

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

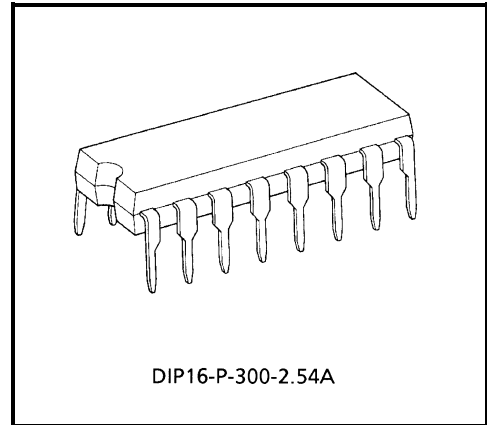
TA8400P

DUAL BRIDGE DRIVER

The TA8400P 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 0.4 A (AVE.) and 1.0 A (PEAK)
- Wide range of operating voltage: $V_{CC} \text{ (opr.)} = 4.5\sim 18 \text{ V}$
 $V_S \text{ (opr.)} = 0\sim 22 \text{ V}$
 $V_{ref} \text{ (opr.)} = 0\sim 22 \text{ V}$
- Built-in thermal shutdown, over current protector and punch-through current restriction circuit.
- Hysteresis for all inputs.

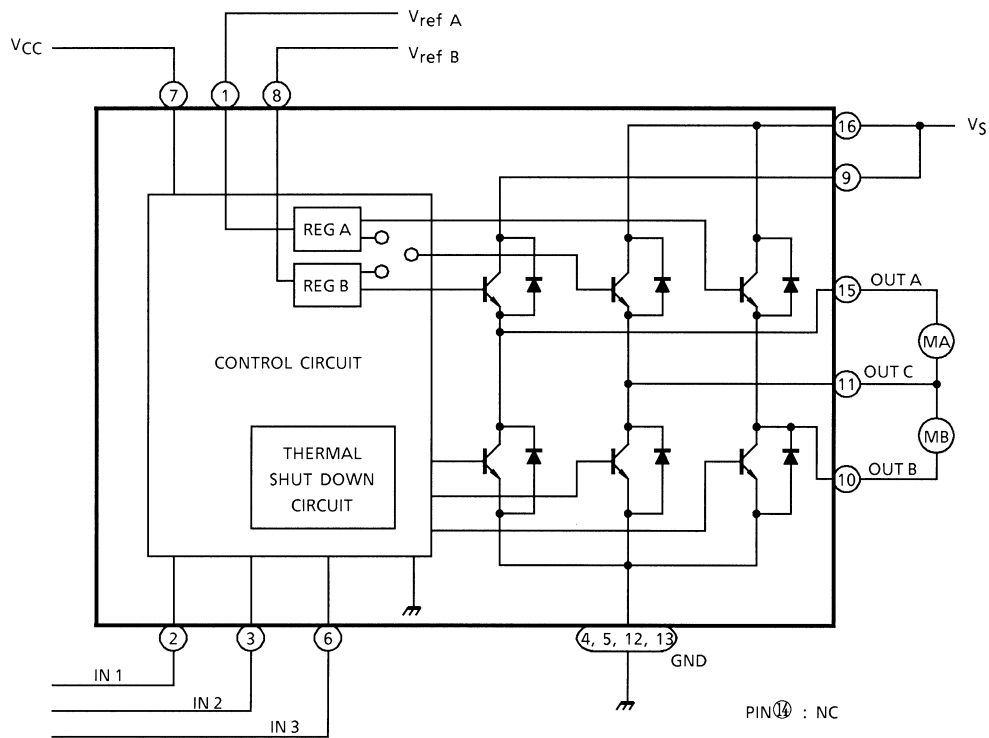


Weight: 1.11 g (Typ.)

