

TOSHIBA**TA8405S**

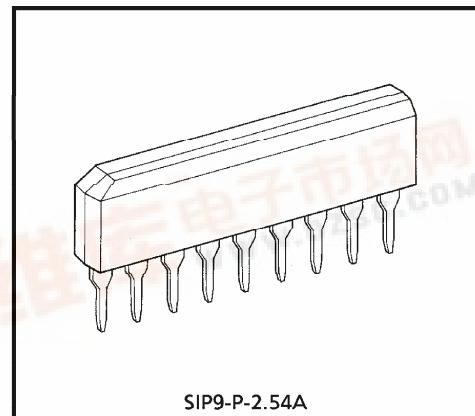
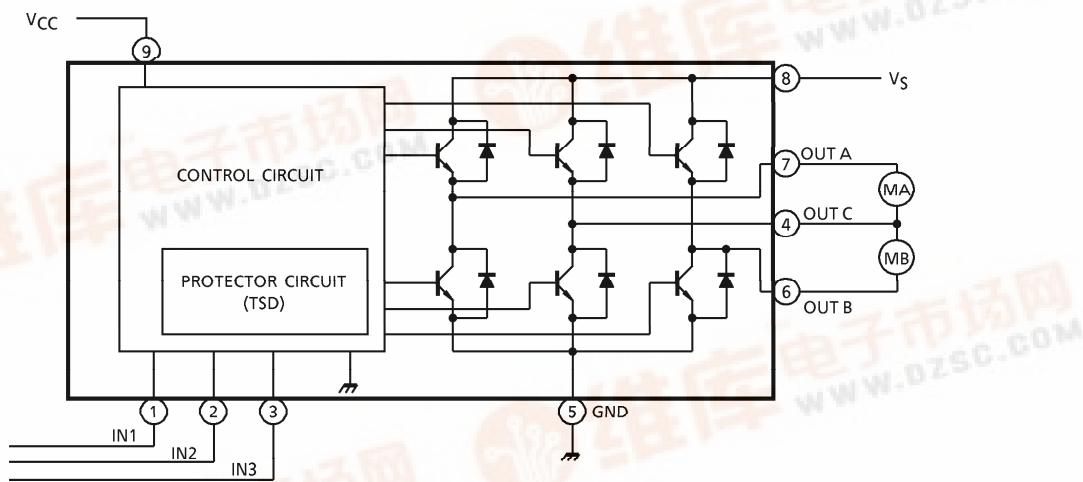
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

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 : $V_{CC}(\text{opr}) = 4.5\sim 22V$
 $V_S(\text{opr}) = 0\sim 22V$
- Built-in thermal shutdown, over current protector and Punch-through current restriction circuit.
- Hysteresis for all inputs.

**BLOCK DIAGRAM**

961001EBA2

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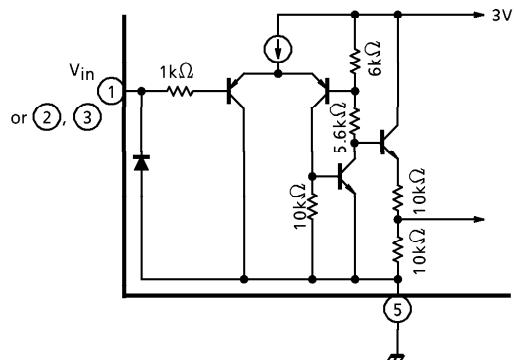


PIN FUNCTION

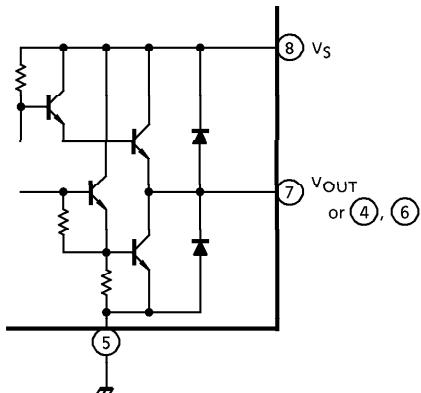
PIN No.	SYMBOL	FUNCTIONAL DESCRIPTION
1	IN1	Input terminal
2	IN2	Input terminal
3	IN3	Input terminal
4	OUT C	Output terminal
5	GND	GND terminal
6	OUT B	Output terminal
7	OUT A	Output terminal
8	V _S	Supply voltage terminal for motor drive
9	V _{CC}	Supply voltage terminal for logic

