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.
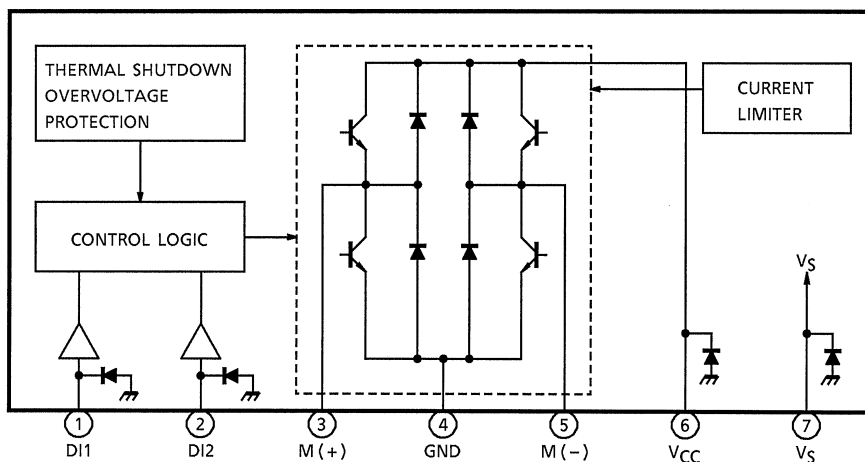
SIP7-P-2.54A

Weight: 0.7 g (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, andovervoltage shut down.
- Bulit-in diode for counteracting counter electromotive force
- Small SIP-7pin
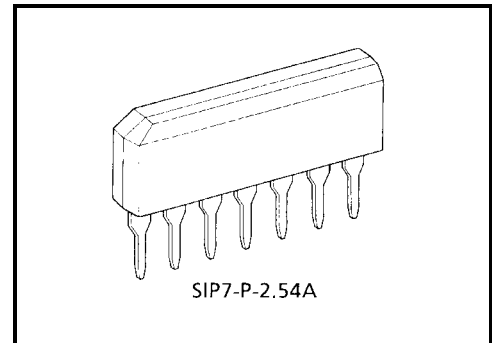
BLOCK DIAGRAM AND PIN LAYOUT

2002-02-27

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 : 100µA (MAX.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	50 (1s)	V
Input Voltage	V_{IN}	−0.3~V_{CC} +0.3	V
Output Current	I_{OUT}	300	mA
Power Dissipation	P_D	0.92	W
Operation Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~150	°C
Lead Temperature Time	T_{sol}	260 (10s)	°C

ELECTRICAL CHARACTERISTICS (VS, V_{CC} = 8~16V, Ta = −40~85°C)

CHARACTERISTIC	SYMBOL	PIN	TEST CIRCUIT	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 / DI2	—		—	—	0.8	V
	V_{IH}				2.0	—	—	
Input Current	I_{IL}	DI1 / DI2	—	V_{IN} = 0.4V	—	10	20	µA
	I_{IH}		—	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 (+) / M (−)	—	V_O = 0V	—	—	−100	µA
	I_{LEAK-L}		—	V_O = V_{CC}	—	—	100	
Diode Forward Voltage	V_{F-U}	M (+) / M (−)	—	I_F = 200mA	—	1.1	—	V
	V_{F-L}		—	I_F = 200mA	—	1.1	—	
Output Limit Current	I_{SC}		—	Ta = 25°C	0.3	0.55	—	A
Shutdown Temperature	T_{SD-H}		—	ON → OFF	—	150	—	°C
	T_{SD-L}		—	OFF → ON	—	130	—	
Overvoltage Detection	V_{SD}		—		27	30	33	V
Transfer Delay Time	t_{pLH}		—		—	1	10	µs
	t_{pHL}		—		—	1	10	

