

DUAL H BRIDGE DRIVER WITH COMPARATOR

■ GENERAL DESCRIPTION

The NJU7381 is a dual H-bridge driver IC especially developed for low voltage small stepper motor applications.

A pair of high efficiency CMOS H-bridge drivers, a built-in end-detection comparator and the advanced 2.5mm-square FFP package make it suitable for miniature micro stepping applications.

■ Package Outline



NJU7381PC1

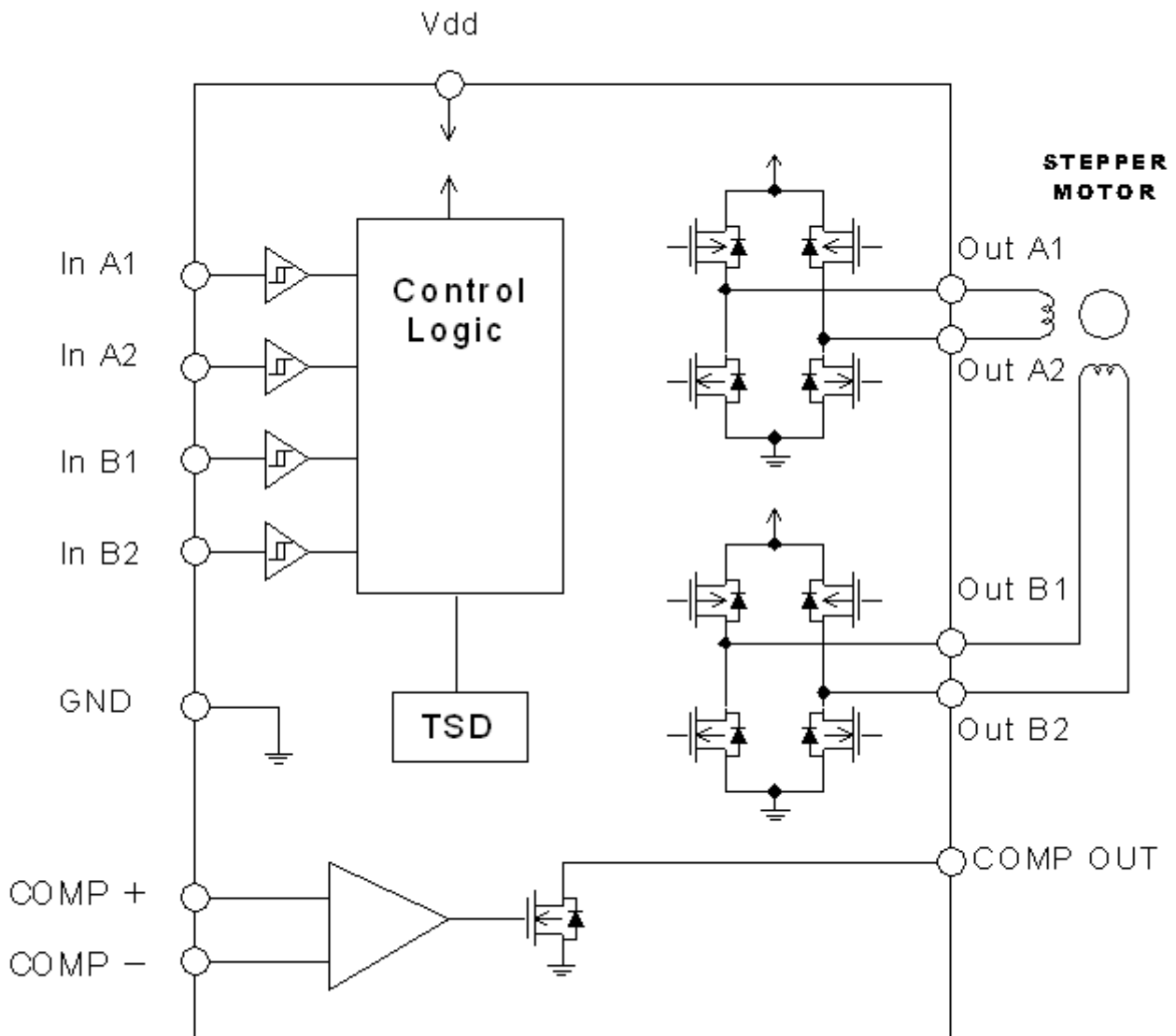
■ FEATURES

- Operating Voltage 2.0V to 5.5V
- CMOS dual H-bridge drivers for stepper motor driving
- Motor Output Current 200mA(continuous),
 400mA(peak)
- Built-in end-detection comparator
- Schmitt trigger logic input
- Thermal shutdown circuit
- Package Outline FFP16 (2.5×2.5×h0.85mm)

