

C-MOS QUAD SPST ANALOG SWITCH

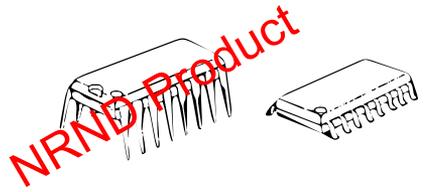
■ GENERAL DESCRIPTION

The NJU211 is a quad break-before-make SPST analog switch protected up to 40V operating voltage.

Each switch is controlled by TTL or C-MOS compatible input, and the input threshold level can be adjusted by external voltage supply control.

The NJU211 is functionally and pin-to-pin compatible with SILICONIX DG211A.

■ PACKAGE OUTLINE



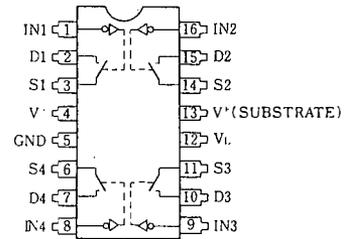
NJU211D

NJU211M

■ FEATURES

- High Break Down Voltage -- 40V
- Input Threshold Voltage Adjustable
- Package Outline -- DIP/DMP 16
- C-MOS Technology

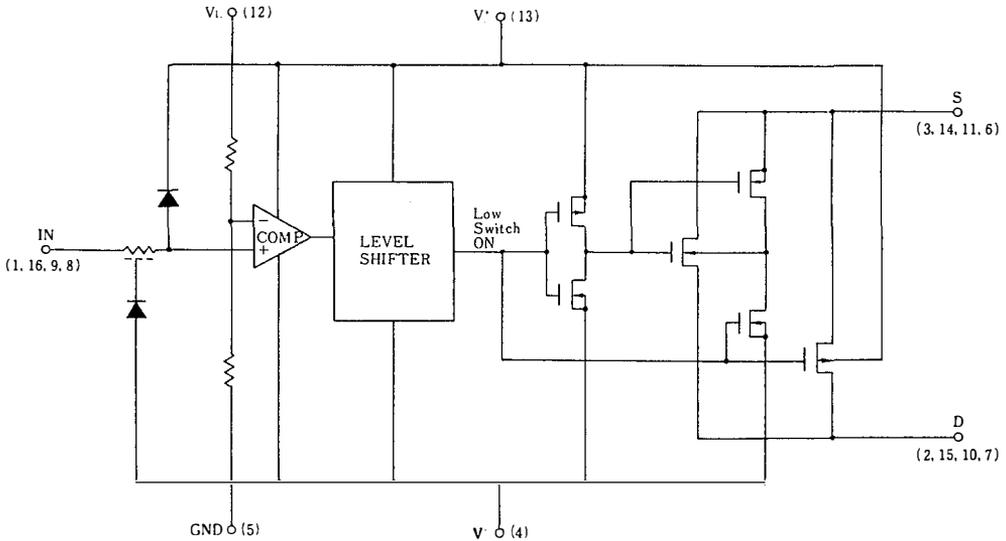
■ PIN CONFIGURATION



■ TRUTH TABLE

Logic (In)	Switch
0	ON
1	OFF

■ EQUIVALENT CIRCUIT



* Logic input threshold voltage V_{TH} is about $V_L \times 0.384(V)$.
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	V _L	Threshold Level Control Voltage Supply
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

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■ 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 ⁻	40	V
	V ⁺ - GND	19	
	GND - V ⁻	25	
Threshold Control Voltage	V _L - GND	-0.5 ~ V ⁺ +0.5 *	
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 40V or less.

■ ELECTRICAL CHARACTERISTICS (DC CHARACTERISTICS)

($V^+=15V$, $V^-=-15V$, $GND=0V$, $V_L=5V$)

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}	$V_{IN}=0.8V$ $I_S=-1mA$	$V_D=10V$	105		175		Ω
			$V_D=-10V$		115		175	
Source-off Leakage Current	$I_S(off)$	$V_I=2.4V$	$V_S=14V, V_D=-14V$	0.01		5		nA
			$V_S=-14V, V_D=14V$	-0.02		- 5		
Drain-off Leakage Current	$I_D(off)$	$V_I=2.4V$	$V_D=14V, V_S=-14V$	0.01		5		nA
			$V_D=-14V, V_S=14V$	-0.02		- 5		
Drain-on Leakage Current	$I_D(on)$	$V_I=0.8V$	$V_D=V_S=14V$	0.1		5		nA
			$V_D=V_S=-14V$	-0.15		- 5		
Input Current	I_{IH}	$V_I=2.4V$	-0.0004		- 1		μA	
		$V_I=15V$	0.003		1			
	I_{IL}	$V_I=0V$	-0.0004		- 1			
Quiescent Current	I^+	$V_I=0$ or $2.4V$	0.35		0.68		mA	
	I^-		0.30		0.68			
	I_L		0.5		1.2			

■ SWITCHING CHARACTERISTICS

($V^+=15V$, $V^-=-15V$, $GND=0V$, $V_L=5V$)

PARAMETER	SYMBOL	CONDITIONS	TYP	MAX		UNIT			
			25°C	0°C	25°C		70°C		
Turn-on Time	t_{on}	$R_L=1k\Omega$, $C_L=35pF$	460		1000		ns		
Turn-off Time	t_{off}		360		500				
Charge Injection	Q	$C_L=1000pF$, $V_{GEN}=0V$, $R_{GEN}=0\Omega$	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		$V_S=2V_{P-P}$ $R_L=75\Omega$	70					dB
Channel-to-channel Crosstalk	CCRR			90					

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