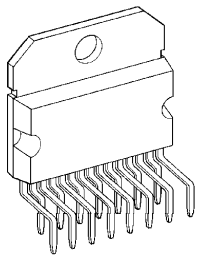
TENTATIVE TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8082H

DUAL DC MOTOR DRIVER

The TA8082H contains two motor driver circuits with a current capacity of 1.5A for directly driving bidirectional DC motors. Inputs DI1A / B and DI2A / B 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. In addition, the IC also has a low standby current function, a self-diagnostic function, and various protective functions.



HZIP15-P-1.27A

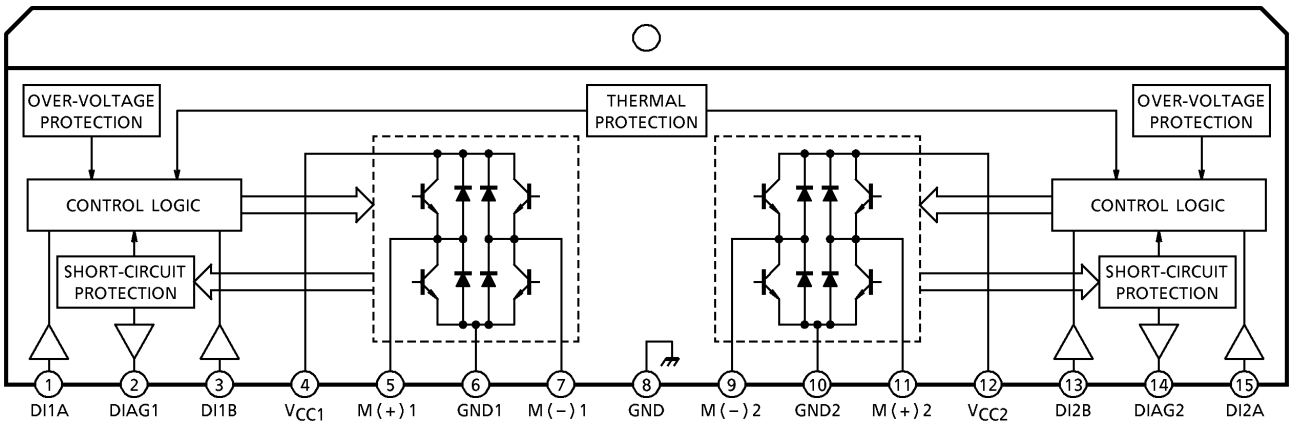
Weight : 5.7g (Typ.)

FEATURES

- 1.5A bidirectional DC motor driver
- Two circuits contained (power supply, self-diagnostic, and protective functions provided for each)
- Low standby current : 0.5mA (Max.)
- Self-diagnostic output

  Short-circuit : 3A
  Open : 10mA
- Multiple protective functions : Short-circuit, thermal-shutdown, over-voltage protection
- Built-in counter electromotive force absorption diodes.
- Plastic HZIP-15pin

BLOCK DIAGRAM AND PIN LAYOUT



961001EBA2

PIN DESCRIPTION

PIN No.		SYMBOL		DESCRIPTION
CH1	CH2	CH1	CH2	
1 3	15 13	DI1A DI1B	DI2A DI2B	Input pin. The signal from this pin controls the output state. (See TRUTH TABLE 1.)
2	14	DIAG1	DIAG2	Self-diagnosis output pin. (See TRUTH TABLE 2 and TIMING CHART.) This signal goes low when the output encounters over-current condition or is opened, whereas it goes high during normal operation or at the time of stop. This pin supplies an NPN open-collector output.
4	12	V_{CC1}	V_{CC2}	Power supply pin. This pin has a function to turn off the output when the applied voltage exceeds 32.5V, thus protecting the IC and the motor load.
5	11	M (+) 1	M (+) 2	Connects to the DC motor. Both the sink and the source have a current capacity of 1.5A. The circuit has a short-circuit protection function which protects the IC from load short-circuit, ground fault, or direct connection to high power. Diodes for absorbing counter electromotive force are contained on the V_{CC} and GND sides.
6	10	GND1	GND2	Grounded pin for output section.
7	9	M (−) 1	M (−) 2	Connects to the motor for CH1 together with pin 2 and has the same function as pin 2. This pin is controlled by the inputs from pins 6 and 7.
8		GND		Grounded.

