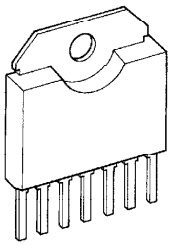
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7257P

BRIDGE DRIVER

The TA7257P is a Full Bridge Driver for blashed DC Motor Rotation control.
Forward Rotation, Reverse Rotation, Stop and Braking operations are available.
It's designed for Loading and Reel Motor driver for VTR and Tape Deck, and any other consumer and industrial applications.
TA7257P have Operation Supply Voltage terminal and Motor Driving Supply Voltage terminal independently therefore Servo control operation is applicable.

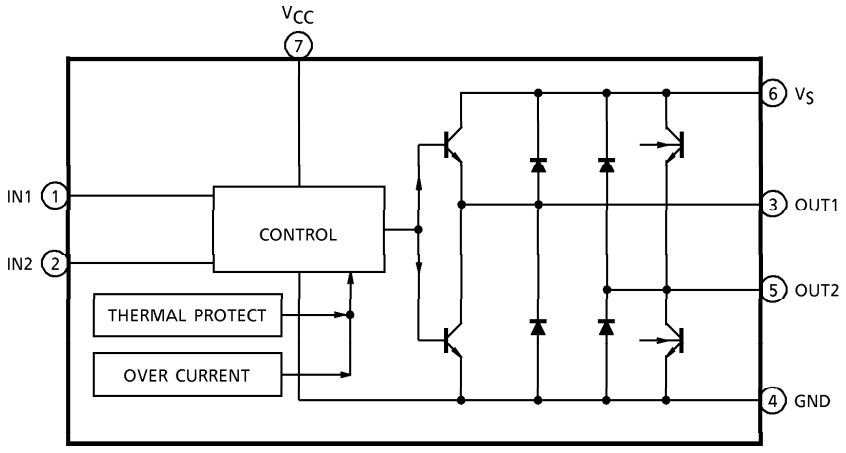


HSIP7-P-2.54
Weight : 1.88g (Typ.)

FEATURES

- Output Current Up to 1.5A (AVE.), and 4.5A (PEAK).
- 4 Function Modes (CW, CCW, STOP and Brake) are Controlled by 2 Logic Signals Fed Into 2 Input Terminals.
- Build in Over Current Protector and Thermal Shut Down Circuit.
- Operating Voltage Range : $V_{CC\ (opr.)} = 6 \sim 18V$, $V_{S\ (opr.)} = 0 \sim 18V$

BLOCK DIAGRAM



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PIN FUNCTION

PIN No.	SYMBOL	FUNCTIONAL DESCRIPTION
1	IN1	Input terminal
2	IN2	Input terminal
3	OUT1	Output terminal
4	GND	GND terminal
5	OUT2	Output terminal
6	V_S	Supply voltage terminal for Motor drive
7	V_{CC}	Supply voltage terminal for Logic

FUNCTION

IN1	IN2	OUT1	OUT2	MODE
1	1	L	L	Brake
0	1	L	H	CW / CCW
1	0	H	L	CCW / CW
0	0			Stop

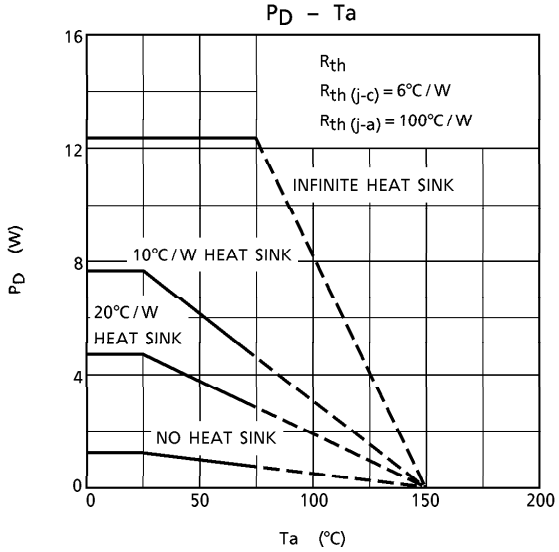
MAXIMUM RATINGS (Ta = 25°C)

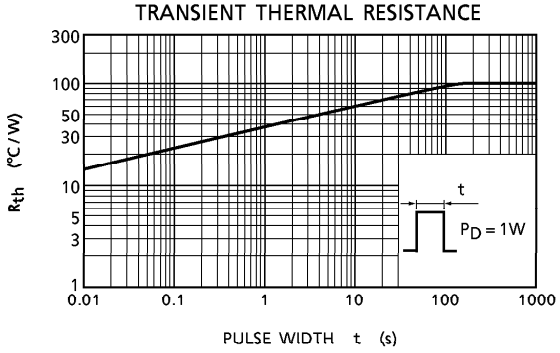
CHARACTERISTIC		SYMBOL	RATING	UNIT
Peak Supply Voltage	Peak	V_{CC} (MAX.)	25	V
	Operate	V_{CC} (opr.)	18	
Output Current	PEAK	I_O (PEAK)	4.5	A
	AVE.	I_O (AVE.)	1.5	
Power Dissipation		P_D	12.5 (Note)	W
Operating Temperature		T_{opr}	−30~75	°C
Storage Temperature		T_{stg}	−55~150	°C