I / O EQUIVALENT CIRCUIT
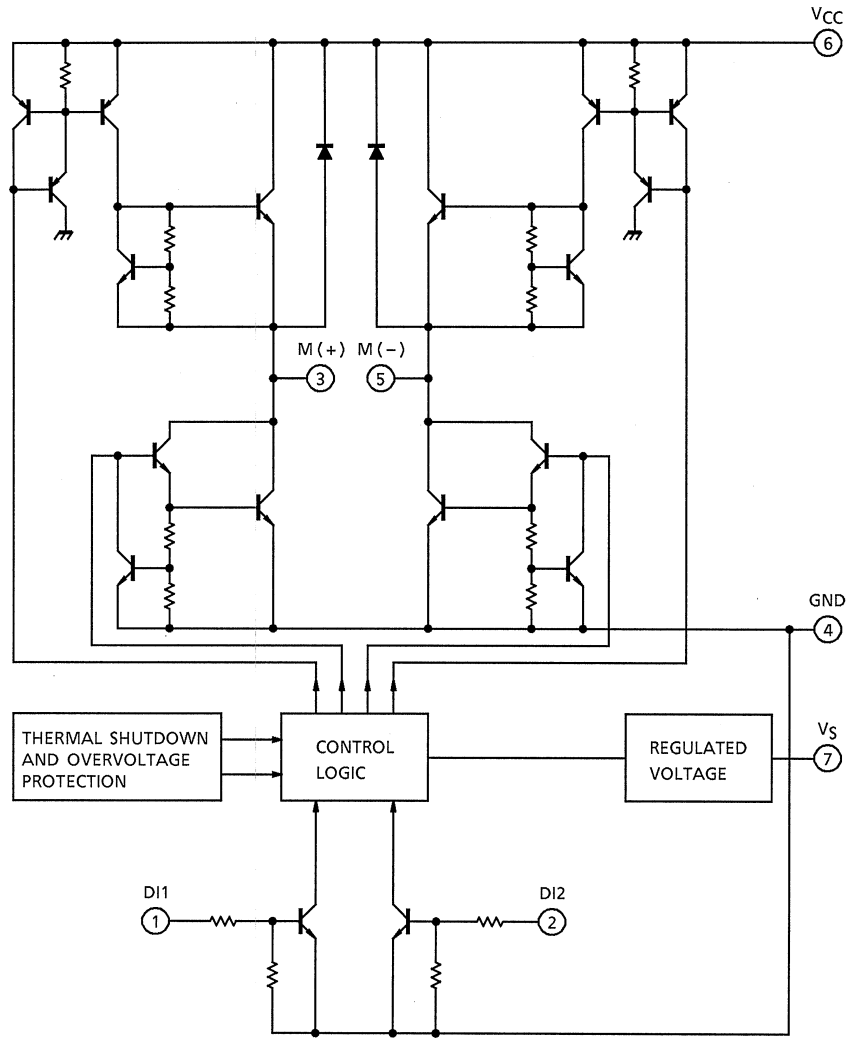
EXAMPLE OF APPLICATION CIRCUIT
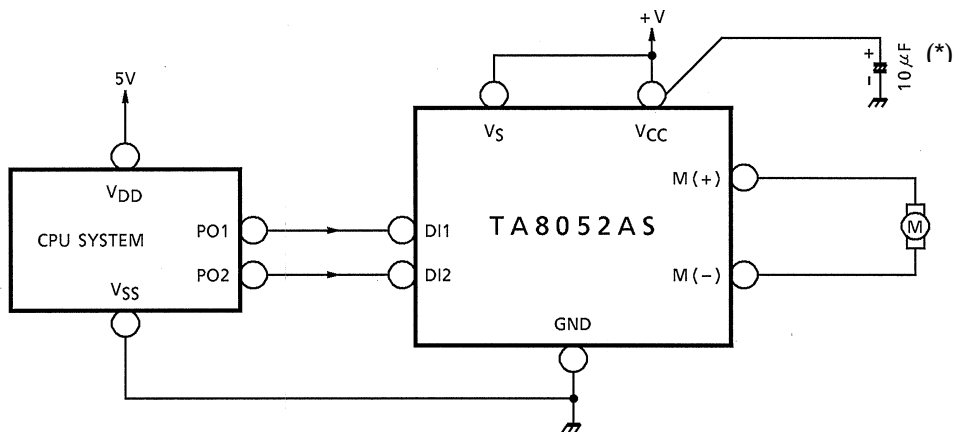
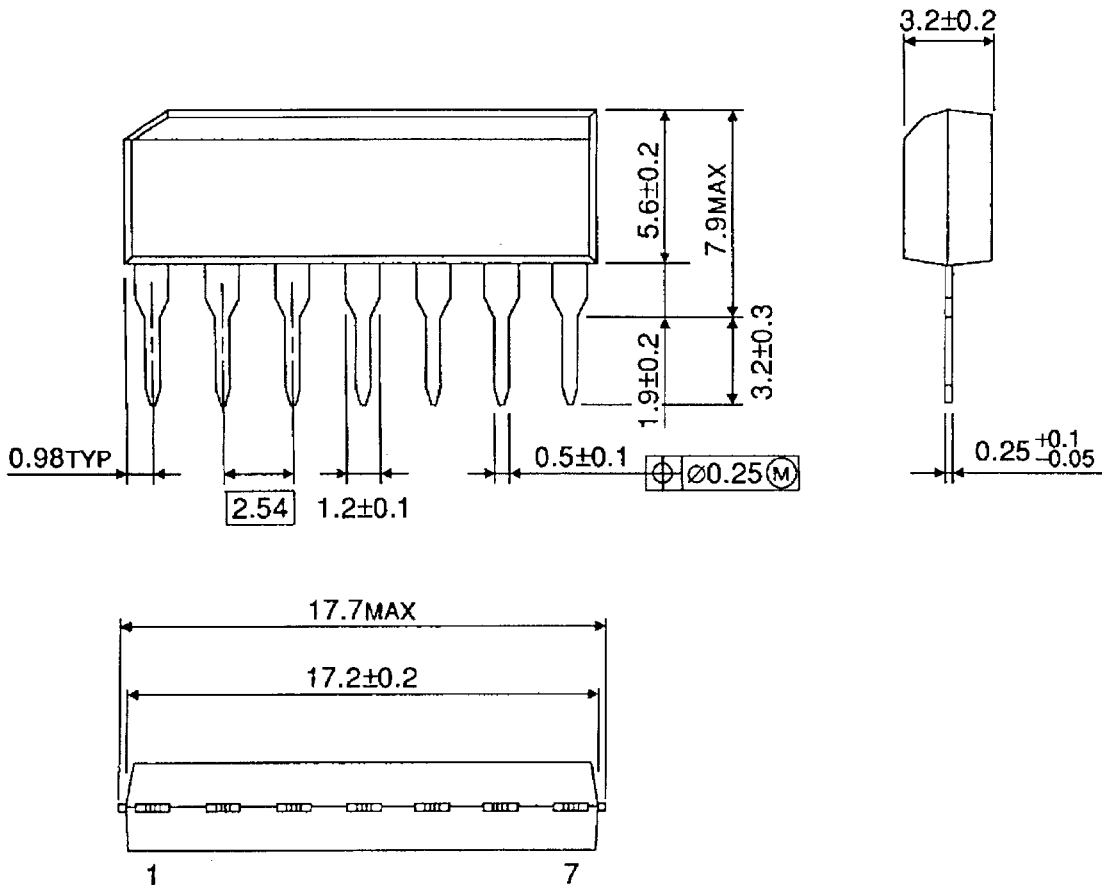*:   Connect this capacitor as close to the IC as Possible.

PACKAGE DIMENSIONS

SIP7-P-2.54A

Unit : mm

Weight: 0.7g (Typ.)

TOSHIBA   TA8052AS

RESTRICTIONS ON PRODUCT USE

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