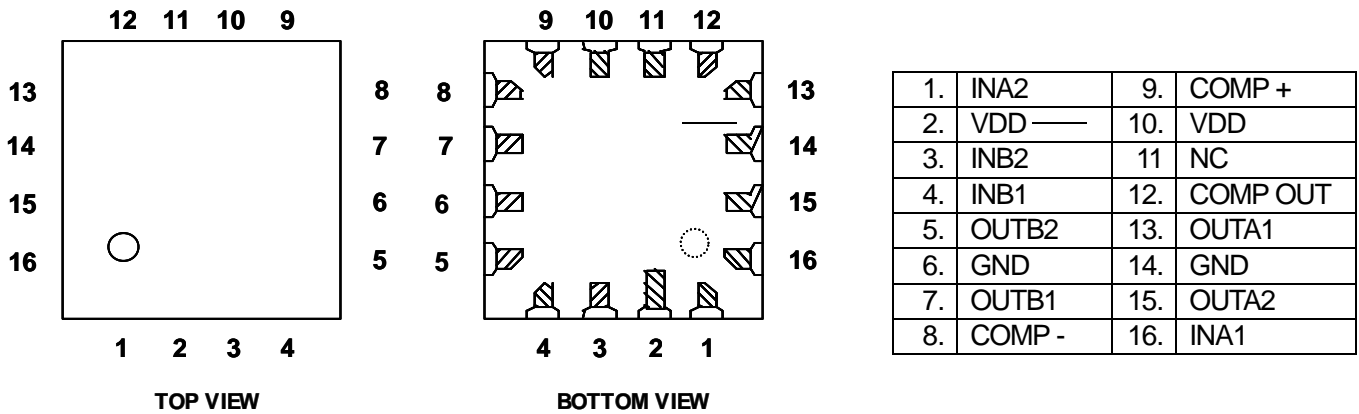
NJU7381

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■ BLOCK DIAGRAM



■ PIN CONFIGURATIONS



FFP-16

(Note)

All VDD and GND pins should be connected the power supply and the ground respectively. Otherwise, the electrical characteristic may not satisfy specifications.

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	RATINGS	SYMBOL (UNIT)	REMARKS
Supply Voltage	+7.0	V _{DD} (V)	
Logic Input Voltage	-0.3~V _{DD} +0.3	V _{ID} (V)	
Motor Output Current (Peak)	400	I _{OPEAK} (mA)	
Comparator Output Current	10	I _{COPEAK} (mA)	
Comparator Output Voltage	+7.0	V _c (V)	
Operating Temperature	-40~+85	T _{opr} (°C)	
Storage Temperature	-50~+150	T _{stg} (°C)	
Power Dissipation	300	P _D (mW)	On PCBoard

■ RECOMMENDED OPERATING CONDITIONS

(Ta=25°C, V_{DD}=3.3V)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage Range	V _{DD}	2.0	-	5.5	V
Junction Temperature	T _j	-20	-	125	dg.C
Motor Output Current	I _o	-	-	200	mA

