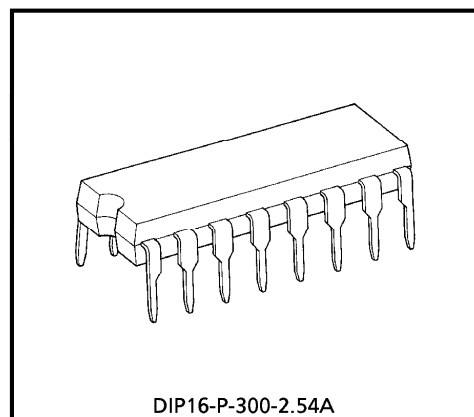


# TA8081P

## 0.7A MOTOR DRIVER WITH DIAGNOSIS

The TA8081P is a 0.7A 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, self-diagnostic, and standby functions.

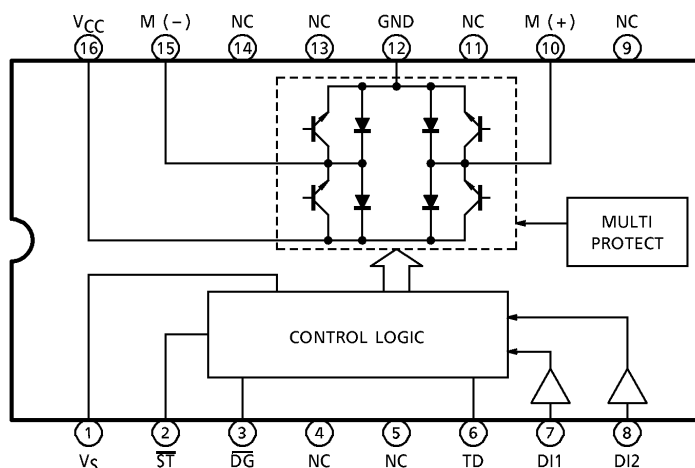


Weight : 1.0g (Typ.)

### FEATURES

- Bidirectional DC motor driver.
- Current capacity : 0.7A (Max.)
- Low standby current : 100 $\mu$ A (Max.)
- 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.
- Self-diagnostic output : On short-circuit detection.
- Plastic DIP-16pin.

### BLOCK DIAGRAM AND PIN LAYOUT



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## PIN DESCRIPTION

PIN No.	SYMBOL	DESCRIPTION
1	$V_S$	Control power supply pin. This pin is completely isolated from $V_{CC}$ .
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 $V_{CC}$ .
3	$\overline{DG}$	Self-diagnostic output pin. When the output current becomes 1.5A or more, this pin outputs a protection switching waveform similar to the waveform which would be supplied from M (+)/M (-) pin. If a capacitor is connected to the TD pin, the signal from this pin will become low after a specific delay. The output from the pin is an open-collector output. The delay time is calculated approximately by the following : $TD = 50 \times C_T$ (ms) $C_T$ ( $\mu F$ )...The permissible range of $C_T$ is from $0.01\mu F$ to $2\mu F$ .
4	NC	Not connected.
5	NC	Not connected.
6	TD	Provides a delay for the $\overline{DG}$ output. A capacitor is connected between this pin and GND. When the pin is opened, the $\overline{DG}$ pin supplies a switching output.
7	DI1	Output status control pin.
8	DI2	Connects to a PNP-type voltage comparator.
9	NC	Not connected.
10	M (+)	Connects to the DC motor. Both the sink and the source have a current capacity of 0.7A. Diodes for absorbing counter electromotive force are contained on the $V_{CC}$ and GND sides.
11	NC	Not connected.
12	GND	Grounded
13	NC	Not connected.
14	NC	Not connected.
15	M (-)	Connects to the DC motor together with pin 10 and has the same function as pin 10. This pin is controlled by the inputs from pins 7 and 8.
16	$V_{CC}$	Output section 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

