C-MOS QUAD SPST ANALOG SWITCH

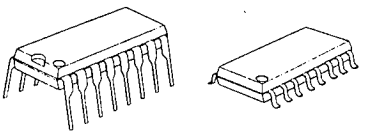
■ GENERAL DESCRIPTION

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

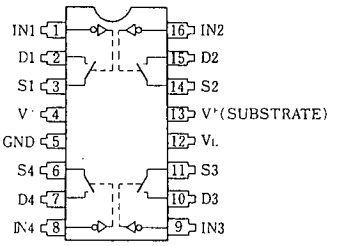


NJU211D NJU211M

■ FEATURES

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

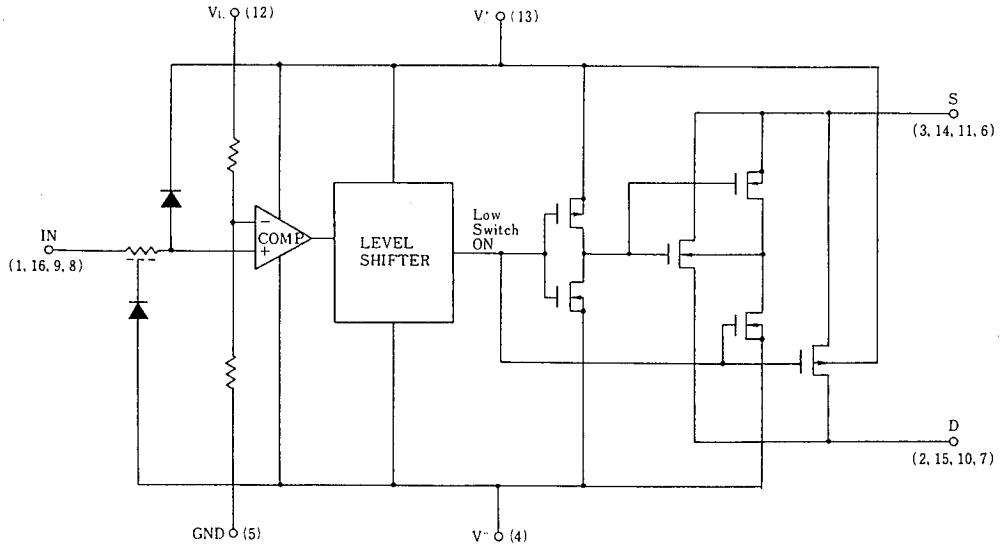
■ PIN CONFIGURATION



■ TRUTH TABLE

Logic (In)	Switch
0	ON
1	OFF

■ EQUIVALENT CIRCUIT



* Logic input threshold voltage V_{TH} is about V_L x 0.384(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	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℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+ - V^-$	40	V
	$V^+ - GND$	19	
	$GND - V^-$	25	
Threshold Control Voltage	$V_L - GND$	$-0.5 \sim V^+ + 0.5$ *	
Input Voltage	V_I, V_S, V_D	$V^- - 0.5 \sim V^+ + 0.5$ *	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	Topr	0 ～ + 70	℃
Storage Temperature Range	Tstg	- 65 ～ + 125	℃

* 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℃	0℃	25℃	70℃	
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℃	0℃	25℃	70℃	
Turn-on Time	t_{on}	R_L=1kΩ, C_L=35pF		460		1000		ns
Turn-off Time	t_{off}			360		500		
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				

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