

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

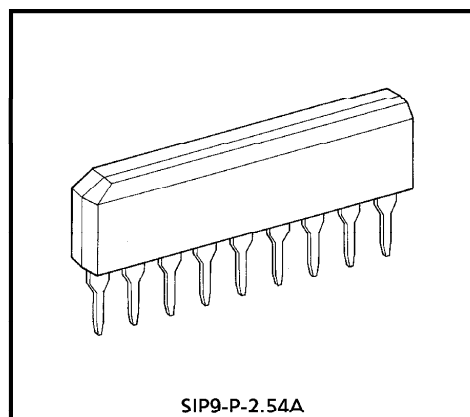
TA8405S

DUAL BRIDGE DRIVER

TA8405S is Dual Bridge Driver designed especially for VCR cassette and tape loading motor drives.

FEATURES

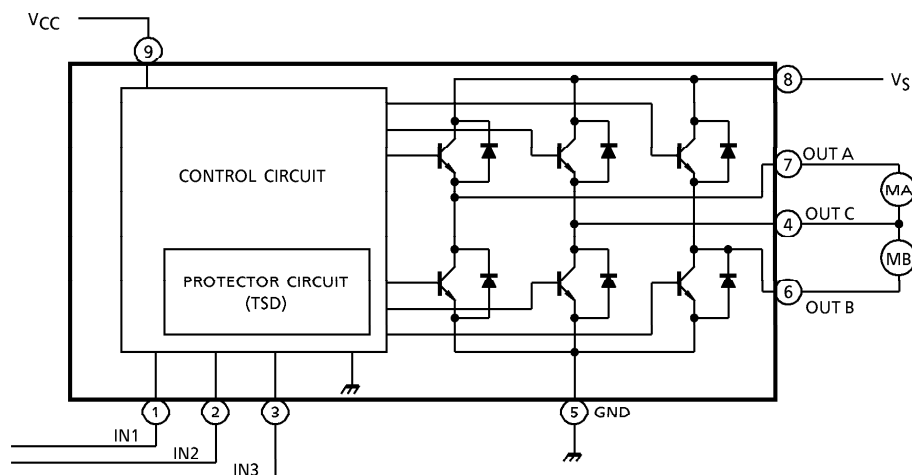
- 4 modes available (CW / CCW / STOP / BRAKE)
- Output current up to 0.4A (AVE.) and 1.0A (PEAK)
- Wide range of operating voltage : $V_{CC}(\text{opr}) = 4.5 \sim 22\text{V}$
 $V_S(\text{opr}) = 0 \sim 22\text{V}$
- Built-in thermal shutdown, over current protector and Punch-through current restriction circuit.
- Hysteresis for all inputs.



SIP9-P-2.54A

Weight : 0.92g (Typ.)

BLOCK DIAGRAM



961001EBA2

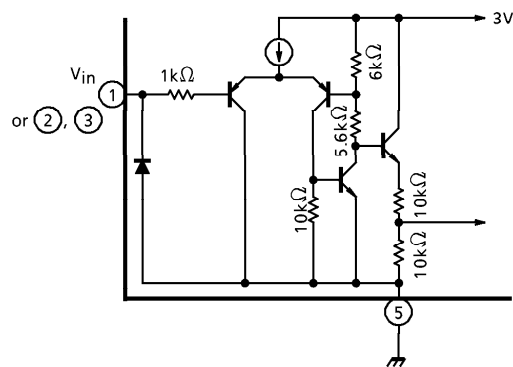
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PIN FUNCTION

