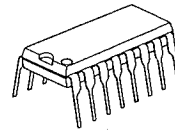
C-MOS QUAD SPST ANALOG SWITCH

■ GENERAL DESCRIPTION

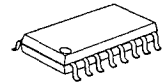
The NJU7301 is a quad break-before-make SPST analog switch protected up to 44V operating voltage.

Each switch is controlled by TTL or C-MOS compatible input.

■ PACKAGE OUTLINE



NJU7301D

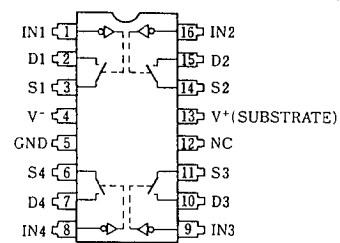


NJU7301M

■ FEATURES

- High Break Down Voltage -- 44V
- Package Outline -- DIP/DMP 16
- C-MOS Technology

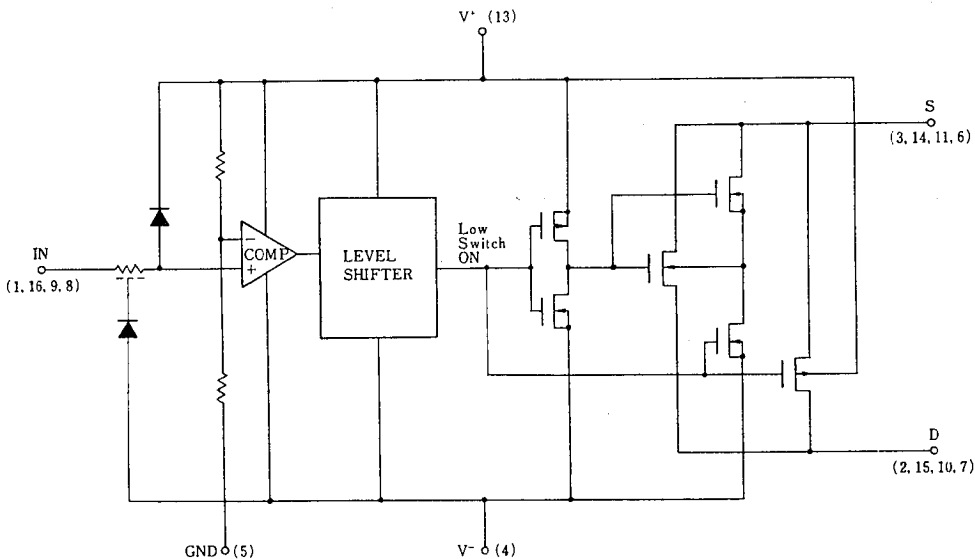
■ PIN CONFIGURATION



■ TRUTH TABLE

Logic (In)	Switch
0	ON
1	OFF

■ EQUIVALENT CIRCUIT



* Logic input threshold voltage V_{TH} is about $V^+ \times 0.128(V)$.
When the designing, enough margin is required.

■ TERMINAL DESCRIPTION

No.	SYMBOL	F U N C T I O N	No.	SYMBOL	F U N C T I O N
1	IN1	Control Signal Input	9	IN3	Control Signal Input
2	D1	Input/Output 1	10	D3	Input/Output 3
3	S1		11	S3	
4	V ⁻	Negative (V ⁻) Power Supply	12	NC	Non Connection
5	GND	Ground	13	V ⁺	Positive (V ⁺) Power Supply
6	S4	Input/Output 4	14	S2	Input/Output 2
7	D4		15	D2	
8	IN4	Control Signal Input	16	IN2	Control Signal Input

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

P A R A M E T E R	SYMBOL	R A T I N G S	UNIT
Supply Voltage	V ⁺ - V ⁻	44	V
	V ⁺ - GND	19	
	GND - V ⁻	25	
Input Voltage	V _I , V _S , V _D	V ⁻ -0.5 ~ V ⁺ +0.5 *	V
Input Current	I _I	30	mA
	I _S , I _D Continuous	20	
	Peak Value (PW=1ms, Duty0.1)	70	
Power Dissipation	P _D	500 (DIP) 200 (DMP)	mW
Operating Temperature Range	T _{opr}	0 ~ + 70	°C
Storage Temperature Range	T _{stg}	- 65 ~ + 125	°C

* V⁺+0.5V must be 44V or less.

ELECTRICAL CHARACTERISTICS (DC CHARACTERISTICS)

($V^+=15V$, $V^-=-15V$, $GND=0V$)

P A R A M E T E R	S Y M B O L	C O N D I T I O N S		TYP	MAX			UNIT
				25°C	0°C	25°C	70°C	
Analog Signal Range	V _{ANALOG}			±15		±15	±15	V
On-state Resistance	R _{ON}	V _{IN} =0.8V I _S =-1mA	V _D =10V	105	200	200	250	Ω
			V _D =-10V	115	200	200	250	
Source-off Leakage Current	I _S (off)	V _I =2.4V	V _S =14V, V _D =-14V	0.01		5	100	nA
			V _S =-14V, V _D =14V	-0.02		- 5	-100	
Drain-off Leakage Current	I _D (off)	V _I =2.4V	V _D =14V, V _S =-14V	0.01		5	100	nA
			V _D =-14V, V _S =14V	-0.02		- 5	-100	
Drain-on Leakage Current	I _D (on)	V _I =0.8V	V _D =V _S =14V	0.1		5	200	nA
			V _D =V _S =-14V	-0.15		- 5	-200	
Input Current	I _{IH}	V _I =2.4V		-0.0004		- 1	- 10	μA
		V _I =15V		0.003		1	10	
	I _{IL}	V _I =0V		-0.0004		- 1	- 10	
Quiescent Current	I ⁺	V _I =0 or 2.4V		0.9		2		mA
	I ⁻			-0.3		-1		

