

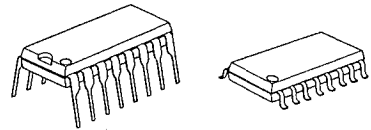
C-MOS QUAD SPST ANALOG SWITCH

■ 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



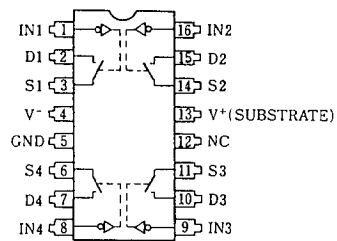
NJU7301D

NJU7301M

■ FEATURES

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

■ PIN CONFIGURATION

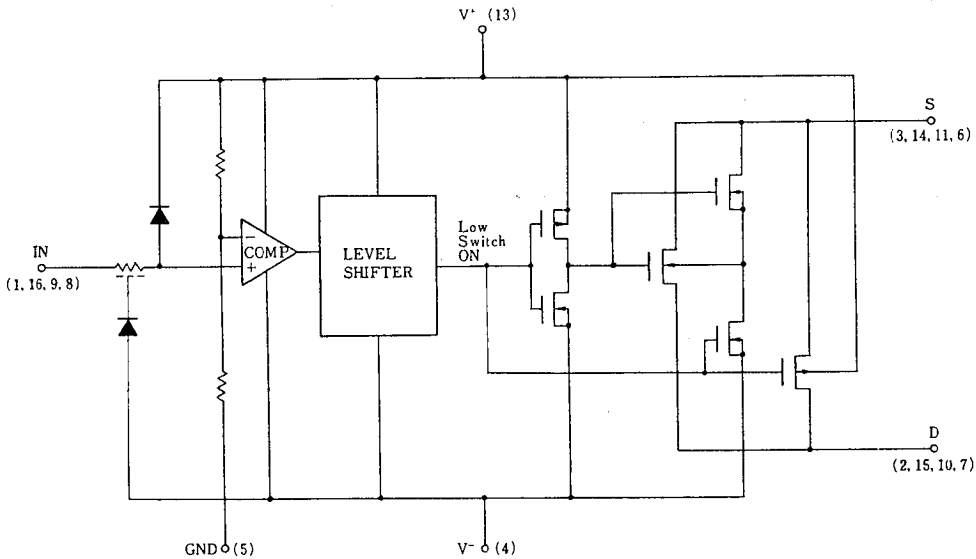


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■ TRUTH TABLE

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	FUNCTION	No.	SYMBOL	FUNCTION
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)

PARAMETER	SYMBOL	RATINGS	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)

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

PARAMETER	SYMBOL	CONDITIONS	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}	$V_{IN}=0.8V$ $V_D=10V$	105	200	200	250	Ω	
		$I_S=-1mA$ $V_D=-10V$	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			

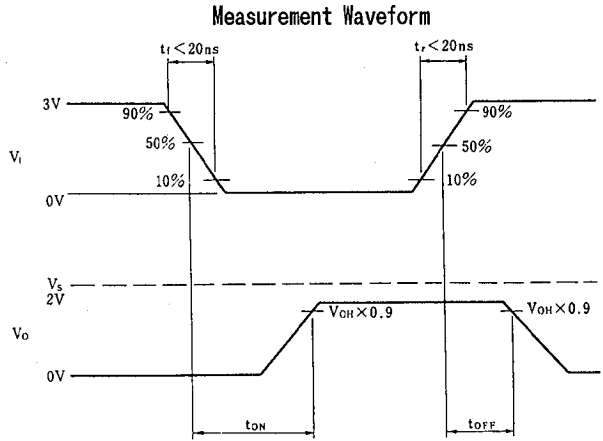
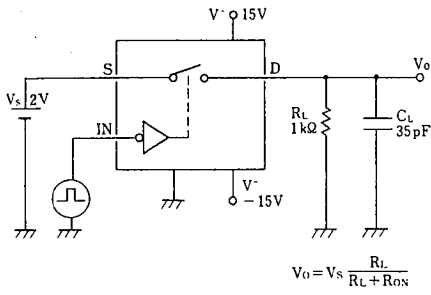
SWITCHING CHARACTERISTICS

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

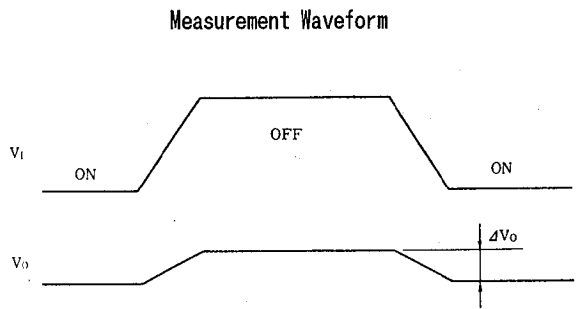
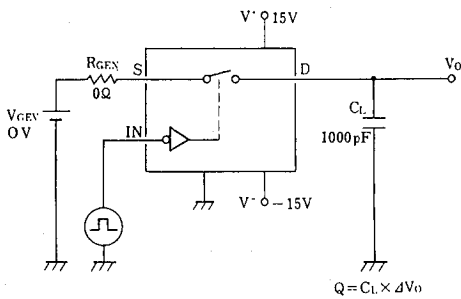
PARAMETER	SYMBOL	CONDITIONS	TYP	MAX			UNIT	
			25°C	0°C	25°C	70°C		
Turn-on Time	t_{on}	$R_L=1k\Omega$, $C_L=35pF$	480		600		ns	
Turn-off Time	t_{off}		370		450			
Charge Injection	Q	$C_L=1000pF$, $V_{GEN}=0V$, $R_{GEN}=0\Omega$	20				pC	
Source-Off Capacit.	$C_S(off)$	$f=100kHz$	5				pF	
Drain-Off Capacit.	$C_D(off)$							$V_S=0V$, $V_I=5V$
Channel-On Capacitance	$C_D(on)$							$V_D=0V$, $V_I=5V$
	$+C_S(on)$							$V_D=V_S=0V$, $V_I=0V$
Off Isolation	OIRR							$V_S=2V_{P-P}$, $R_L=75\Omega$
Channel-to-channel Crosstalk	CCRR		90					

■ MEASUREMENT CIRCUITS

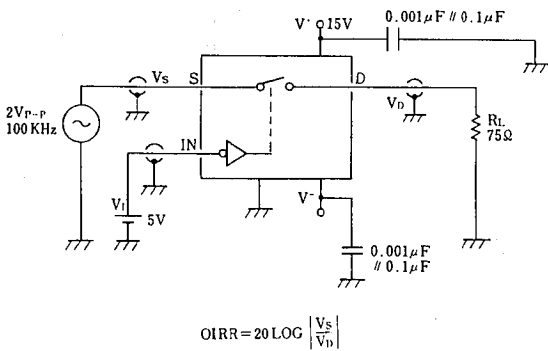
(1) Turn-on/Turn-off Time



(2) Charge Injection



(3) Off Isolation



(4) Channel-To-Channel Crosstalk