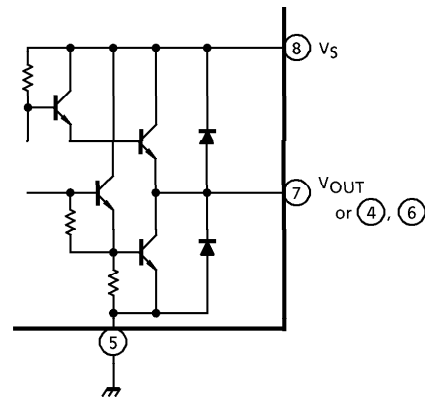
PIN No.	SYMBOL	FUNCTIONAL DESCRIPTION
1	IN1	Input terminal
2	IN2	Input terminal
3	IN3	Input terminal
4	OUT C	Output terminal
5	GND	GND terminal
6	OUT B	Output terminal
7	OUT A	Output terminal
8	V _S	Supply voltage terminal for motor drive
9	V _{CC}	Supply voltage terminal for logic

FUNCTION SPECIFICATION

(1) Input circuit



(2) Output circuit



FUNCTION

INPUT			OUTPUT			MODE	
IN1	IN2	IN3	OUT C	OUT A	OUT B	MA	MB
0	0	1 / 0	∞	∞	∞	STOP	STOP
1	0	0	H	L	∞	CW / CCW	STOP
1	0	1	L	H	∞	CCW / CW	STOP
0	1	0	H	∞	L	STOP	CW / CCW
0	1	1	L	∞	H	STOP	CCW / CW
1	1	1 / 0	L	L	L	BRAKE	BRAKE

(∞) High impedance
(Note) Inputs are all low active type

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V _{CC}	25	V
Motor Drive Voltage		V _S	25	V
Output Current	PEAK	I _O (PEAK)	1.0 (Note 1)	A
	AVE.	I _O (AVE.)	0.4	
Power Dissipation		P _D	0.75 (Note 2)	W
Operating Temperature		T _{opr}	– 30~75	°C
Storage Temperature		T _{stg}	– 55~150	°C

