

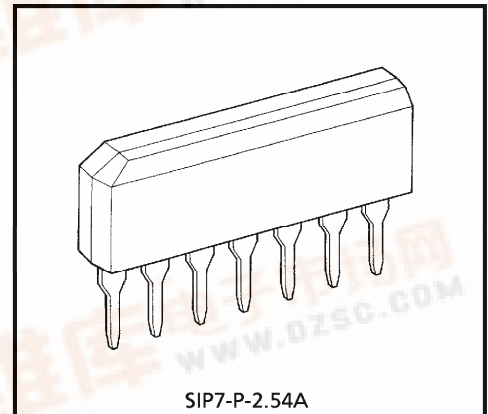
TOSHIBA**TA8052S**

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8052S

0.3A MOTOR DRIVER WITH BRAKE FUNCTION

The TA8052S 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.

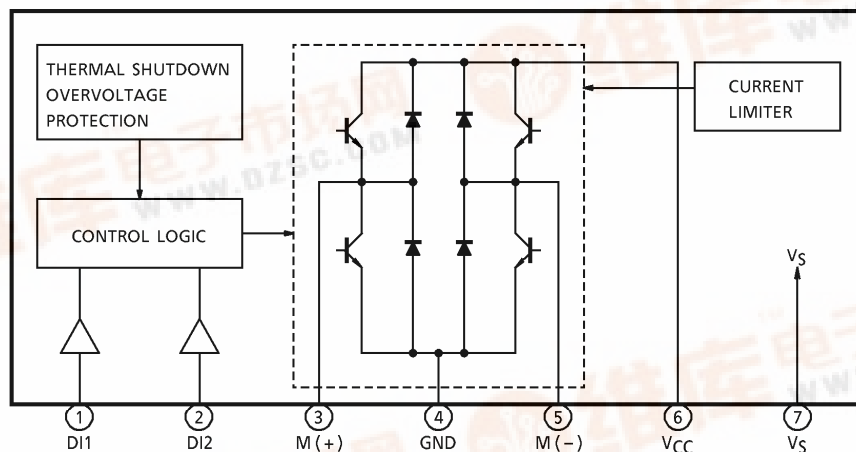


Weight : 0.7g (Typ.)

FEATURES

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

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. 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

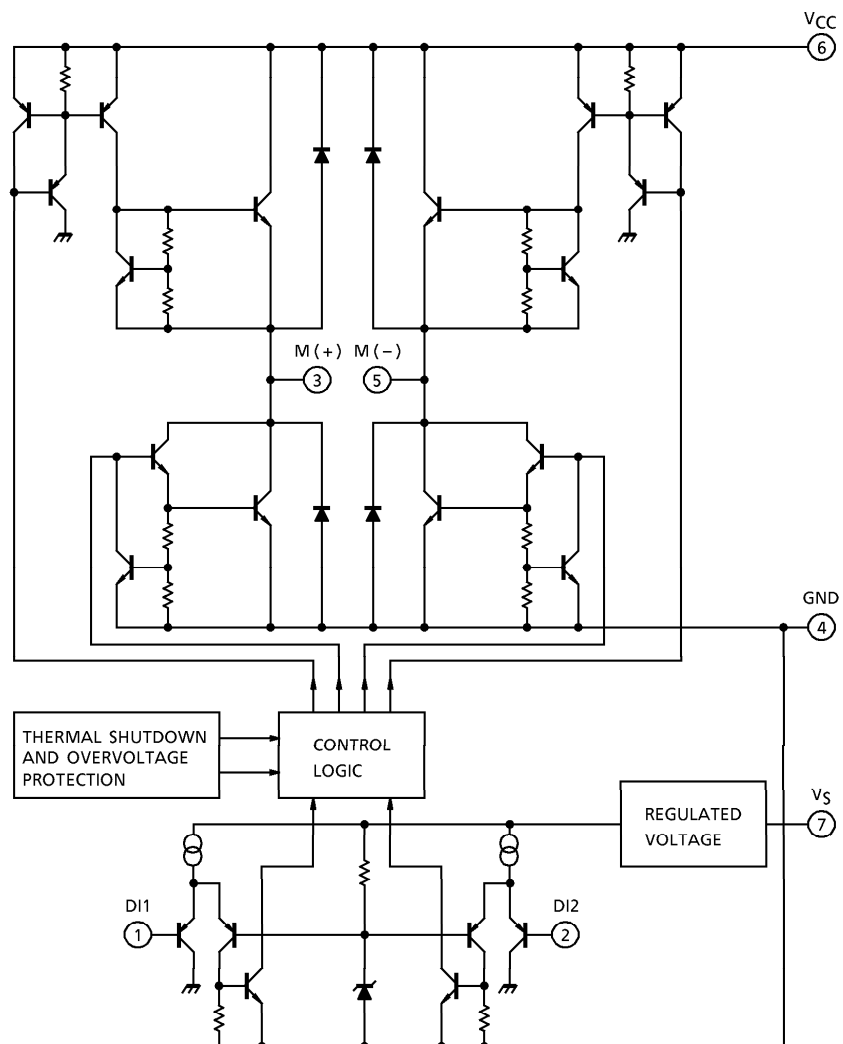
MAXIMUM RATINGS ($T_a = 25^{\circ}\text{C}$)