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

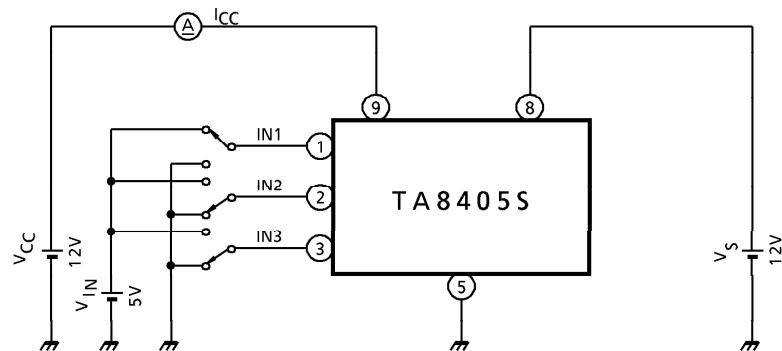
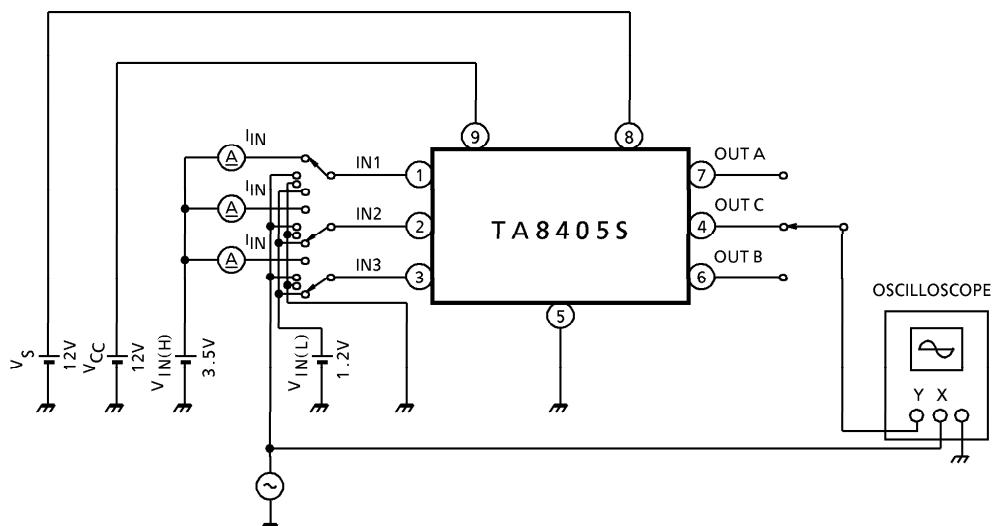
CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	25	V
Motor Drive Voltage		V_S	25	V
Output Current	PEAK	I_O (PEAK)	1.0 (Note 1)	A
	AVE.	I_O (AVE.)	0.4	
Power Dissipation		P_D	0.75 (Note 2)	W
Operating Temperature		T_{opr}	$-30 \sim 75$	$^\circ\text{C}$
Storage Temperature		T_{stg}	$-55 \sim 150$	$^\circ\text{C}$

(Note 1) Duty 1/10, 100ms

(Note 2) No heat sink

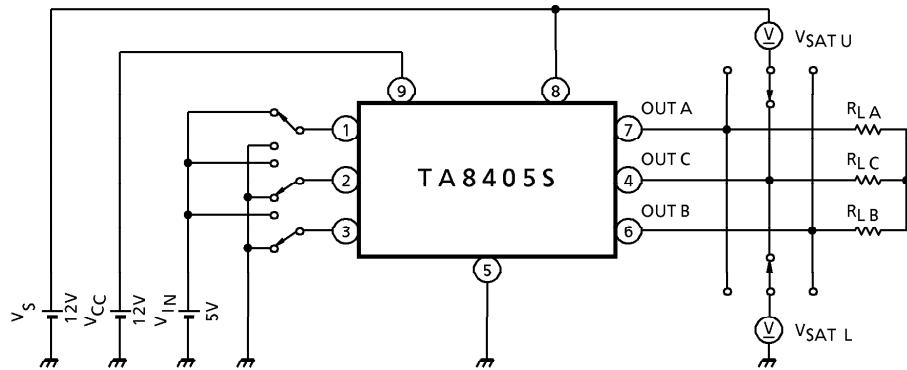
ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $T_a = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $V_S = 12\text{V}$)