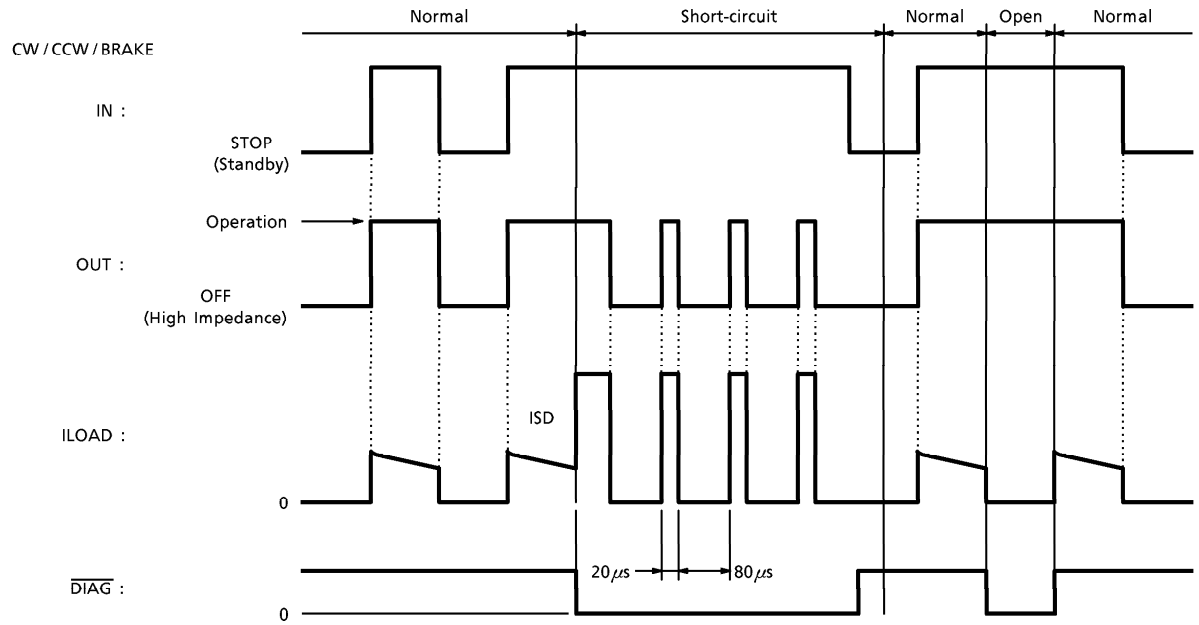
TRUTH TABLE 1 INPUT / OUTPUT

INPUT		OUTPUT		OPERATION MODE
DI1 / 2A	DI1 / 2B	M (+) 1 / 2	M (−) 1 / 2	
H	H	L	L	Brake
L	H	L	H	Reverse (CCW)
H	L	H	L	Forward (CW)
L	L	OFF (High impedance)		Stop (Standby)

TRUTH TABLE 2 SELF-DIAGNOSIS

INPUT		OUTPUT		DIAG
DI1 / 2A	DI1 / 2B	MODE	LOAD	
H	H	Brake	Normal	H
			Short	L
			Open	H
H / L	H / L	CCW / CW	Normal	H
			Short	L
			Open	L
L	L	Stop	—	H

SELF-DIAGNOSIS TIMING CHART



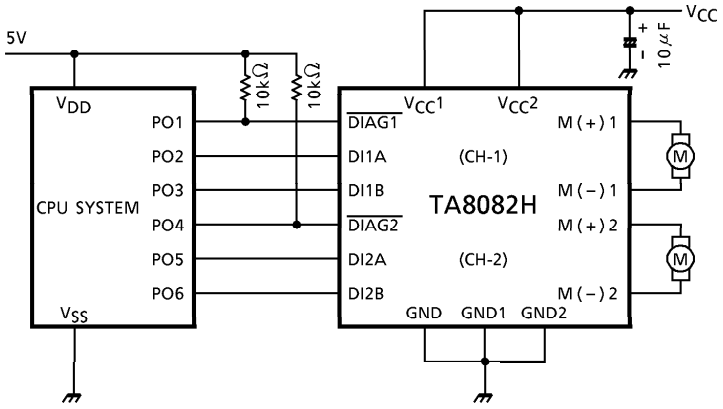
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	V_{CC}	30	V
	V_{CC}	60 (1s)	
Input Voltage	V_{IN}	−0.3~V_{CC}	V
Output Current	$I_{O\ AVE}$	1.5	A
Power Dissipation	P_D	25	W
Operating Temperature	T_{opr}	−40~110	°C
Storage Temperature	T_{stg}	−55~150	°C
Lead Temperature·time	T_{sol}	260 (10s)	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 6~16V, Tc = −40~110°C)

