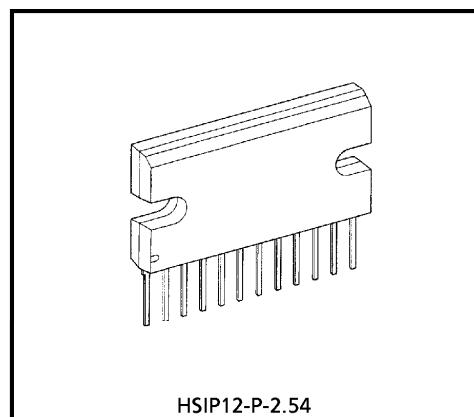


# TA8068L

## INTELLIGENT STEPPING MOTOR DRIVER

The TA8068L is a stepping motor driver with a current capacity of 1.5A. Inputs INA and INB are combined to control the four outputs.

Since the inputs are TTL-compatible, this IC can be controlled directly from a CPU or other control system. The IC also incorporates various protective functions as well as a self-diagnostic function for diagnostic function for diagnostic output.

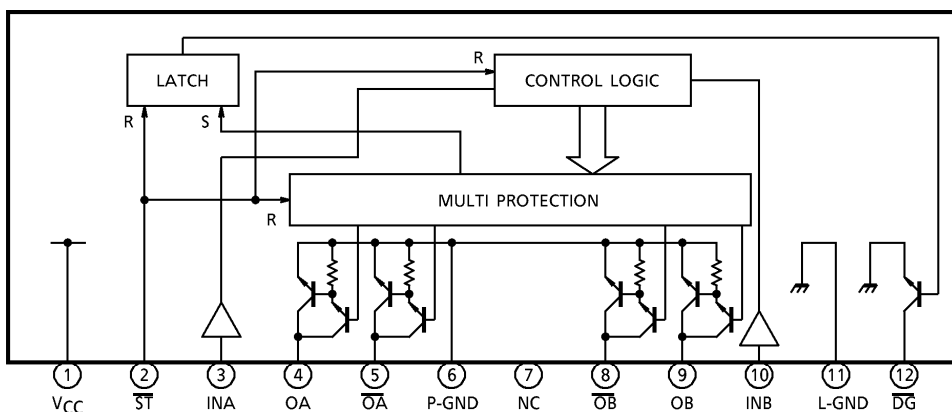


HSIP12-P-2.54  
Weight : 7.95g (Typ.)

### FEATURES

- Output current capacity : 1.5A (Max.)
- Low standby current : 100 $\mu$ A (Max.)
- Built-in Protective Functions : Over-Voltage Protection / Short-Circuit Protection (latch) / Thermal-Shutdown
- Self-diagnostic Output : On Short-Circuit Detection
- Separate GND for output and logic control sections
- Plastic package HSIP-12pin

### BLOCK DIAGRAM AND PIN LAYOUT



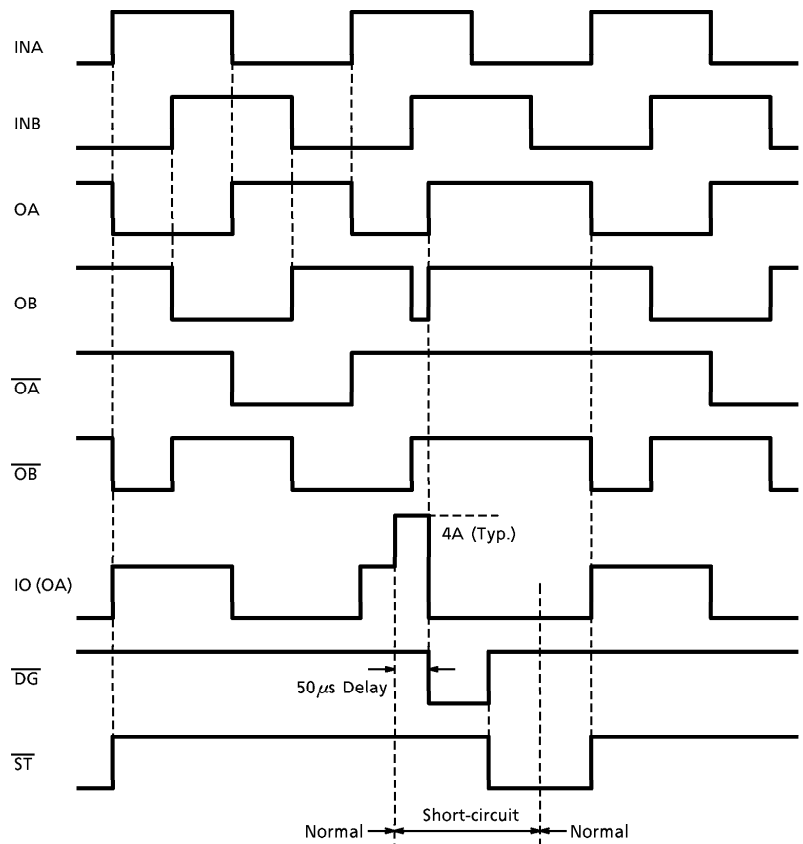
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## PIN DESCRIPTION