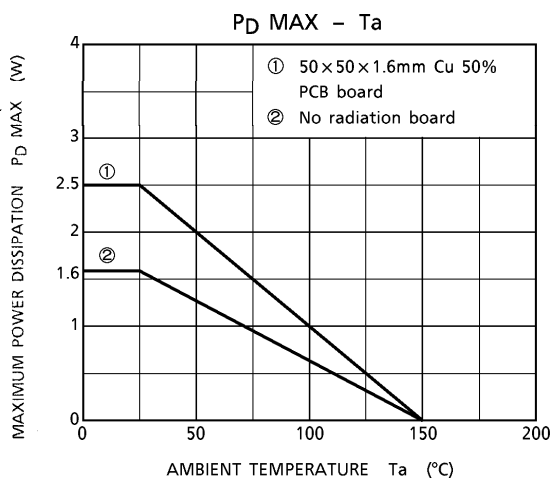
INPUT			OUTPUT		OUTPUT MODE
DI1	DI2	$\overline{ST}$	M (+)	M (-)	
H	H	H	L	L	Brake
L	H	H	L	H	Reverse (CCW)
H	L	H	H	L	Forward (CW)
L	L	H	OFF (high impedance)		Stop
H/L	H/L	L	OFF (high impedance)		Standby (stop)

## MAXIMUM RATINGS (Ta = 25°C)

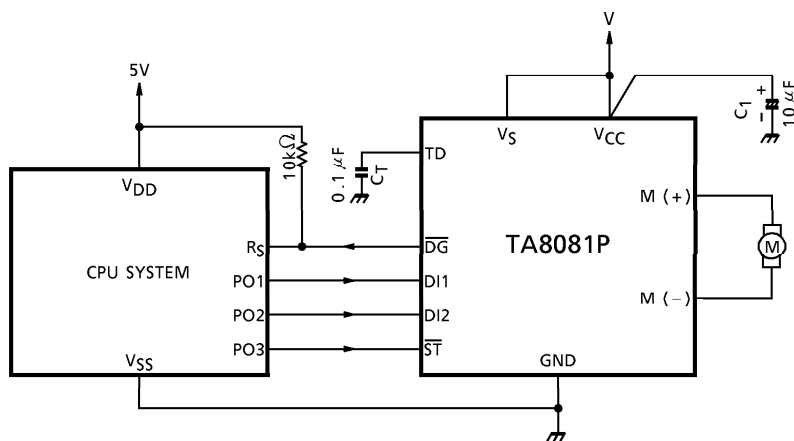
CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	V <sub>CC</sub>	33	V
	V <sub>CC</sub>	60 (1s)	
Input Voltage	V <sub>IN</sub>	-0.3~V <sub>CC</sub>	V
Output Current	I <sub>O AVE</sub>	0.7	A
Power Dissipation	P <sub>D</sub>	1.6	W
Operating Temperature	T <sub>opr</sub>	-40~110	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C
Lead Temperature-time	T <sub>sol</sub>	260 (10s)	°C

ELECTRICAL CHARACTERISTICS ( $V_{CC} = 6 \sim 16V$ ,  $T_a = -40 \sim 110^\circ C$ )

CHARACTERISTIC	SYMBOL	PIN	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Consumption 1	$I_{S1}$	$V_S$	—	Stop	—	5	10	mA
	$I_{S2}$		—	Forward / Reverse	—	10	20	
	$I_{S3}$		—	Brake	—	10	20	
Current Consumption 2	$I_{CC1}$	$V_{CC}$	—	Stop	—	1.0	2.0	mA
	$I_{CC2}$		—	Forward / Reverse	—	15	30	
	$I_{CC3}$		—	Brake	—	1.0	2.0	
Input Voltage	$V_{IL}$	DI1 / DI2	—	—	—	—	0.8	V
	$V_{IH}$		—	—	2.0	—	—	
	$V_{IL}$	$\overline{ST}$	—	—	—	—	0.5	
	$V_{IH}$		—	—	2.0	—	—	
Input Current	$I_{IL}$	DI1 / DI2	—	$V_{IN} = 0.4V$	-10	—	10	$\mu A$
	$I_{IH}$		—	$V_{IN} = V_{CC}$	-10	—	10	
	$I_{IL}$	$\overline{ST}$	—	$V_{IN} = 0.4V$	—	—	20	mA
	$I_{IH}$		—	$V_{IN} = V_{CC}$	—	—	2.0	
Output Saturation Voltage	$V_{sat}$ (total)	M (+) /	—	$I_O = 0.5A, T_c = 25^\circ C$	—	1.7	2.4	V
		M (-)	—	$I_O = 0.5A, T_c = 110^\circ C$	—	1.6	2.3	
Output Leakage Current	$I_{LEAK \cdot U}$	M (+) /	—	$V_{OUT} = 0V$	—	—	-10	$\mu A$
	$I_{LEAK \cdot L}$	M (-)	—	$V_{OUT} = V_{CC}$	—	—	10	
Output Voltage	$V_{OL}$	$\overline{DG}$	—	$I_{OL} = 3mA$	—	—	0.5	V
Output Leakage Current	$I_{LEAK}$		—	$V_{OUT} = V_{CC}$	—	—	10	$\mu A$
Diode Forward Voltage	$V_{F \cdot U}$	M (+) /	—	$I_F = 0.5A$	—	1.5	—	V
	$V_{F \cdot L}$	M (-)			—	1.5	—	
Over-current Detection	$I_{SD}$	—	—	—	1.0	1.5	2.0	A
Shutdown Temperature	$T_{SD}$	—	—	—	—	150	—	$^\circ C$
Over-voltage Detection	$V_{SD}$	—	—	—	27	30	33	V
Standby Current	$I_S$	$V_{CC} + V_S$	—	$\overline{ST} = 0V$	—	—	100	$\mu A$
Transfer Delay Time	$t_{pLH}$	—	—	—	—	1	10	$\mu s$
	$t_{pHL}$	—	—	—	—	1	10	



