

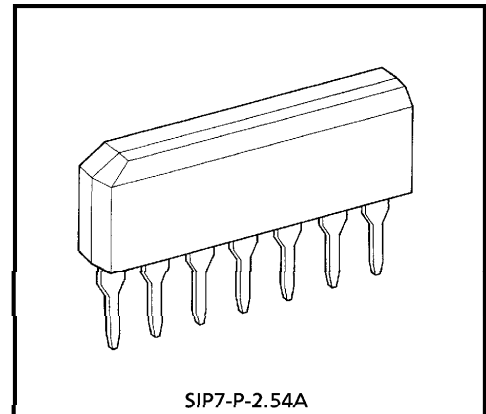
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA8052AS

## 0.3A MOTOR DRIVER WITH BRAKE FUNCTION

The TA8052AS is a full-bridge 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, the IC can be directly controlled from a CPU or other control system. The IC also has various protective functions.



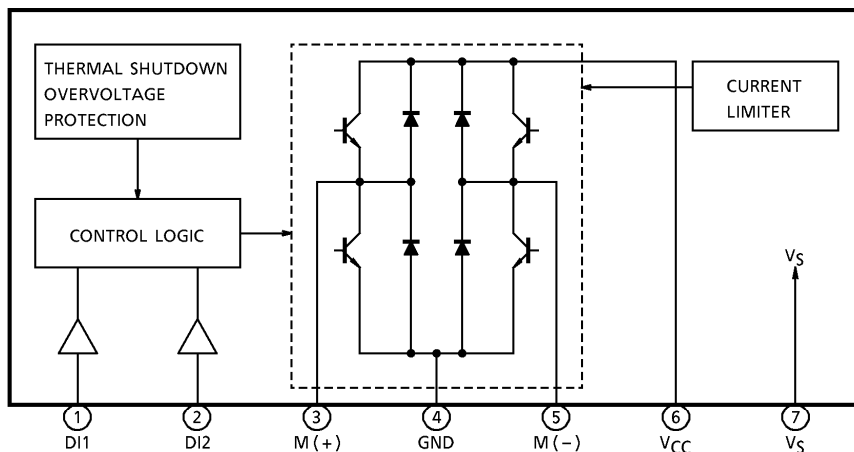
SIP7-P-2.54A

Weight : 0.7g (Typ.)

### FEATURES

- Output current : 300mA (max.)
- Four modes : Forward, reverse, stop, and brake
- Low Standby Current : 100 $\mu$ A (Max.)
- Multiple protective functions : Thermal shutdown, current limiter, and overvoltage shut down.
- Built-in diode for counteracting counter electromotive force
- Small SIP-7pin

### BLOCK DIAGRAM AND PIN LAYOUT



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## PIN DESCRIPTION

PIN No.	SYMBOL	DESCRIPTION
1	DI1	Output status control pin.
2	DI2	Connects to a PNP-type voltage comparator.
3	M (+)	Connects to the DC motor. Diodes for absorbing counter electromotive force are contained on the $V_{CC}$ 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	$V_{CC}$	Power supply pin. This pin has a function to turn off the output when the applied voltage exceeds 30V, thus protecting the IC and the load.
7	$V_S$	Power supply pin for the control section. This pin is completely separated from the $V_{CC}$ pin.

## TRUTH TABLE

INPUT		OUTPUT		OUTPUT MODE
DI1	DI2	M (+)	M (-)	
H	H	L	L	BRAKE
L	H	L	H	REVERSE
H	L	H	L	FORWARD
L	L	OFF (high impedance)		STOP (*)

(\*) LOW STANDBY CURRENT MODE :  $100\mu\text{A}$  (MAX.)