PIN No.	SYMBOL	DESCRIPTION
1	V <sub>CC</sub>	Power supply pin. This pin has a function to turn off the output when the applied voltage exceeds 30V (Typ.), thus protecting the IC and the motor load.
2	$\overline{ST}$	When this pin is opened or grounded, the output turns off, thus reducing the current consumption to 100 $\mu$ A or less. If standby mode is not needed, the pin is connected to V <sub>CC</sub> .
3	INA	This is input terminal which controls output condition of pin 4 and pin 5. PNP-type voltage comparator is built in.
4	OA	PNP-type complementary output pin with a current capacity of 1.5A. This pin is controlled by the input from pin 3. When the output is supplied with a current exceeding the detection current (4A Typ.) because of load short-circuit, the output is latched to the OFF state after a 50 $\mu$ s (Typ.) delay in order to protect the IC.
5	$\overline{OA}$	Output pin of the inversion of pin 4. This terminal has the same function as pin 4 and is controlled by pin 3.
6	P-GND	Ground terminal of output section which is usually connected with pin 11.
7	(NC)	Not connected.
8	$\overline{OB}$	Output pin of the inversion of pin 9. This terminal has the same function as pin 4 and is controlled by pin 10.
9	OB	This terminal has the same function as pin 4 and is controlled by pin 10.
10	INB	This is input terminal which controls output condition of pin 8 and pin 9. PNP-type voltage comparator is built in.
11	L-GND	Ground terminal of logic control section which is usually connected with pin 6.
12	$\overline{DG}$	Self-diagnostic output pin. This signal goes low when the output is short-circuited while the input is on (high). The output will be latched after a 50 $\mu$ s (Typ.) delay when the load is short-circuited. This pin supplies an NPN open-collector output.

**TIMING CHART**



**TRUTH TABLE INPUT / OUTPUT**

INPUT			OUTPUT				
INA	INB	$\overline{ST}$	OA	$\overline{OA}$	OB	$\overline{OB}$	$\overline{DG}$
L	L	H	OFF	ON	OFF	ON	OFF
L	H	H	OFF	ON	ON	OFF	OFF
H	L	H	ON	OFF	OFF	ON	OFF
H	H	H	ON	OFF	ON	OFF	OFF
—	—	L	OFF	OFF	OFF	OFF	OFF
—	—	OPEN	OFF	OFF	OFF	OFF	OFF