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	$V_{IN} = \text{GND}$, source mode	—	4	60	μA
Input Hysteresis Voltage		ΔV_T	2	—	—	1.5	—	V
Output Saturation Voltage	Upper	$V_{SAT\ U-1}$	3	$I_O = 0.4\text{A}$, $V_{OUT}-V_S$ measure	—	1.0	1.4	V
	Lower	$V_{SAT\ L-1}$	3	$I_O = 0.4\text{A}$ $V_{OUT}-\text{GND}$ measure	—	0.8	1.2	
	Upper	$V_{SAT\ U-2}$	3	$V_{OUT}-V_S$ measure $I_O = 1.0\text{A}$, ON LOAD : 20ms	—	1.3	2.3	
	Lower	$V_{SAT\ L-2}$	3	$V_{OUT}-\text{GND}$ measure $I_O = 1.0\text{A}$, ON LOAD : 20ms	—	1.0	1.5	
Output Transistor Leakage Current	Upper	I_{LU}	5	$V_S = 25\text{V}$	—	—	50	μA
	Lower	I_{LL}	5	$V_S = 25\text{V}$	—	—	50	
Diode Forward Voltage	Upper	V_{FU}	4	$I_F = 1.0\text{A}$	—	2.1	—	V
	Lower	V_{FL}	4	$I_F = 1.0\text{A}$	—	1.6	—	
Thermal Shut Down Operating Temperature		T_{SD}	—	T_j	—	130	—	$^\circ\text{C}$

TEST CIRCUIT 1 $I_{CC1}, 2, 3$ **TEST CIRCUIT 2** $V_{IN1, 2}, I_{IN}, \Delta V_T$ 

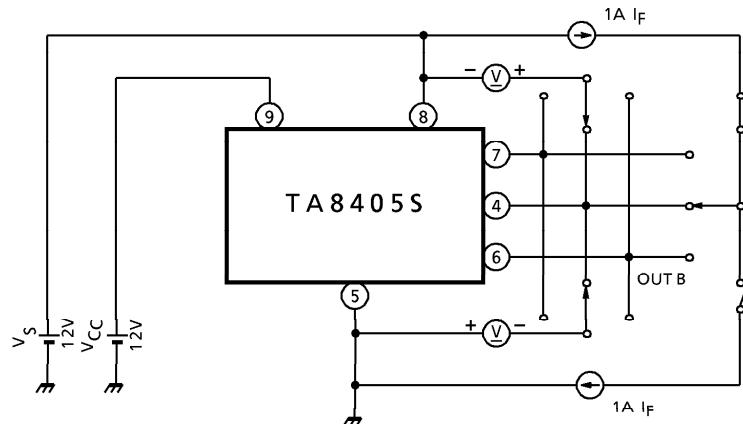
TEST CIRCUIT 3

$V_{SAT\ U}$, L , U , L



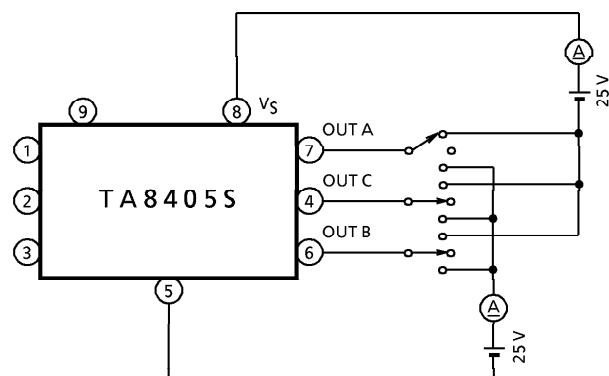
TEST CIRCUIT 4

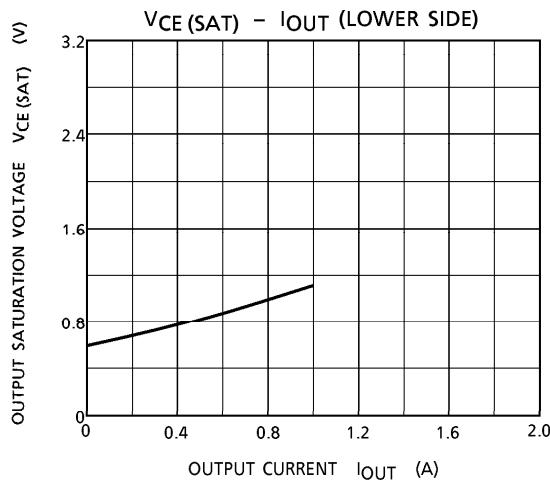
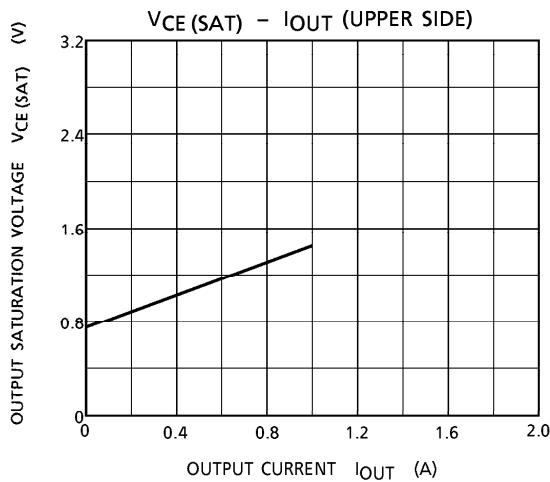
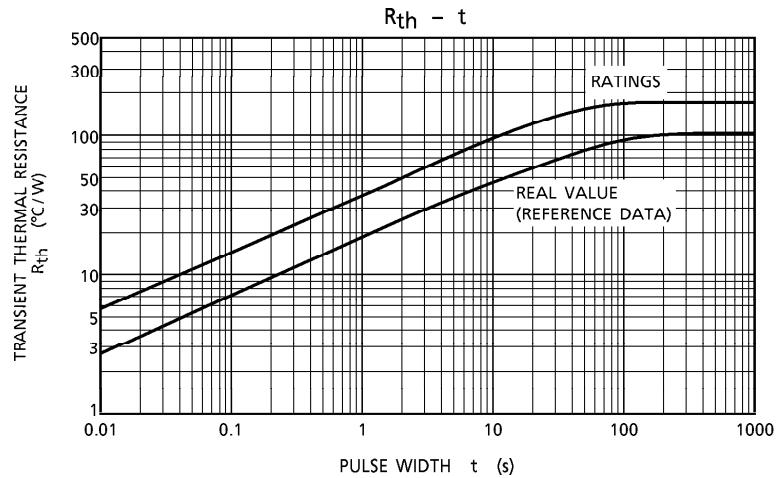
$V_F\ U$, L