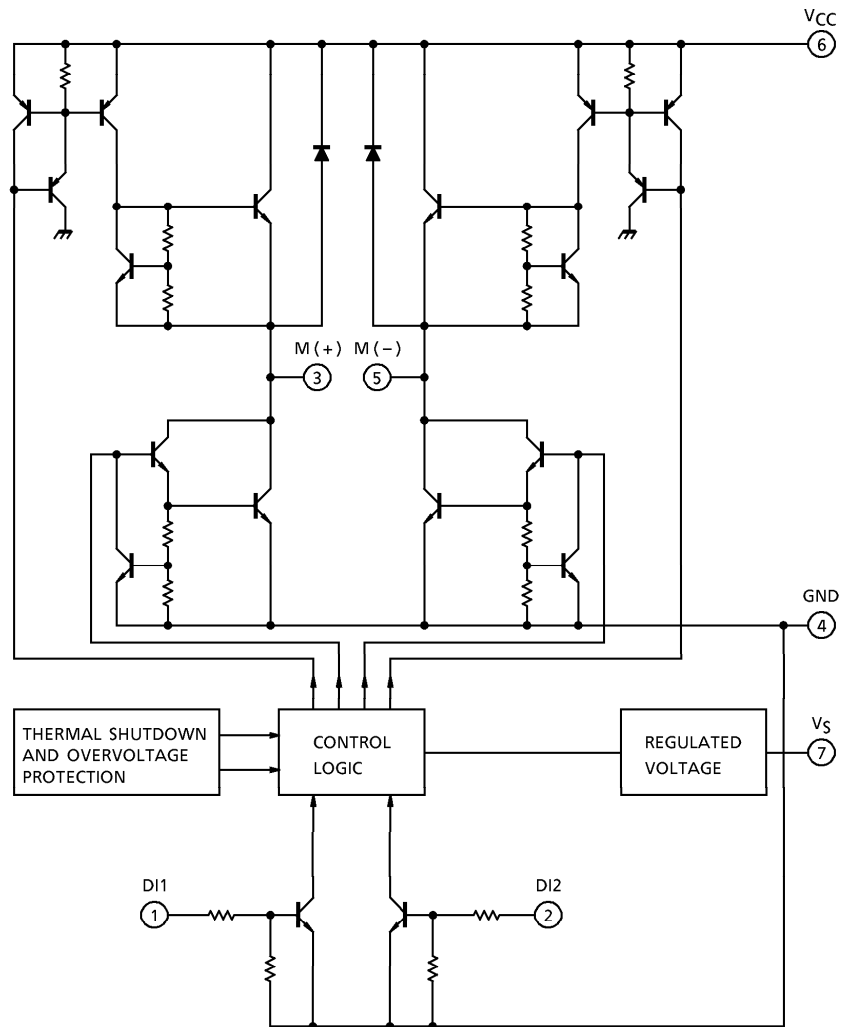
MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

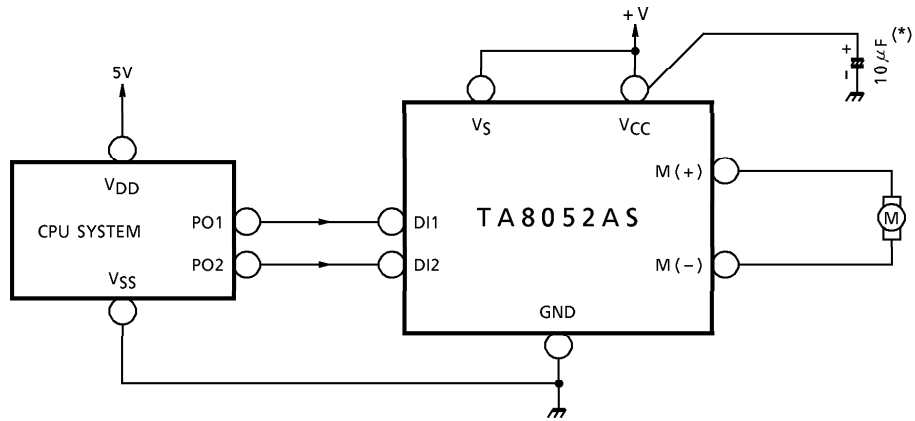
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}$	50 (1s)	V
Input Voltage	$V_{IN}$	$-0.3 \sim V_{CC} + 0.3$	V
Output Current	$I_{OUT}$	300	mA
Power Dissipation	$P_D$	0.92	W
Operating Temperature	$T_{opr}$	$-40 \sim 85$	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	$-55 \sim 150$	$^\circ\text{C}$
Lead Temperature-time	$T_{sol}$	260 (10s)	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ( $V_S, V_{CC} = 8 \sim 16V, T_a = -40 \sim 85^\circ C$ )