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BLOCK DIAGRAM



PIN FUNCTION

PIN No.	SYMBOL	FUNCTIONAL DESCRIPTION
1	V _{ref A}	Supply voltage terminal for control circuit
2	IN 1	Logic input terminal
3	IN 2	Logic input terminal
4	GND	GND terminal
5	GND	GND terminal
6	IN 3	Logic input terminal
7	V _{CC}	Supply voltage terminal for logic
8	V _{ref B}	Supply voltage terminal for control circuit
9	V _S	Supply voltage terminal for motor driver
10	OUT B	Output terminal
11	OUT C	Output terminal
12	GND	GND terminal
13	GND	GND terminal
14	NC	Non connection
15	OUT A	Output terminal
16	V _S	Supply voltage terminal for motor driver

FUNCTION

INPUT			OUTPUT			MODE	
IN 1	IN 2	IN 3	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
Reference Voltage	V _{ref}	25	V
Output Current	PEAK	I _{O (PEAK)}	1.0 (Note 1)
	AVE.	I _{O (AVE.)}	0.4
Power Dissipation	P _D	1.4 (Note 2)	W
Operating Temperature	T _{opr}	-30~75	°C
Storage Temperature	T _{stg}	-55~150	°C

Note 1: Duty 1 / 10, 100 ms

Note 2: No heat sink

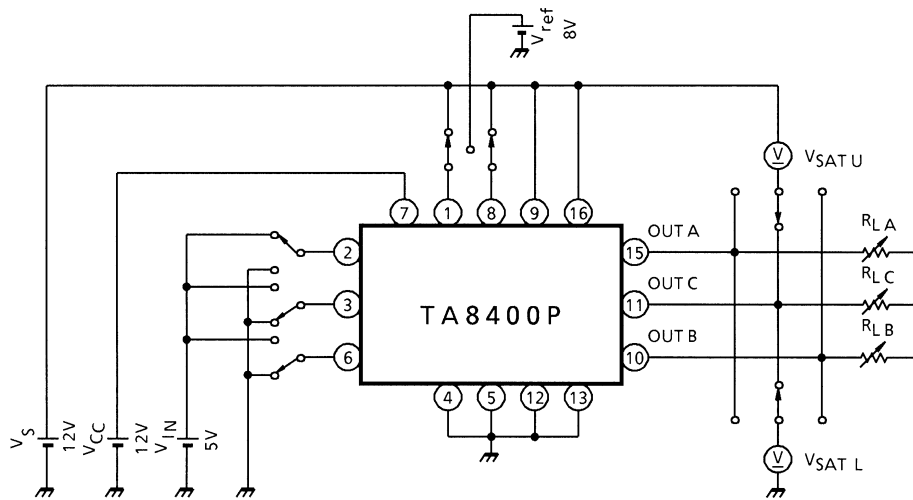
ELECTRICAL CHARACTERISTICS

(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	—	25	38	mA	
		I_{CC2}	1	Output open, Brake mode	—	25	38		
		I_{CC3}	1	Output open, Stop mode	—	10	20		
Input Voltage	1 (High)	V_{IN1}	2	$T_j = 25^\circ\text{C}$, pin (2), (3), (6)	3.5	—	5.5	V	
	2 (Low)	V_{IN2}	2	$T_j = 25^\circ\text{C}$, pin (2), (3), (6)	GND	—	1.2		
Input Current		I_{IN}	2	$V_{IN} = \text{GND}$, source mode	6	12	60	μA	
Input Hysteresis Voltage		ΔV_T	2		—	0.7	—	V	
Saturation Voltage		Upper	$V_{SAT U-1}$	3	$V_{ref} = V_S$, $I_O = 0.4\text{ A}$	—	1.0	1.5	V
		Lower	$V_{SAT L-1}$	3	$V_{ref} = V_S$, $I_O = 0.4\text{ A}$	—	0.3	—	
		Upper	$V_{SAT U-2}$	3	$V_{ref} = V_S$, $I_O = 1.0\text{ A}$, ON LOAD: 20 ms	—	2.0	2.5	
		Lower	$V_{SAT L-2}$	3	$V_{ref} = V_S$, $I_O = 1.0\text{ A}$, ON LOAD: 20 ms	—	0.8	1.3	
Output Voltage		$V_{SAT U-1}'$	3	$V_{ref} = 8\text{ V}$, $I_O = 0.4\text{ A}$	8.2	8.8	9.3	V	
		$V_{SAT U-2}'$	3	$V_{ref} = 8\text{ V}$, $I_O = 1.0\text{ A}$, ON LOAD: 20 ms	8.1	8.6	9.2		
Output Transistor Leakage Current		Upper	I_{LU}	—	$V_S = 25\text{ V}$	—	—	200	μA
		Lower	I_{LL}	—	$V_S = 25\text{ V}$	—	—	200	
Diode Forward Voltage		Upper	V_{FU}	4	$I_F = 1.0\text{ A}$	—	3.6	—	V
		Lower	V_{FL}	4	$I_F = 1.0\text{ A}$	—	0.9	—	
Reference Current		I_{ref}	2	$V_{ref} = 8\text{ V}$, source mode	—	0.45	0.7	mA	
Thermal Shut Down Operating Temperature		T_{SD}	—	T_j	110	130	150	$^\circ\text{C}$	

