

**TOSHIBA**

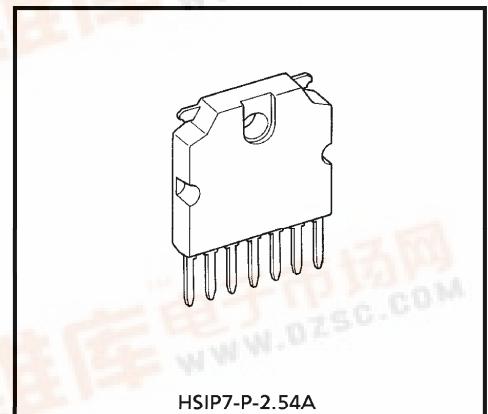
**TA8080K**

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA8080K

## 1.0A MOTOR DRIVER WITH BRAKE FUNCTION

The TA8080K is a 1.0A motor driver which directly drives a bidirectional DC motor. Inputs DI1 and DI2 are combined to select one of forward, reverse, stop, and brake modes. Since the inputs are TTL-compatible, this IC can be controlled directly from a CPU or other control system. The IC also has various protective functions.

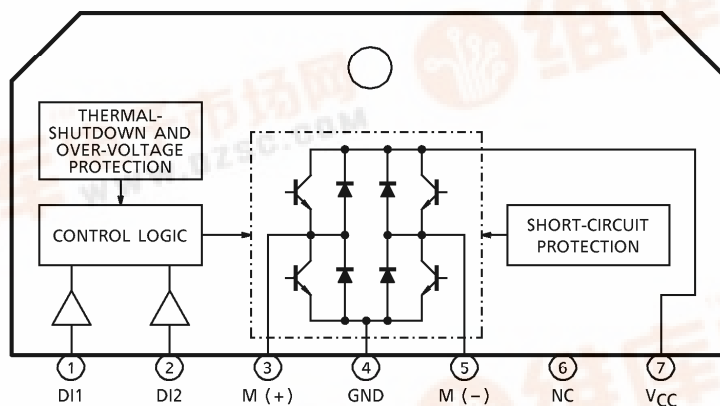


Weight : 2.2g (Typ.)

### FEATURES

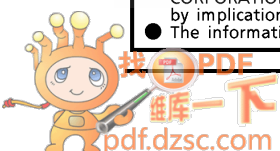
- Bidirectional DC motor driver.
- 1.0A current capacity.
- Four operation modes : Forward, reverse, stop, and brake.
- Protective functions : Thermal-shutdown, short-circuit protection, and over-voltage shutdown.
- Built-in counter electromotive force absorption diodes.
- Plastic package HSIP-7pin.

### BLOCK DIAGRAM AND PIN LAYOUT



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**PIN DESCRIPTION**

PIN No.	SYMBOL	DESCRIPTION
1	DI1	Output status control pin. Connects to a PNP-type voltage comparator.
2	DI2	
3	M (+)	Connects to the DC motor. Both the sink and the source have a current capacity of 1.0A. Diodes for absorbing counter electromotive force are contained on the V <sub>CC</sub> and GND sides.
4	GND	Grounded.
5	M (-)	Connects to the DC motor together with pin 3 and has the same function as pin 3. This pin is controlled by the inputs from pins 1 and 2.
6	NC	Not connected.
7	V <sub>CC</sub>	Power supply pin. This pin has a function to turn off the output when the applied voltage exceeds 30.0V, thus protecting the IC and the load.

**TRUTH TABLE**

INPUT		OUTPUT		
DI1	DI2	M (+)	M (-)	
H	H	L	L	(Note)
L	H	L	H	
H	L	H	L	(Note)
L	L	OFF (high impedance)		

(Note) Brake mode comes into effect when both M (+) and M (-) go low, stopmode comes into effect when both M (+) and M (-) turn OFF.