CHARACTERISTIC	SYMBOL	PIN	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Consumption (I)	$I_{S1}$	$V_S$	—	Stop	—	—	0.05	mA
	$I_{S2}$		—	Forward / Reverse	—	6	15	
	$I_{S3}$		—	Brake	—	9	20	
Current Consumption (II)	$I_{CC1}$	$V_{CC}$	—	Stop	—	—	0.05	mA
	$I_{CC2}$		—	Forward / Reverse	—	7.5	15	
	$I_{CC3}$		—	Brake	—	—	1	
Input Voltage	$V_{IL}$	DI1	—	—	—	—	0.8	V
	$V_{IH}$	/ DI2	—		2.0	—	—	
Input Current	$V_{IL}$	DI1	—	$V_{IN} = 0.4V$	—	10	20	$\mu A$
	$V_{IH}$	/ DI2	—	$V_{IN} = 5V$	—	170	350	
Output Saturation Voltage	$V_{sat}$ (total)	M (+) / M (-)	—	$I_O = 200mA$	—	1.8	2.5	V
Output Leakage Current	$I_{LEAK-U}$	M (+)	—	$V_O = 0V$	—	—	-100	$\mu A$
	$I_{LEAK-L}$	/ M (-)	—	$V_O = V_{CC}$	—	—	100	
Diode Forward Voltage	$V_{F-U}$	M (+)	—	$I_F = 200mA$	—	1.1	—	V
	$V_{F-L}$	/ M (-)	—	$I_F = 200mA$	—	1.1	—	
Output Limit Current	$I_{SC}$	—	—	$T_a = 25^\circ C$	0.3	0.55	—	A
Shutdown Temperature	$T_{SD-H}$	—	—	ON→OFF	—	150	—	$^\circ C$
	$T_{SD-L}$	—	—	OFF→ON	—	130	—	
Overvoltage Detection	$V_{SD}$	—	—	—	27	30	33	V
Transfer Delay Time	$t_{pLH}$	—	—	—	—	1	10	$\mu s$
	$t_{pHL}$	—	—	—	—	1	10	

**I/O EQUIVALENT CIRCUIT**

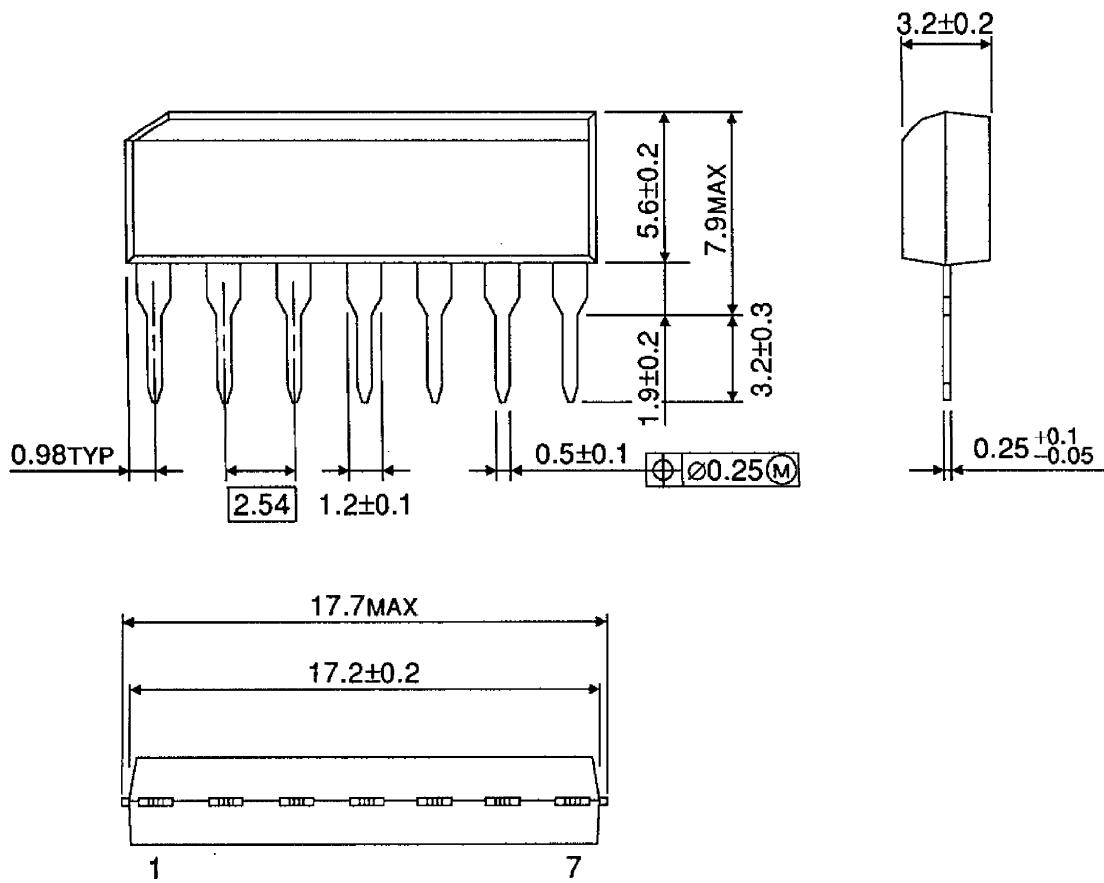


**EXAMPLE OF APPLICATION CIRCUIT**

(\* ) Connect this capacitor as close to the IC as Possible.

OUTLINE DRAWING  
SIP7-P-2.54A

Unit : mm



Weight : 0.7g (Typ.)