CHARACTERISTIC	SYMBOL	PIN	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Power Supply Current	$I_{CC}1$	$V_{CC}1$ / $V_{CC}2$	—	CH1 / 2 Stop	—	0.2	0.5	mA
	$I_{CC}2$		—	CH1 or 2 CW / CCW	—	20	40	
	$I_{CC}3$		—	CH1 / 2 CW / CCW	—	40	80	
	$I_{CC}4$		—	CH1 / 2 Brake	—	16	30	
Input Voltage	V_{IL}	DI1A / B DI2A / B	—	—	—	—	0.8	V
	V_{IH}		—	—	2.0	—	—	
Input Current	I_{IL}		—	V_{IN} = 0.4V	—	10	20	μA
	I_{IH}		—	V_{IN} = V_{CC}	—	140	300	
Output Saturation Voltage	V_{sat} (total)	1M (+) / (−) / 2M (+) / (−)	—	I_O = 1.5A, Tc = 25°C	—	2.2	2.9	V
			—	I_O = 1.5A, Tc = 110°C	—	2.2	2.8	
Output Leakage Current	$I_{LEAK.U}$		—	V_{OUT} = 0V	—	—	−10	μA
	$I_{LEAK.L}$		—	V_{OUT} = V_{CC}	—	—	10	
Diode Forward Voltage	$V_{F.U}$		—	I_F = 1.5A	—	2.6	—	V
	$V_{F.L}$		—		—	1.5	—	
Output Voltage	V_{OUT}	DIAG1 / 2	—	I_{OL} = 3mA	—	0.2	0.5	V
Output Leakage Current	I_{LEAK}		—	V_{OUT} = V_{CC}	—	—	5	μA
Over-current Detection	I_{SD}	—	—	—	2	3	4	A
Load-open Detection	I_{OS}	—	—	—	5	10	20	mA
Shutdown Temperature	T_{SD}	—	—	—	—	150	—	°C
Over-voltage Detection	V_{SD}	—	—	—	30	32.5	35	V
Thermal Resistance	$R\theta_{j\text{-}c}$	—	—	—	—	4	—	°C / W
Transfer Delay Time	t_{pLH}	—	—	—	—	1	10	μs
	t_{pHL}	—	—	—	—	1	10	

EXAMPLE OF APPLICATION CIRCUIT

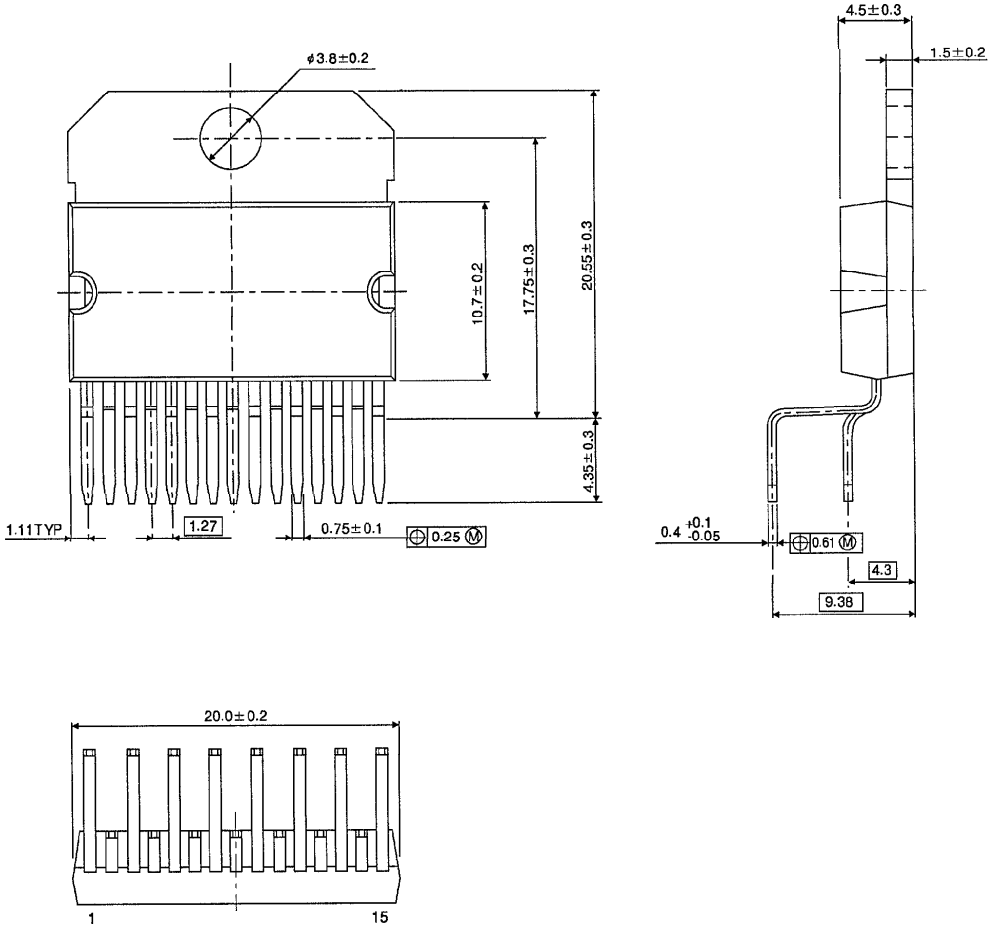


(*) Cautions for wirings
C_1 is for absorbing disturbance, noise, etc. Connect it as close to the IC as possible.

OUTLINE DRAWING

HZIP15-P-1.27A

Unit : mm



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