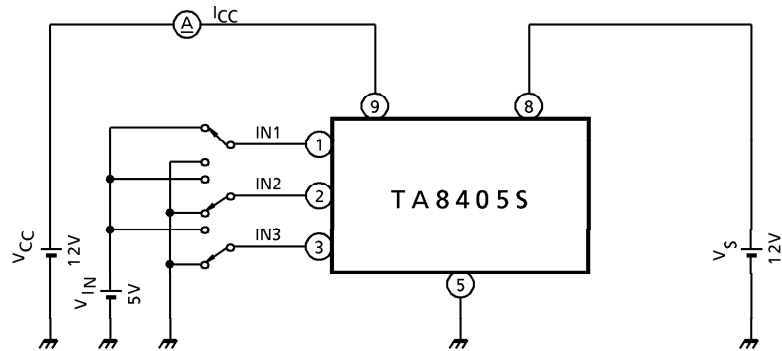
(Note 1) Duty 1 / 10, 100ms

(Note 2) No heat sink

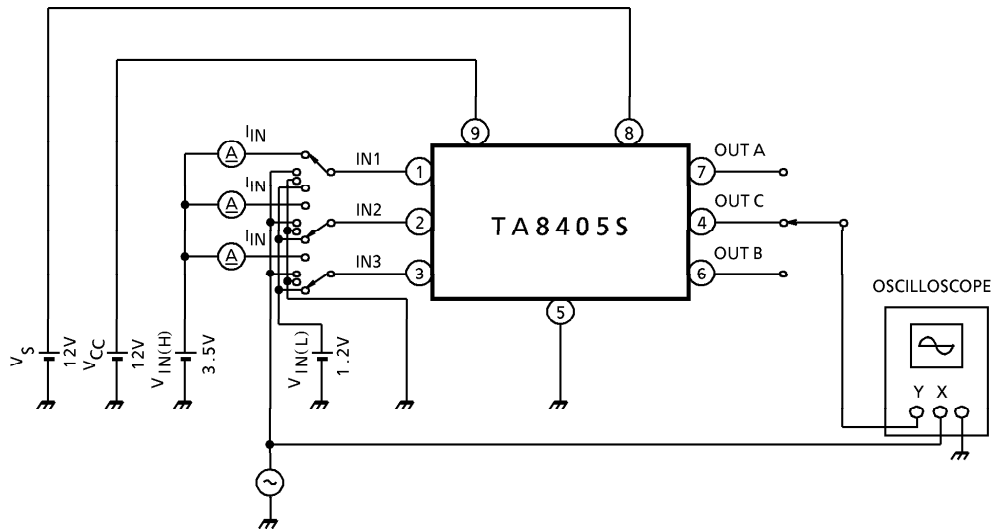
ELECTRICAL CHARACTERISTICS (Unless otherwise specified, Ta = 25°C, V_{CC} = 12V, V_S = 12V)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I _{CC1}	1	Output open, CW / CCW mode	—	7	15	mA
		I _{CC2}	1	Output open, BRAKE mode	—	15	38	
		I _{CC3}	1	Output open, STOP mode	—	7	15	
Input Operating Voltage	1 (High)	V _{IN1}	2	—	3.5	—	5.5	V
	2 (Low)	V _{IN2}	2	—	GND	—	1.2	
Input Current		I _{IN}	2	V _{IN} = GND, source mode	—	4	60	μA
Input Hysteresis Voltage		ΔV _T	2	—	—	1.5	—	V
Output Saturation Voltage	Upper	V _{SAT U-1}	3	I _O = 0.4A, V _{OUT} -V _S measure	—	1.0	1.4	V
	Lower	V _{SAT L-1}	3	I _O = 0.4A V _{OUT} -GND measure	—	0.8	1.2	
	Upper	V _{SAT U-2}	3	V _{OUT} -V _S measure I _O = 1.0A, ON LOAD : 20ms	—	1.3	2.3	
	Lower	V _{SAT L-2}	3	V _{OUT} -GND measure I _O = 1.0A, ON LOAD : 20ms	—	1.0	1.5	
Output Transistor Leakage Current	Upper	I _{LU}	5	V _S = 25V	—	—	50	μA
	Lower	I _{LL}	5	V _S = 25V	—	—	50	
Diode Forward Voltage	Upper	V _{F U}	4	I _F = 1.0A	—	2.1	—	V
	Lower	V _{F L}	4	I _F = 1.0A	—	1.6	—	
Thermal Shut Down Operating Temperature		T _{SD}	—	T _j	—	130	—	°C