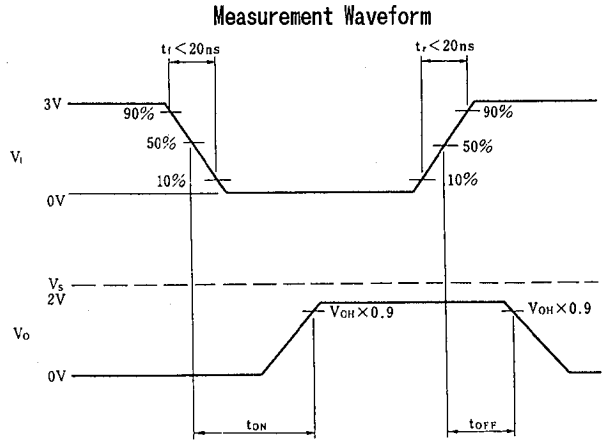
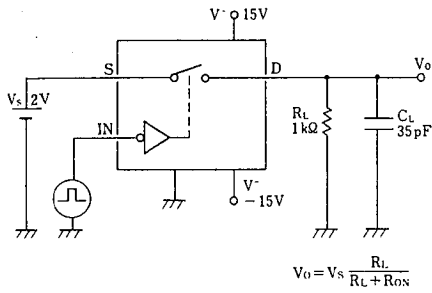
SWITCHING CHARACTERISTICS

($V^+=15V$, $V^-=-15V$, $GND=0V$)

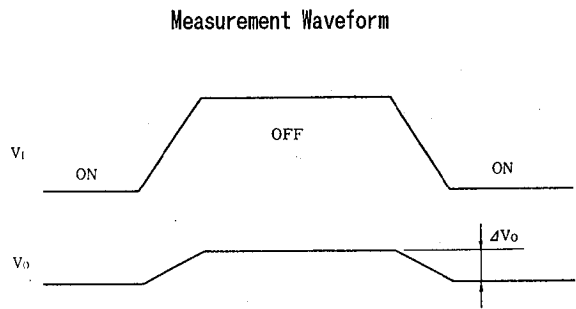
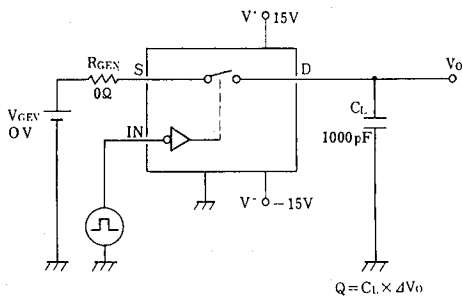
PARAMETER	SYMBOL	CONDITIONS		TYP	MAX			UNIT
				25°C	0°C	25°C	70°C	
Turn-on Time	t _{on}	R _L =1kΩ, C _L =35pF		480		600		ns
Turn-off Time	t _{off}			370		450		
Charge Injection	Q	C _L =1000pF, V _{GEN} =0V, R _{GEN} =0Ω		20				pC
Source-Off Capacit.	C _S (off)	f=100kHz	V _S =0V, V _I =5V	5				pF
Drain-Off Capacit.	C _D (off)		V _D =0V, V _I =5V	5				
Channel-On Capacitance	C _D (on) +C _S (on)		V _D =V _S =0V, V _I =0V	16				
Off Isolation	OIRR		V _S =2V _{P-P} , R _L =75Ω	70				dB
Channel-to-channel Crosstalk	CCRR			90				

■ MEASUREMENT CIRCUITS

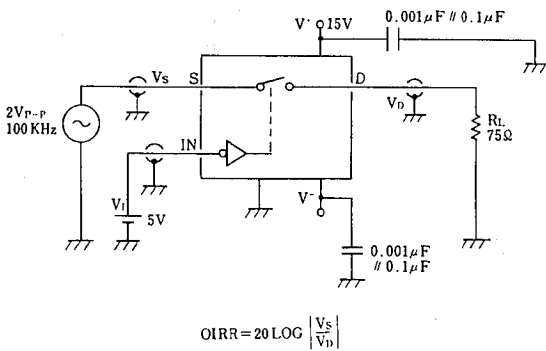
(1) Turn-on/Turn-off Time



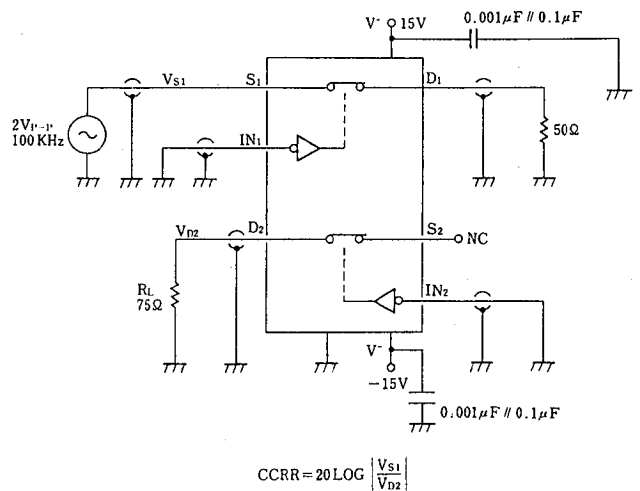
(2) Charge Injection



(3) Off Isolation



(4) Channel-To-Channel Crosstalk



MEMO

[CAUTION]

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