

C-MOS QUAD SPST ANALOG SWITCH

GENERAL DESCRIPTION PACKAGE OUTLINE 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. NJU7301D NJU7301M FEATURES PIN CONFIGURATION High Break Down Voltage -- 44V Package Outline -- DIP/DMP 16 IN1 CT <⊅ 167 IN2 C-MOS Technology D1 52 15⊃ D2 SI (3 14⊃ S2 V- ₹<u>4</u> 13> V+(SUBSTRATE) GND (5 12> NC 11> S3 S4 🕻 6 10> D3 D4 57 IN4 (8 **9** או ב **TRUTH TABLE** Logic (In) Switch 0 ON 1 OFF EQUIVALENT CIRCUIT V* (13) S (3, 14, 11, 6) ЧĘ Low Switch ON IN COMP LEVEL SHIFTER (1, 16, 9, 8) Чh D (2, 15, 10, 7) GND (5) V- 0 (4) * Logic input threshold voltage $V_{\rm TH}$ is about V⁺ x 0.128(V). When the designing, enough margin is required.

New Japan Radio Co., Ltd.

6

6-7

TERMINAL DESCRIPTION

No.	SYMBOL	FUNCTION	No.	SYMBOL	FUNCTION
1	I N1	Control Signal Input	9	1 N3	Control Signal Input
2	D1	Laurent (Dertaurt 1	10	D3	Input/Output 3
3	S1	Input/Output 1	11	S3	
4	٧-	Negative (V ⁻) Power Supply	12	NC	Non Connection
5	GND	Ground	13	V+	Positive (V ⁺) Power Supply
6	S4	I must (Dutmut A	14	S2	Input/Output 2
7	D4	Input/Output 4	15	D2	τηματγοάτματ Ζ
8	1 N4	Control Signal Input	16	I N2	Control Signal Input

M ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL.	RATINGS	UNIT	
	$V^{+} - V^{-}$	44		
Supply Voltage	V+ - GND	19	۷	
	gnd – V-	25		
Input Voltage	V _I ,V _S ,V _D	V ⁻ -0.5 \sim V ⁺ +0.5 *	۷	
	I I	30	ļ	
Input Current	ls,l⊳ Continuous	uous 20		
	Peak Value (PW=1ms,Duty0.1)	70		
Power Dissipation	P⊳	500 (DIP) 200 (DMP)	mW	
Operating Temperature Range	Topr	0 ~+ 70	ĉ	
Storage Temperature Range	Tstg	- 65 ~ + 125	°C	

* V⁺+0.5V must be 44V or less.

6-8-

6

-New Japan Radio Co.,Ltd.-

ELECTRICAL CHARACTERISTICS (DC CHARACTERISTICS)

ELECTITICAL CHARACTERTE			11037		(V ⁺ =15	V , V ⁻ =-	15V , GN	D=0V)		
	SYMBOL	CONDITIONS		TYP		MAX		UNIT		
PARAMETER	STMDUL			25℃	0°C	25℃	70℃	UNTI		
Analog Signal Range	VANALOG			±15		± 15	±15	۷		
0		V _{IN} =0.8V	V _D =10V	105	200	200	250	Ω		
On-state Resistance	Ron	ls=−1mA	V_=-10V	115	200	200	250			
Source-off	∣₅(off)	V -0 4V	Vs=14V,VD=-14V	0.01		5	100			
Leakage Current		Is(011)	V1 =2.4 V	Vs=-14V,Vd=14V	-0.02		- 5	-100	nA	
Drain-off	I _D (off) V₁=	o(off) V1=2.4V	V _D =14V,V _S =-14V	0.01		5	100			
Leakage Current			V _D =-14V,V _S =14V	-0.02		- 5	-100	nA		
Drain-on	l∍(on)	V -0 eV	$V_{\rm D}$ =Vs=14V	0.1		5	200	nA		
Leakage Current		I⊳(on)	V1=0.8V	V _D =V _S =-14V	-0.15		- 5	-200		
	Іін	V1=2.4V		-0.0004		- 1	- 10	μA		
Input Current		V1=15V		0.003		1	10			
	I L	V1=0V		-0.0004		- 1	- 10			
Quinnert Quart	⁺		AV	0.9		2		- mA		
Quiescent Current	I -	V1=0 or 2.4V		-0.3		-1				

SWITCHING CHARACTERISTICS

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

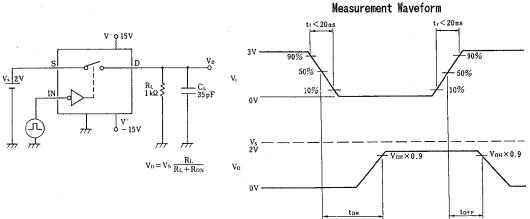
	01/11/001	CONDITIONS		ТҮР	MAX			10117					
PARAMETER	SYMBOL			25℃	0°C	25℃	70℃	UNIT					
Turn-on Time	ton	R⊥=1kΩ, C⊥=35pF		480		600		ns					
Turn-off Time	toff			370		450							
Charge Injection	Q	$\begin{array}{l} C_{\rm L} = 1000 \text{pF}, V_{\rm GEN} = 0 \text{V}, \\ R_{\rm GEN} = 0 \; \Omega \end{array}$		20				Oq					
Source-Off Capacit.	Cs(off)		Vs=0V, V1=5V	5									
Drain-Off Capacit.	$C_{D}(off)$								$V_{\rm D}=0V$, $V_{\rm I}=5V$	5			
Channel-On Capacitance	C₋(on) +C₅(on)	f=100kHz	V _D =V _S =0V, V ₁ =0V	16				pF					
Off Isolation	OIRR		V -0V	70				۹۲					
Channel-to-channel Crosstalk	CCRR		$V_s=2V_{P-P}, R_t=75\Omega$	90				dB					

·6-9

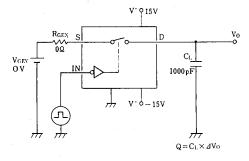


MEASUREMENT CIRCUITS

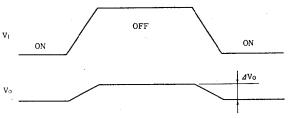
(1) Turn-on/Turn-off Time



(2) Charge Injection

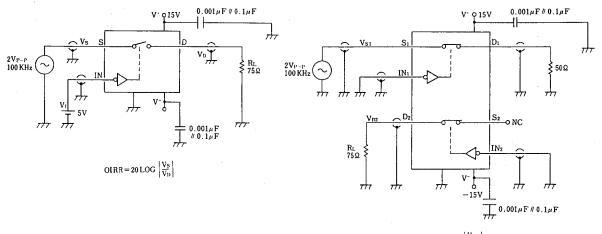


Measurement Waveform



(3) Off Isolation

(4) Channel-To-Channel Crosstalk



-New Japan Radio Co., Ltd.

 $CCRR = 20 LOG \left| \frac{V_{S1}}{V_{D2}} \right|$

MEMO

[CAUTION] The specifications on this databook are only given for information , without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

NJR:

NJU7301M-TE1 NJU7301M NJU7301D