TEST CIRCUIT 1

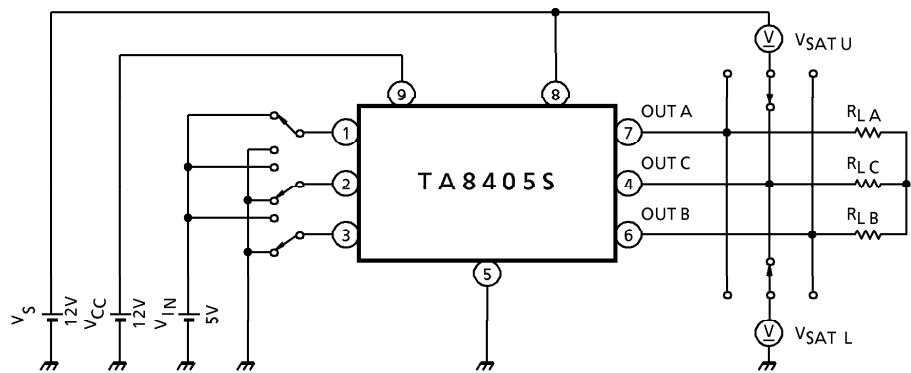
 $I_{CC1, 2, 3}$ 

TEST CIRCUIT 2

 $V_{IN1, 2}, I_{IN}, \Delta V_T$ 

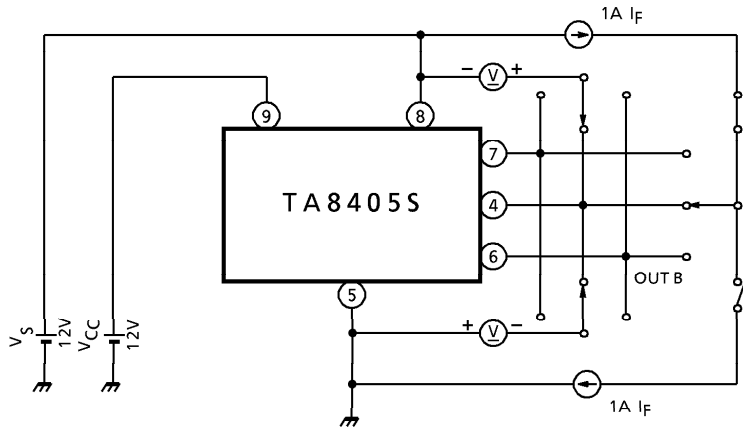
TEST CIRCUIT 3

$V_{SAT\ U-1, L-1, U-2, L-2}$



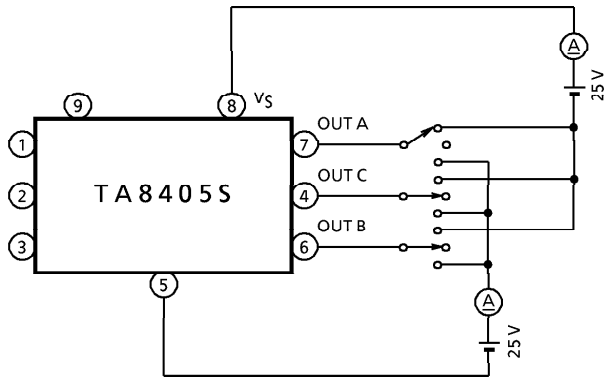
TEST CIRCUIT 4

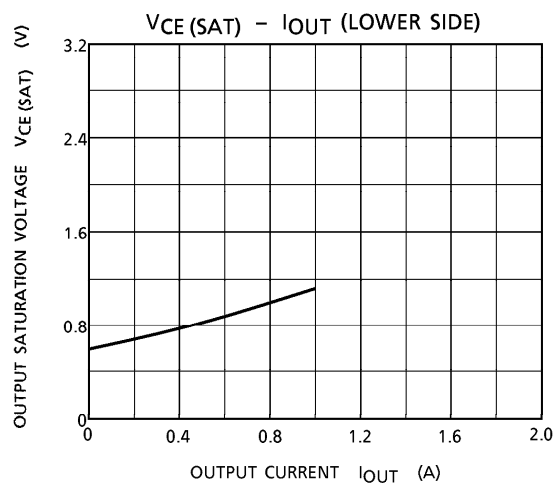
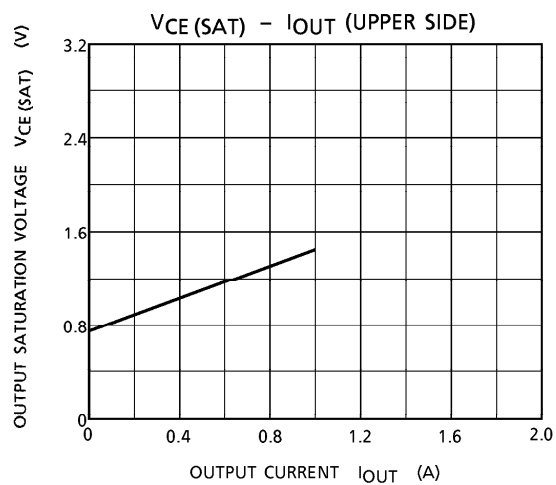
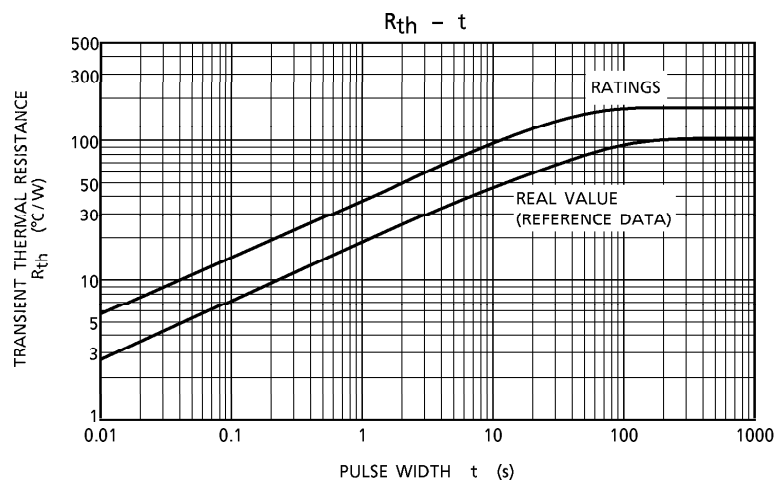
$V_F\ U, L$