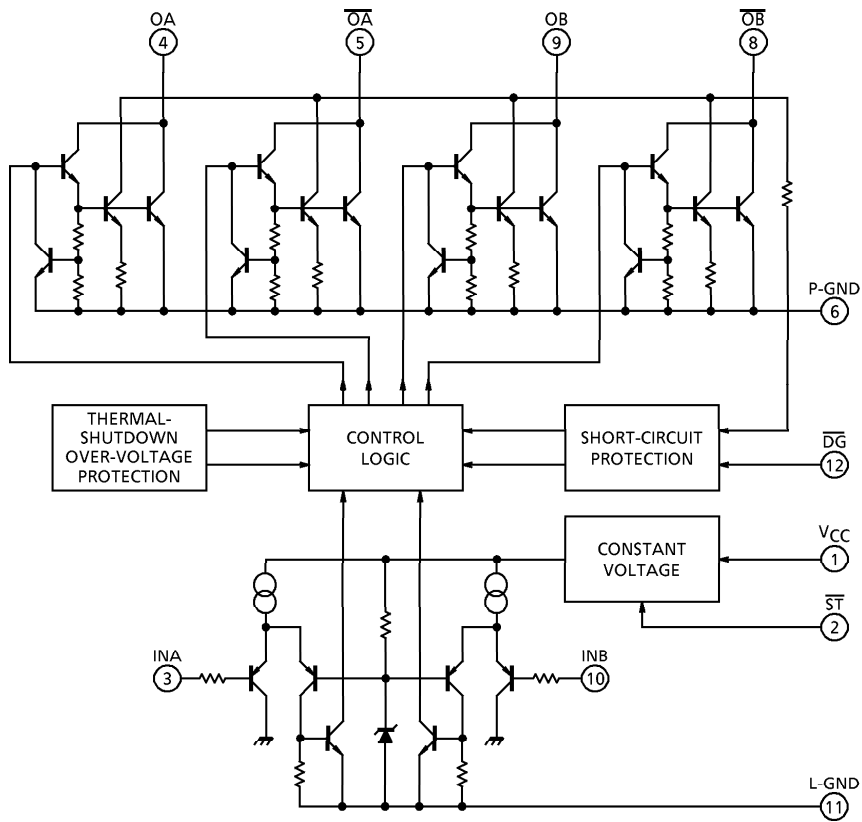
## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	30	V
	V <sub>CC</sub>	60 (1s)	
Input Voltage	V <sub>IN</sub>	-0.3~7	V
Output Voltage	V <sub>CC</sub>	-0.3~V <sub>CC</sub>	V
Output Current	I <sub>O·AVE</sub>	1.5	A
Power Dissipation	P <sub>D</sub>	25	W
Operating Temperature	T <sub>opr</sub>	-40~110	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C
Lead Temperature-time	T <sub>sol</sub>	260 (10s)	°C

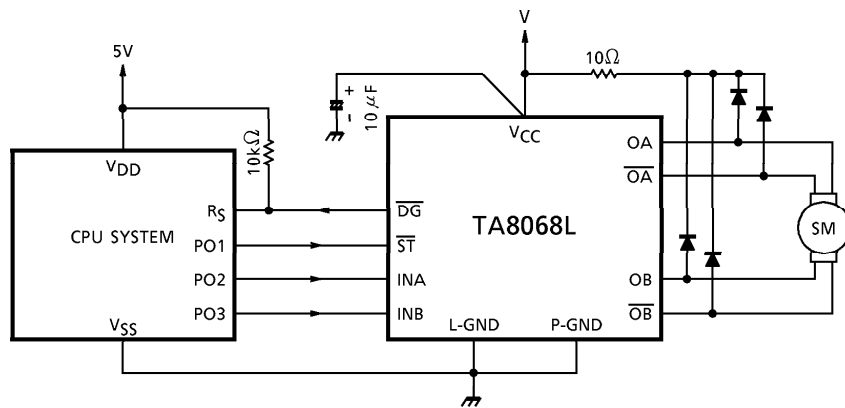
ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 8~16V, Ta = -40~85°C)

CHARACTERISTIC	SYMBOL	PIN	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Consumption	I <sub>CC</sub>	V <sub>CC</sub>	—	—	12	25	40	mA
Input Voltage	V <sub>IL</sub>	INA / INB	—	—	—	—	0.8	V
	V <sub>IH</sub>		—	—	2.4	—	—	
Input Current	I <sub>IL</sub>	INA / INB	—	V <sub>IN</sub> = 0.4V	-50	—	—	μA
	I <sub>IH</sub>		—	V <sub>IN</sub> = 5V	—	—	10	
Input Voltage	V <sub>IL</sub>	ST	—	—	—	—	0.8	V
	V <sub>IH</sub>		—	—	3.0	—	—	
Output Saturation Voltage	V <sub>SAT</sub>	OA, $\overline{OA}$ OB, $\overline{OB}$	—	I <sub>O</sub> = 1.5A / Ta = 25°C	—	1.25	1.5	V
Output Leakage Current	I <sub>LEAK</sub>	OA, $\overline{OA}$ OB, $\overline{OB}$	—	V <sub>O</sub> = V <sub>CC</sub>	—	—	10	μA
Output Voltage	V <sub>OL</sub>	$\overline{DG}$	—	I <sub>OL</sub> = 3mA	—	—	0.3	V
Output Leakage Current	I <sub>LEAK</sub>		—	V <sub>O</sub> = V <sub>CC</sub>	—	—	10	μA
Over-current Detection	ISD	—	—	—	1.8	4	6	A
Shutdown Temperature	TSD-H	—	—	OUT = ON→OFF	—	160	—	°C
	TSD-L		—	OUT = OFF→ON	—	130	—	
Over-voltage Detection	VSD	—	—	—	27.5	30	33	V
Standby Current	IST	V <sub>CC</sub>	—	$\overline{ST}$ = GND	—	—	100	μA
Thermal Resistance	R <sub>θj-c</sub>	—	—	—	—	3	—	°C/W
Transfer Delay Time	t <sub>pLH</sub>	—	—	—	—	1	10	μs
	t <sub>pHL</sub>	—	—	—	—	1	10	