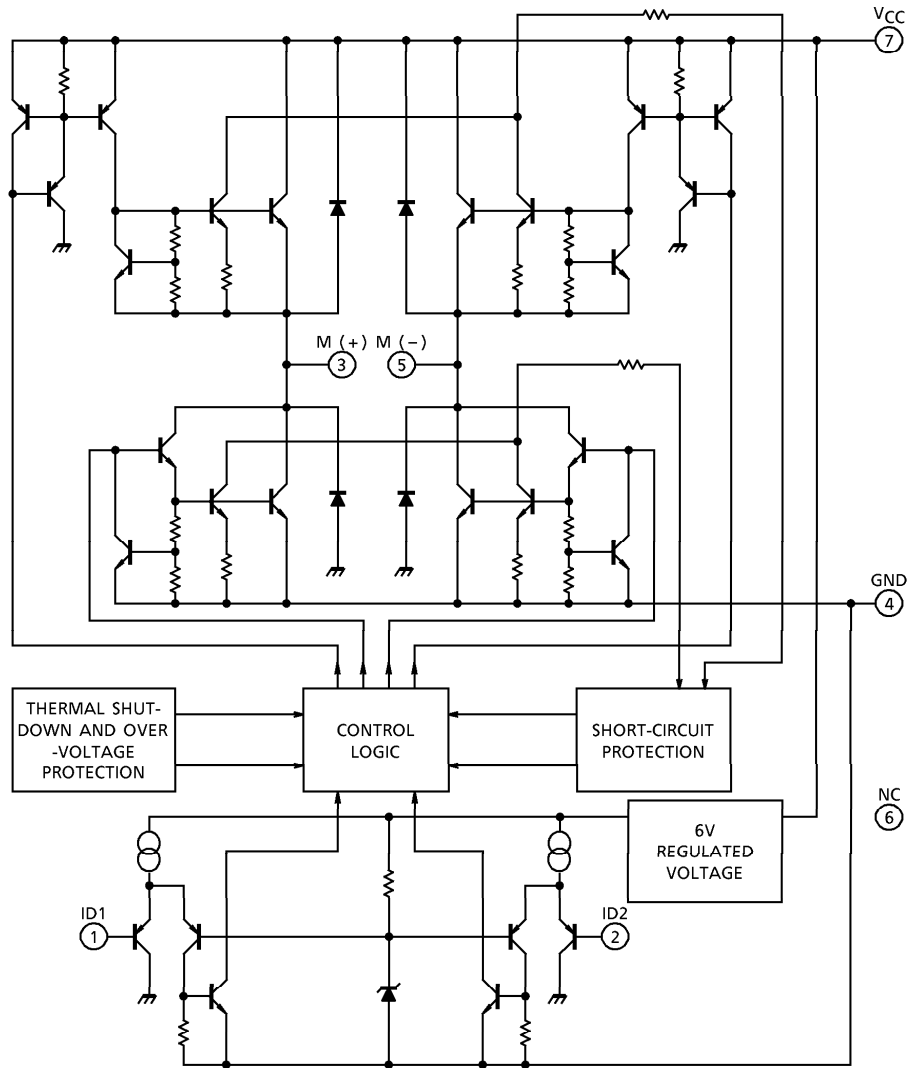
## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	V <sub>CC</sub>	30	V
	V <sub>CC</sub>	60 (1s)	
Input Voltage	V <sub>IN</sub>	-0.3~V <sub>CC</sub>	V
Output Current	I <sub>O AVE</sub>	1.0	A
Power Dissipation	P <sub>D</sub>	12.5	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

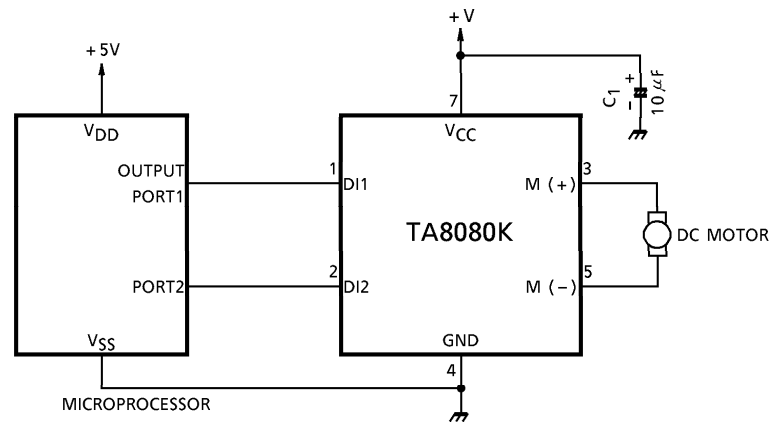
ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 6~16V, T<sub>c</sub> = -40~110°C)