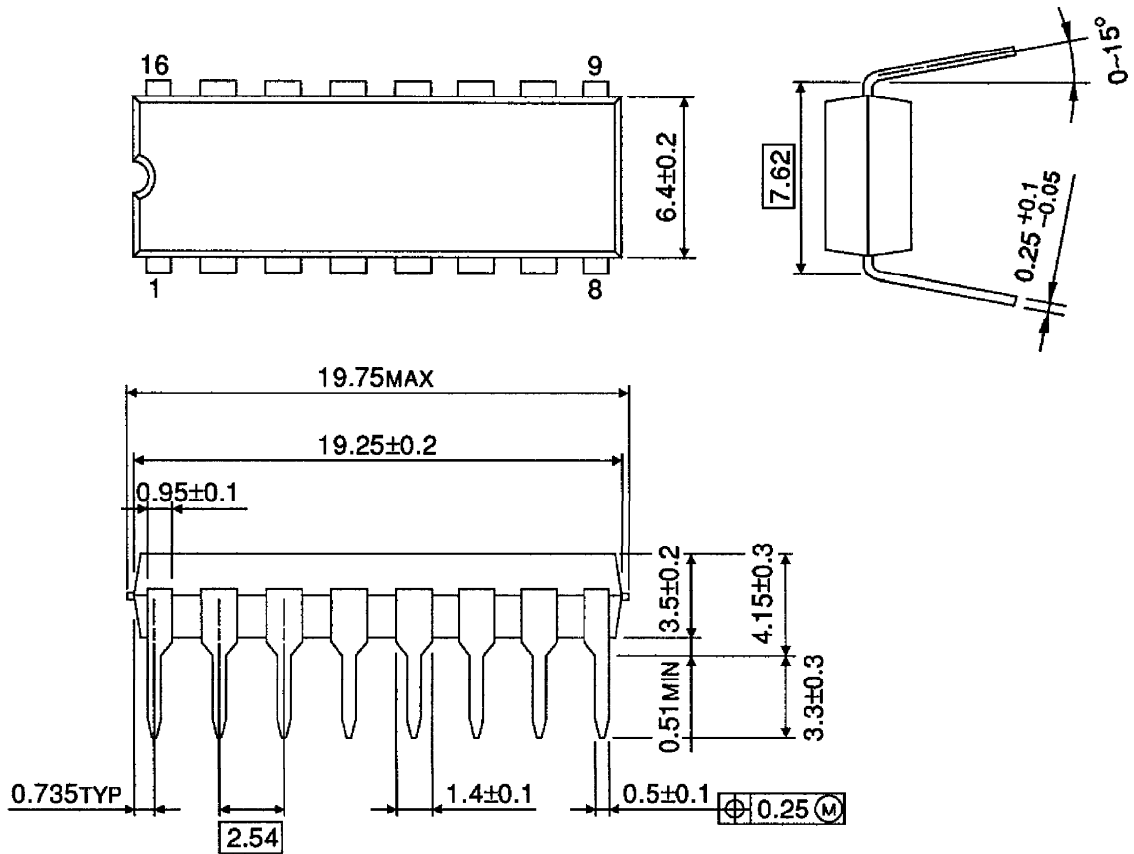
**EXAMPLE OF APPLICATION CIRCUIT**



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

**OUTLINE DRAWING**  
DIP16-P-300-2.54A

Unit : mm



Weight : 1.0g (Typ.)