EQUIVALENT CIRCUIT

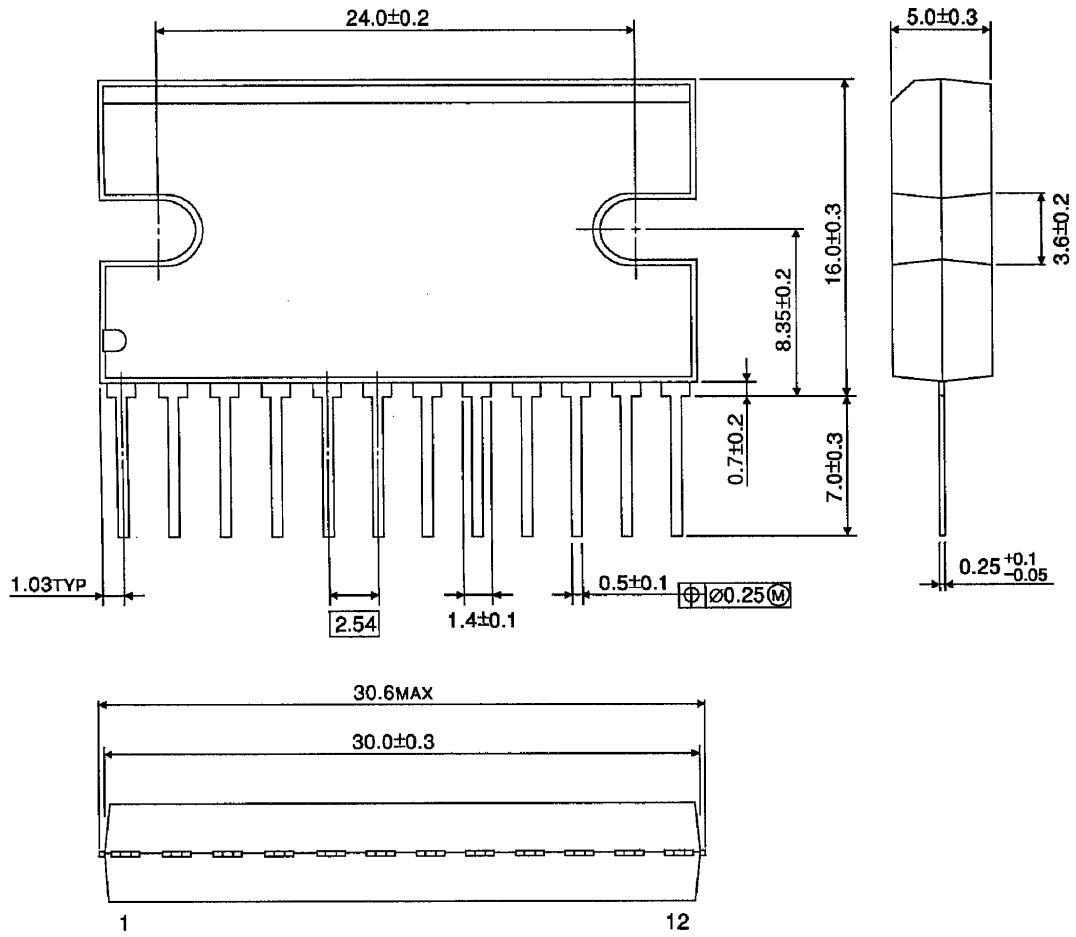


APPLICATION CIRCUIT



**OUTLINE DRAWING**  
HSIP12-P-2.54

Unit : mm



Weight : 7.95g (Typ.)