CHARACTERISTIC	SYMBOL	PIN	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Power Supply Current	I <sub>CC1</sub>	V <sub>CC</sub>	—	Stop	—	8	15	mA
	I <sub>CC2</sub>		—	Forward / Reverse	—	20	40	
	I <sub>CC3</sub>		—	Brake	—	12	25	
Input Voltage	V <sub>IL</sub>	DI1 / DI2	—	—	—	—	0.8	V
	V <sub>IH</sub>		—	—	2.0	—	—	
Input Current	I <sub>IL</sub>	DI1 / DI2	—	V <sub>IN</sub> = 0.4V	-100	—	10	μA
	I <sub>IH</sub>		—	V <sub>IN</sub> = V <sub>CC</sub>	-10	—	10	
Output Saturation Voltage	V <sub>sat</sub> (total)	M (+) /	—	I <sub>O</sub> = 1.0A, T <sub>c</sub> = 25°C	—	2.0	2.5	V
		M (-)	—	I <sub>O</sub> = 1.0A, T <sub>c</sub> = 110°C	—	2.0	2.5	
Output Leakage Current	I <sub>LEAK-U</sub>	M (+) /	—	V <sub>OUT</sub> = 0V	—	—	-10	μA
	I <sub>LEAK-L</sub>	M (-)	—	V <sub>OUT</sub> = V <sub>CC</sub>	—	—	10	
Diode Forward Voltage	V <sub>F-U</sub>	M (+) /	—	I <sub>F</sub> = 1.0A	—	20	—	V
	V <sub>F-L</sub>				M (-)	—	1.2	
Over-current Detection	I <sub>SD</sub>	—	—	—	1.2	1.7	2.3	A
Shutdown Temperature	T <sub>SD</sub>	—	—	—	—	150	—	°C
Over-voltage Detection	V <sub>SD</sub>	—	—	—	27	30	33	V
Thermal Resistance	R <sub>θj-c</sub>	—	—	—	—	4	—	°C/W
Transfer Delay Time	t <sub>pLH</sub>	—	—	—	—	1	10	μs
	t <sub>pHL</sub>	—	—	—	—	1	10	

I/O EQUIVALENT CIRCUIT



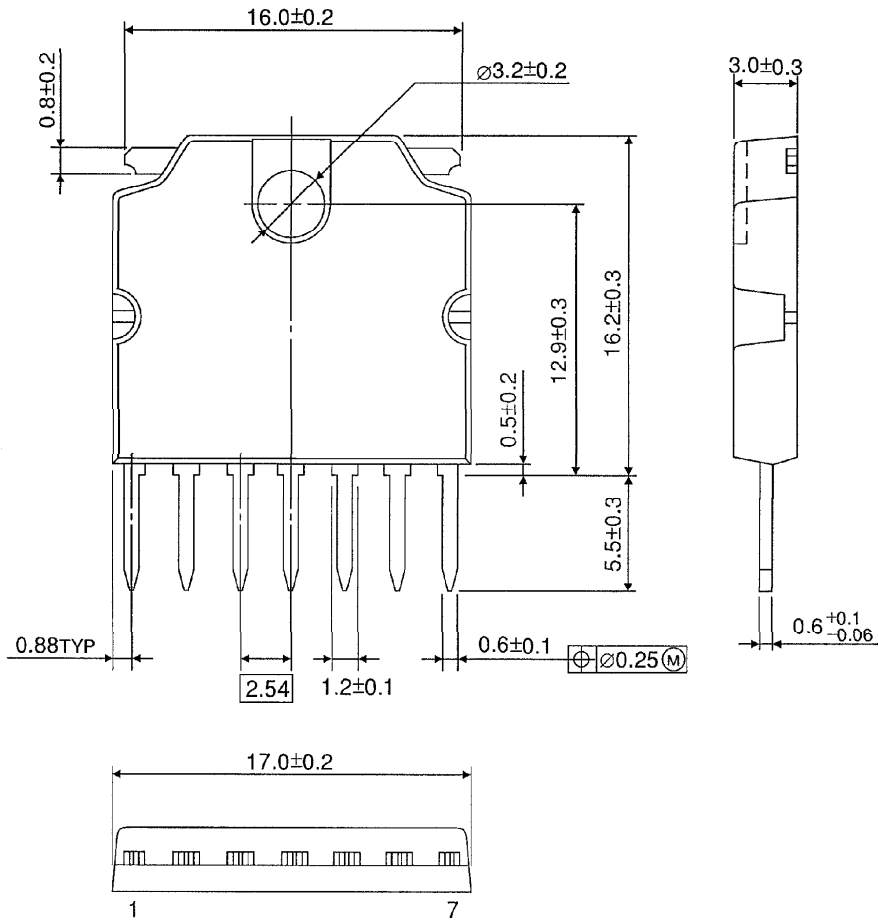
**EXAMPLE OF APPLICATION CIRCUIT**



Cautions for Wiring : C<sub>1</sub> is for absorbing disturbance, noise etc.  
Connect it as close to the IC as possible.

**OUTLINE DRAWING**  
HSIP7-P-2.54A

Unit : mm



Weight : 2.2g (Typ.)