TEST CIRCUIT 5

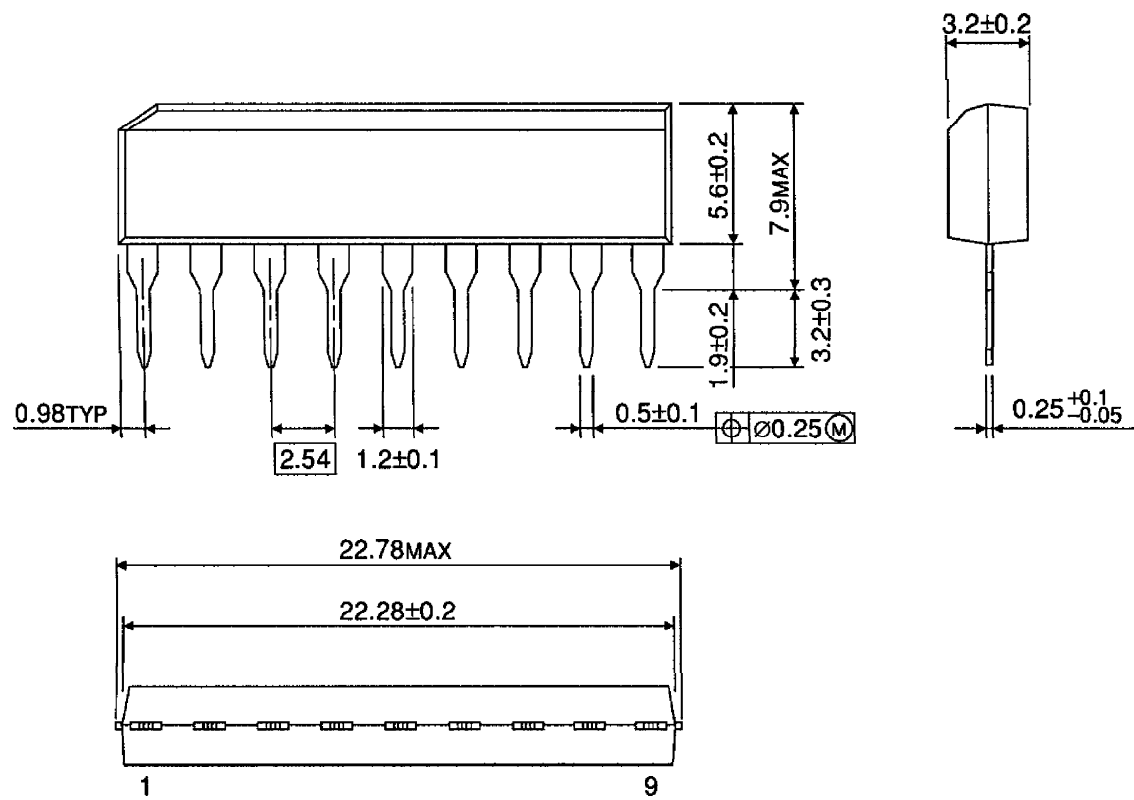
$I_L\ U, L$





OUTLINE DRAWING
SIP9-P-2.54A

Unit : mm



Weight : 0.92g (Typ.)