TEST CIRCUIT 3

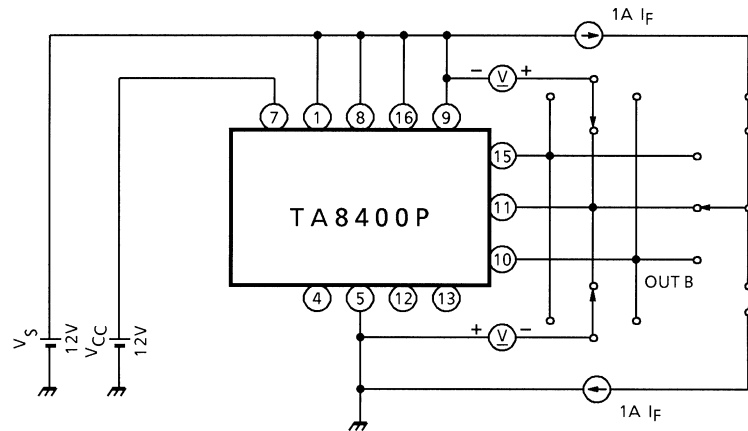
$V_{SAT U-1, L-1, U-2, L-2, U-1', U-2'}$

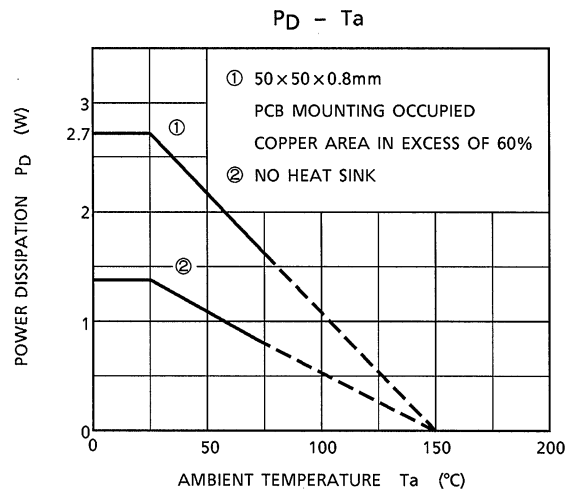


Note: Calibrate I_{OUT} to 0.4 / 1.0A by R_{LA} , R_{LB} and R_{LC} .