■ ELECTRICAL CHARACTERISTICS

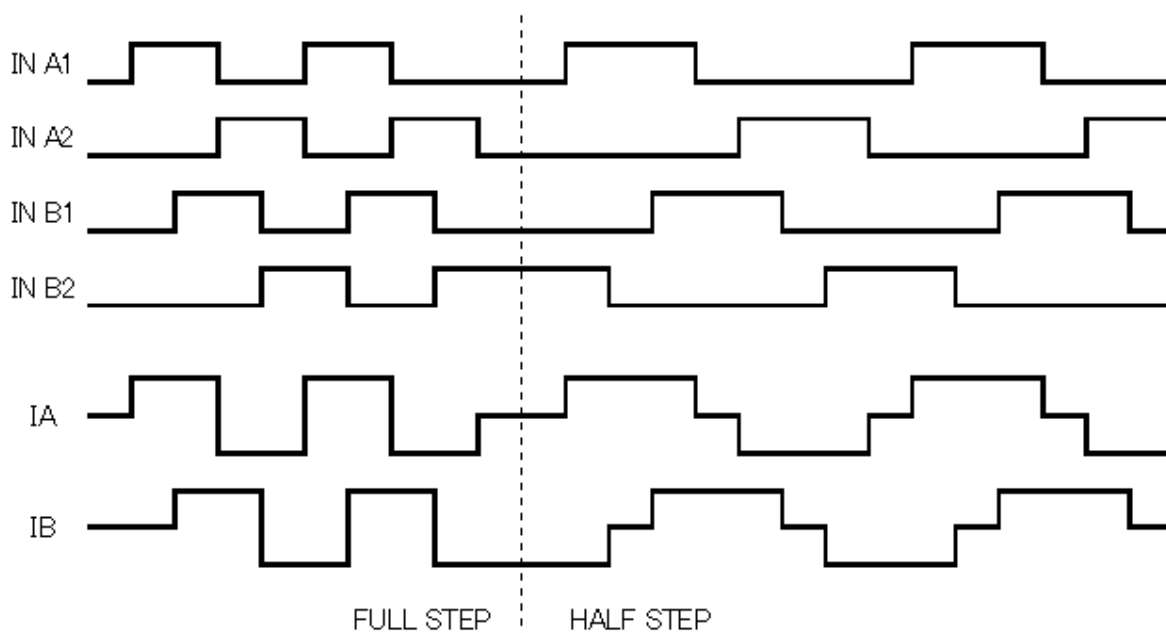
(Ta=25°C, V_{DD}=3.3V, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
■ GENERAL						
Operating Current 1	I _{DD1}	INA1=INA2=INB1=INB2=0V	-	100	500	uA
Operating Current 2	I _{DD2}	INA1=INB1=3V,INA2=INB2=0V	-	100	-	uA
Thermal Shutdown	T _{TSD}	-	-	180	-	dg.C
Thermal Shutdown Hysteresis	T _{HYS}	-	-	30	-	dg.C
■ DRIVERS						
Logic Input Current	I _I	V _{IH} =3V	-	-	1	uA
Logic High Input Voltage	V _{IH}	-	2.4	-	-	V
Logic Low Input Voltage	V _{IL}	-	-	-	0.6	V
High Output Voltage	V _{OH}	I _o =+100mA	-	3.1	-	V
Low Output Voltage	V _{OL}	I _o = -100mA	-	0.2	-	V
■ COMPARATOR						
Input Offset Voltage	V _{IO}	-	-12	-	+12	mV
Input Bias Current	I _{IB}	-	-	1	-	pA
Common mode Input voltage range	V _{ICM}	-	0	-	2.8	V
Output Voltage	V _{sat}	RL=10k ohm	-	0.3	-	V
Output leak current	I _{COLEAK}	V _{CO} =5.5V	-	-	1	uA

■ TRUTH TABLE

INPUT				OUTPUT				Remarks
INA1	INA2	INB1	INB2	OUTA1	OUTA2	OUTB1	OUTB2	
L	L	L	L	Hi Z	Hi Z	Hi Z	Hi Z	ALL OUTPUT is OFF Half Step Sequence
H	L	L	L	H	L	Hi Z	Hi Z	
H	L	H	L	H	L	H	L	
L	L	H	L	Hi Z	Hi Z	H	L	
L	H	H	L	L	H	H	L	
L	H	L	L	L	H	Hi Z	Hi Z	
L	H	L	H	L	H	L	H	
L	L	L	H	Hi Z	Hi Z	L	H	
H	L	L	H	H	L	L	H	
H	L	L	L	H	L	Hi Z	Hi Z	When both INPUT are H, OUTPUT is held the previous logic.
H	H	L	L	H	L	Hi Z	Hi Z	
H	L	H	L	H	L	H	L	
H	L	H	H	H	L	H	L	

■ TIMING CHART



*IA and IB mean that the current flowing through OUTPUT A1 and A2, B1 and B2.

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