DUAL H BRIDGE DRIVER WITH COMPARATOR

■ GENERAL DESCRIPTION

The NJU7382 is a dual H-bridge driver IC especially developed low voltage small stepper motor applications. It consists of a pair of low consumption CMOS H-bridge drivers protected by thermal shutdown circuit.

It is also including a general-purpose comparator suited for detection from photo reflector as rotor position sensor or current limitation.

The NJU7382 adopt a very small FFP package, it is suitable for mobile or portable applications using micro stepper motors.

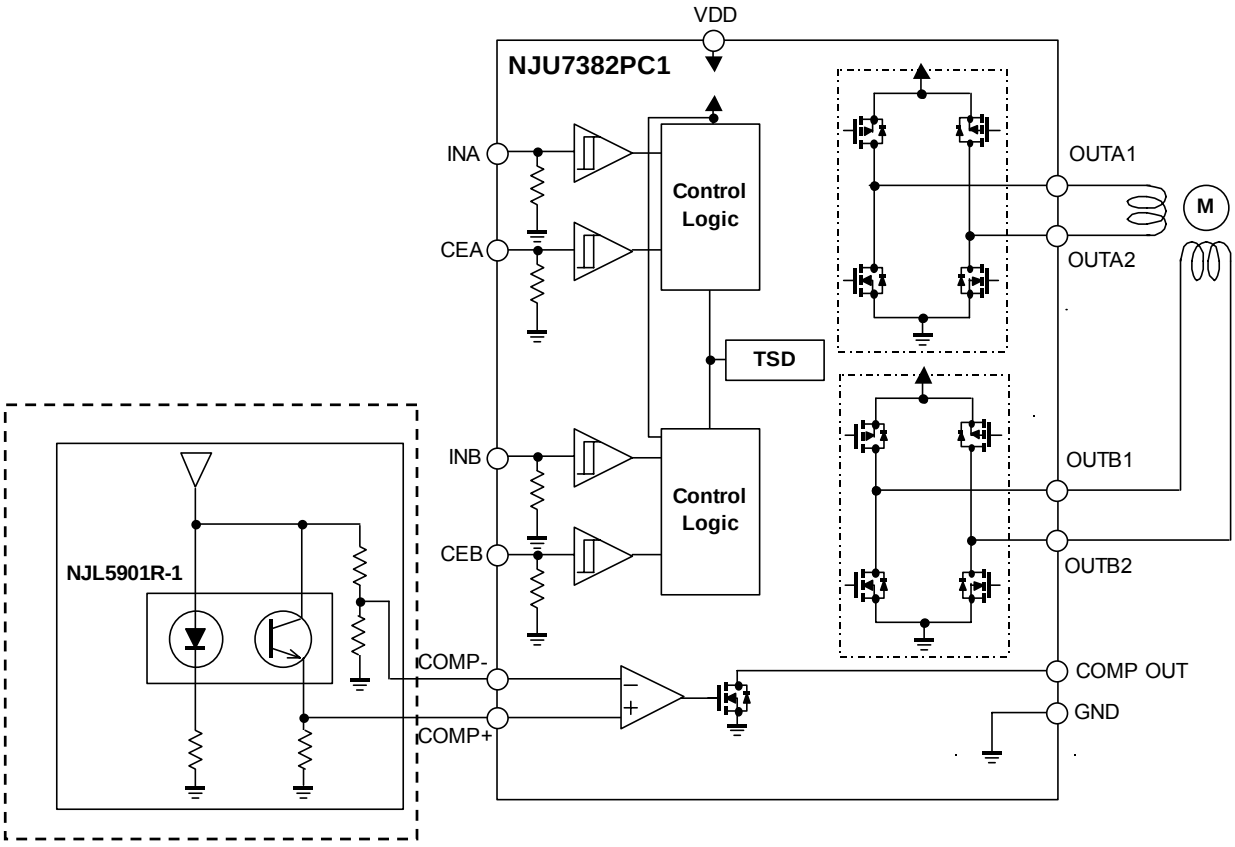
■ Package Outline

NJU7382PC1

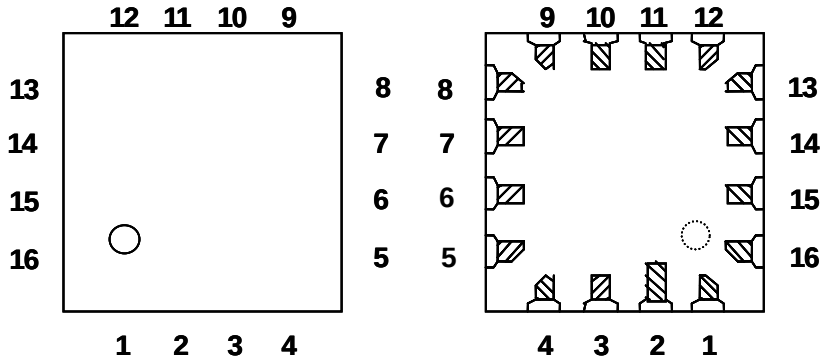
■ FEATURES

- Operating Voltage 2.0V to 5.5V
- Two CMOS H-bridge drivers for stepper motor driving
- Motor Output Current 200mA(continuous), 400mA(peak)
- Chip enable function
- General purpose comparator
- Thermal shutdown circuit
- CMOS technology
- Package Outline FFP16 (2.5×2.5×h0.85mm)