TEST CIRCUIT 5

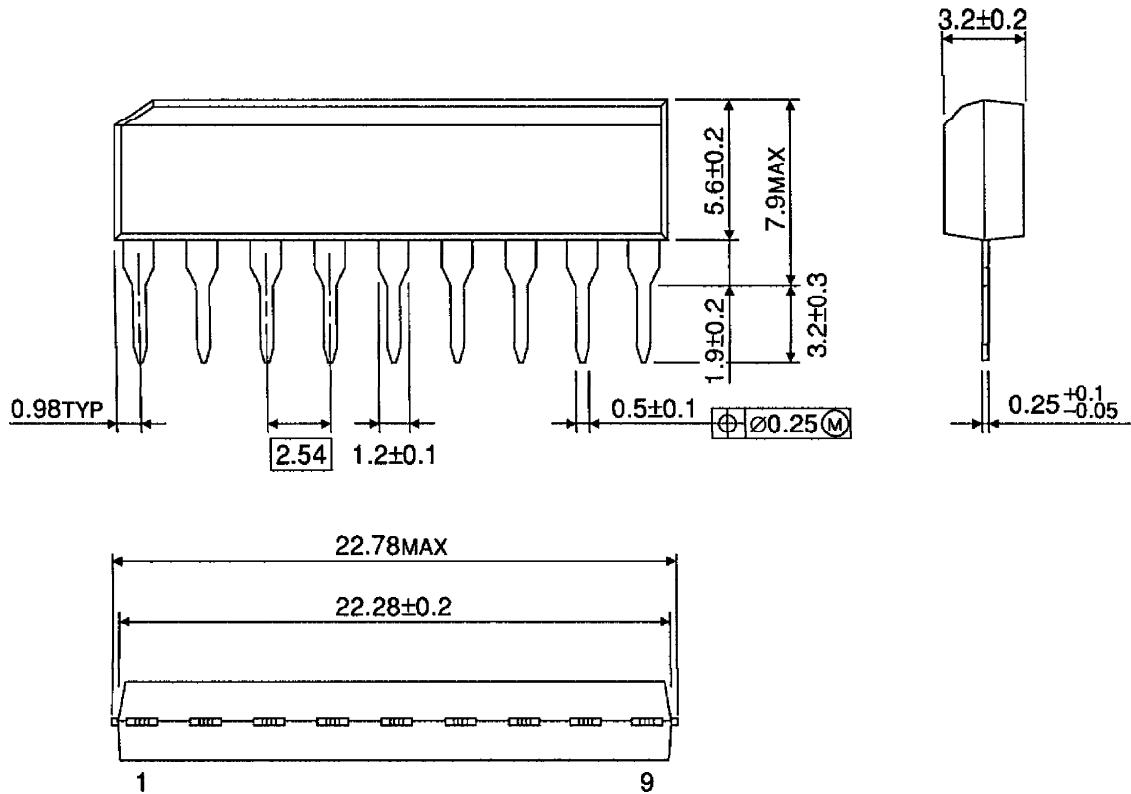
$I_L\ U$, L





OUTLINE DRAWING
SIP9-P-2.54A

Unit : mm



Weight : 0.92g (Typ.)