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)	$^{\circ}\text{C}$

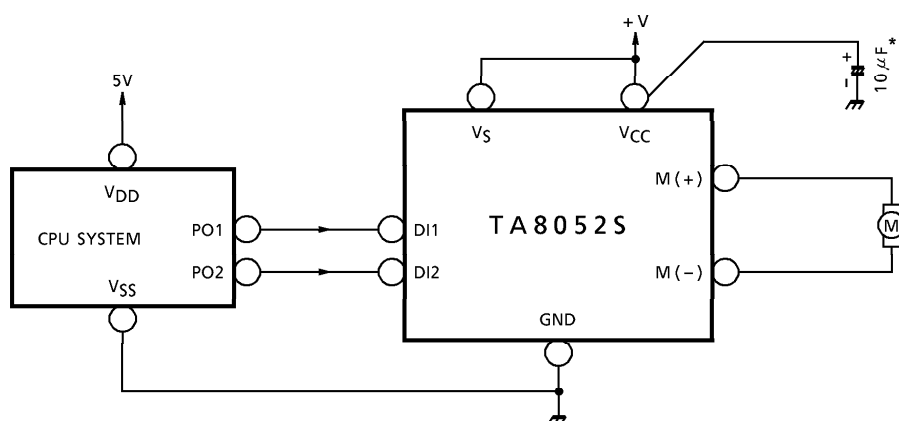
ELECTRICAL CHARACTERISTICS (V_S , $V_{CC}=8$ to $16V$, $T_a = -40$ to $85^{\circ}C$)

CHARACTERISTIC	SYMBOL	PIN	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Consumption (I)	I_{S1}	V_S	—	Stop	—	2.5	5	mA
	I_{S2}		—	Forward / Reverse	—	4	8	
	I_{S3}		—	Brake	—	4	8	
Current Consumption (II)	I_{CC1}	V_{CC}	—	Stop	—	—	1	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	—	$V_{IN} = 0.4V$	—	—	-20	μA
	V_{IH}	/ DI2	—	$V_{IN} = V_{CC}$	—	—	10	
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	μA
	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	μs
	t_{pHL}	—	—	—	—	1	10	

I/O EQUIVALENT CIRCUIT



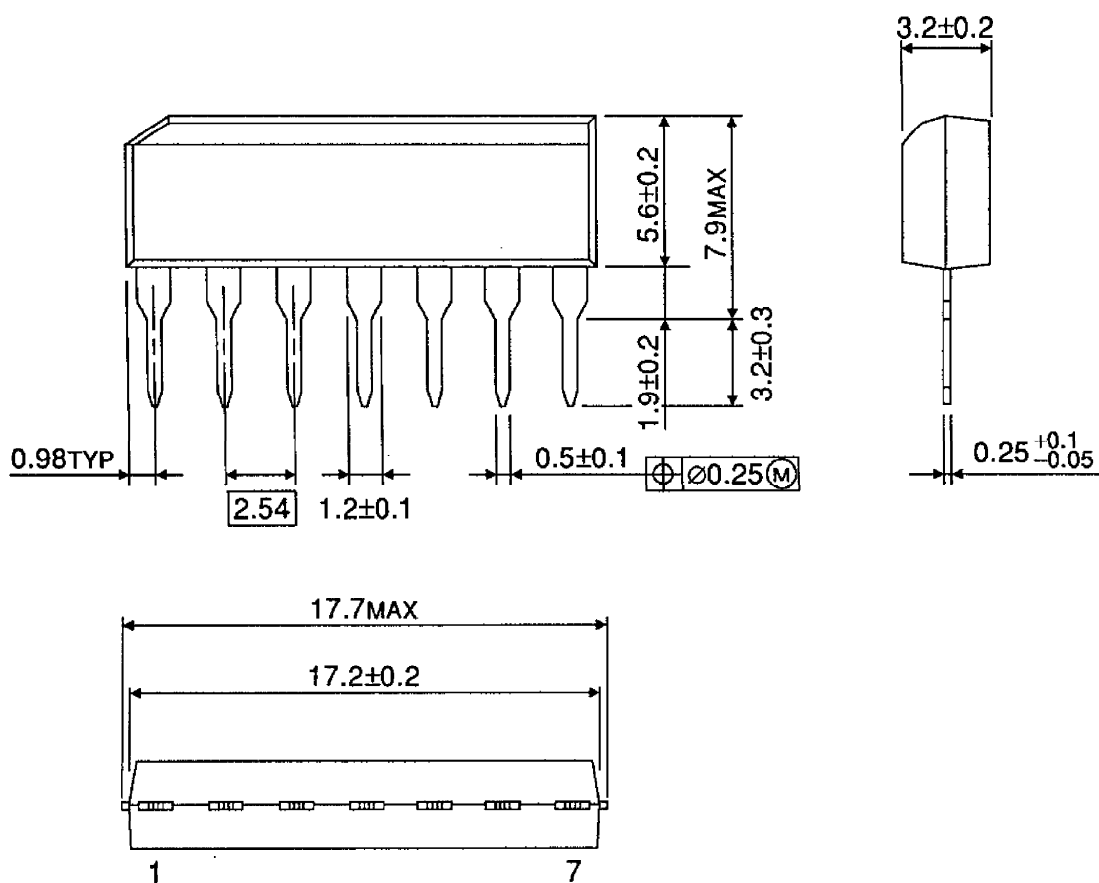
EXAMPLE OF APPLICATION CIRCUIT



* Connect this capacitor as close to the IC as Possible.

OUTLINE DRAWING
SIP7-P-2.54A

Unit : mm



Weight : 0.7g (Typ.)