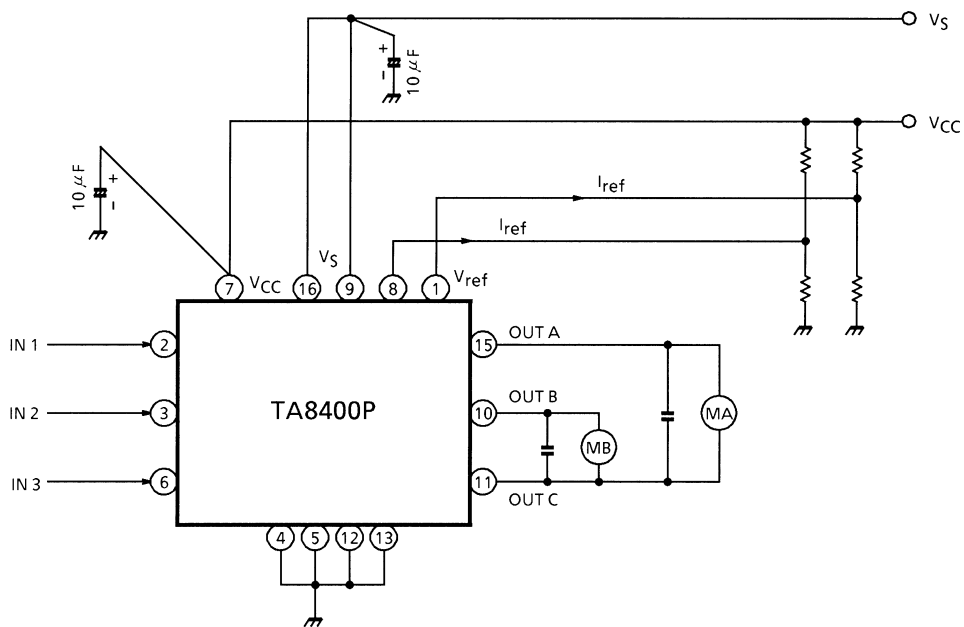
TEST CIRCUIT 4

$V_{FU, L}$





APPLICATION CIRCUIT



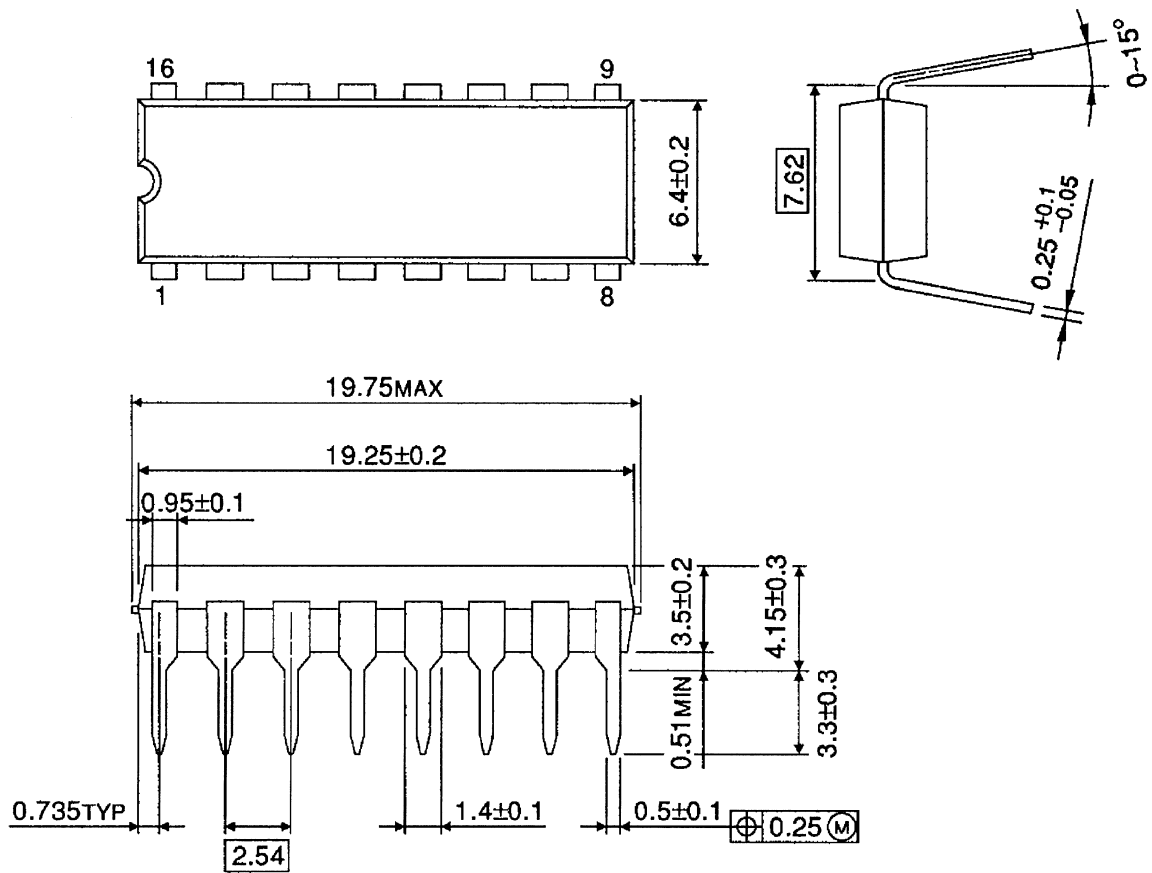
Pin (16) is required to connect to pin (9).

Note: Utmost care is necessary in the design of the output line, V_S and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

OUTLINE DRAWING

DIP16-P-300-2.54A

Unit: mm



Weight: 1.11 g (Typ.)