■ BLOCK DIAGRAM



■ PIN CONFIGURATIONS



1.	CE A	9.	COMP+
2.	VDD	10.	VDD
3.	CE B	11	NC
4.	IN B	12.	COMP OUT
5.	OUT B2	13.	OUT A1
6.	GND	14.	GND
7.	OUT B1	15.	OUT A2
8.	COMP-	16.	IN A

(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}	V_{ID}(V)	Note1
Motor Output Current (Peak)	400	I_{OPEAK}(mA)	
Comparator Output Current	10	I_{COPEAK}(mA)	
Comparator Output Voltage	+7.0	Vc(V)	
Operating Temperature	-40~+85	Topr (°C)	
Storage Temperature	-50~+150	Tstg (°C)	
Power Dissipation	300	P_D (mW)	On PCBoard

Note1: If the supply voltage (V_{DD}) is less than 7V, the input voltage must not over the V_{DD} level though 7V is limit specified.

■ 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	Tj	-20	-	125	dg.C
Motor Output Current	I_O	-	-	200	mA

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

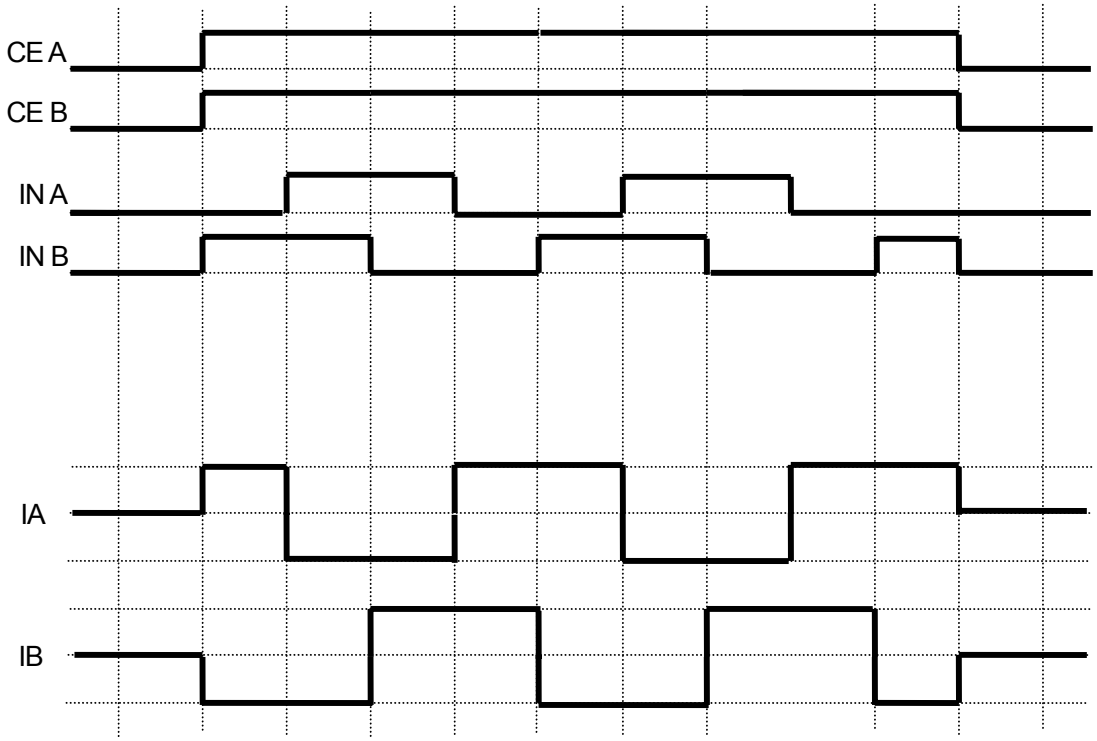
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
■ GENERAL						
Operating Current 1	I_{DD1}	IN A=IN B=CE A=CE A=0V	-	100	500	uA
Operating Current 2	I_{DD2}	IN A=IN B=0V,CE A=CE B=3V	-	100	-	uA
Thermal Shutdown	T_{TSD}	-	-	180	-	°C
Thermal Shutdown Hysterisis	T_{HYS}	-	-	30	-	°C
■ DRIVERS						
Logic Input Current	I_I	V_{IH}=3V, Note2	-	-	1	μA
Logic High Input Voltage	V_{IH}	Note2	2.4	-	-	V
Logic Low Input Voltage	V_{IL}	Note2	-	-	0.6	V
High Output Voltage	V_{OH}	Io=+100mA	-	3.1	-	V
Low Output Voltage	V_{OL}	Io= -100mA	-	0.2	-	V
■ COMPARATOR						
Input Offset Voltage	V_{IO}	-	-12	-	+12	mV
Input Bias Current	I_{IB}	-	-	-	1	μA
Common mode Input voltage range	V_{ICM}	-	0	-	2.8	V
Output Voltage	Vsat	RL=10kΩ	-	0.3	-	V
Output leak current	$I_{CO\ LEAK}$	V_{CO}=5.5V	-	-	1	μA

Note2 : Refers to “IN” terminal and “CE” terminal.

■ TRUTH TABLE

CE A	IN A	OUT A2	OUT A1	CE B	IN B	OUT B2	OUT B1
L	X	Z	Z	L	X	Z	Z
H	L	H	L	H	L	H	L
H	H	L	H	H	H	L	H

■ TIMING CHART



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