(Note) Tc = 75°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I_{CC1}	—	V_{CC} = 18V Output OFF stop mode	—	6.5	13	mA
		I_{CC2}		V_{CC} = 18V Output OFF CW / CCW mode	—	10	20	
Saturation Voltage	Upper	$V_{S1}U$	—	V_{CC} = 18V, I_O = 0.1A	—	0.7	1.0	V
	Lower	$V_{S1}L$			—	0.6	0.9	
	Upper	$V_{S2}U$		V_{CC} = 18V, I_O = 1.1A	—	1.0	1.4	
	Lower	$V_{S2}L$			—	0.9	1.3	
Output Transistor Leakage Current	Upper	I_L U	—	V_S = 18V	—	—	100	μA
	Lower	I_L L			—	—	100	
Input Voltage 1, 2		$V_{IN\,(H)}$	—	T_j = 25°C, pin① and pin②	3.0	—	—	V
		$V_{IN\,(L)}$			—	—	0.8	
Diode Forward Voltage		V_F U	—	I_F = 1.0A	—	2.0	—	V
		V_F L			—	1.25	—	
Limiting Current		I_{SC}	—	—	—	3.5	—	A
Input Current		I_{IN}	—	—	—	1	10	μA





APPLICATION NOTE

(1) Input circuit

Input circuit is shown in Fig.1. It's a "Low active" type voltage comparator that's one input connect to Input terminal (pin①, or ②) and the other to built-in temperature compensated voltage reference (V_{TH} = 1.4V Typ.)
If a voltage above $V_{IN\,(H)}$ fed into the Input Terminal that means "Logic 1" and less than $V_{IN\,(L)}$ or connect to GND means "Logic 0".

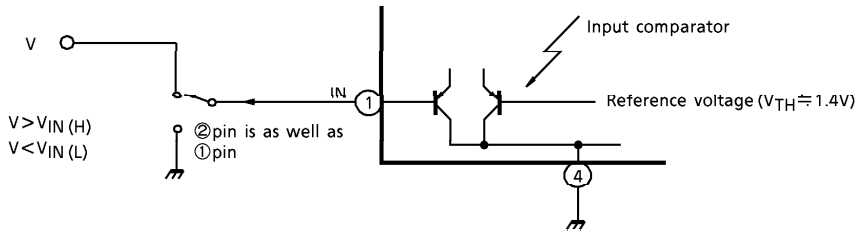


Fig.1

(2) Basic application circuit

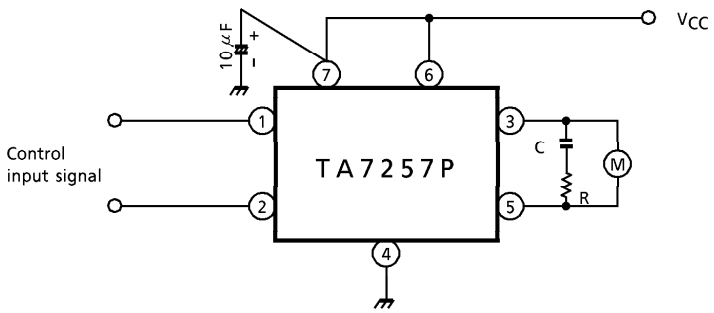


Fig.2

(Note) Fig.2 shows the basic application circuit.
Optimum values of the C, R depend on the inherent constant of a motor and parasitic C, R values around the circuit.
Normally, recommended to use 0.1μF and 33Ω.

(3) Additional diode

i) If the braking operation is so loose, connect a additional diode between each output to GND, (See Fig.3)

ii) If the back electromotive pulse generated in output coil is so strong.
Internally connected back electromotive suppression diode may be damaged by this pulse.
In such a case connect a additional diode between each output to V_{CC}. (See Fig.4)

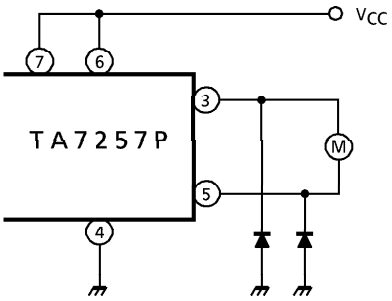


Fig.3

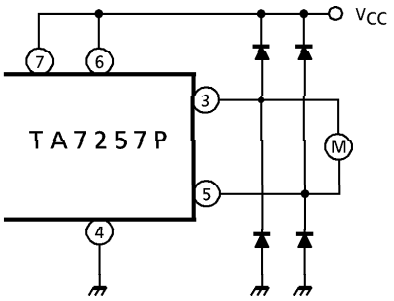


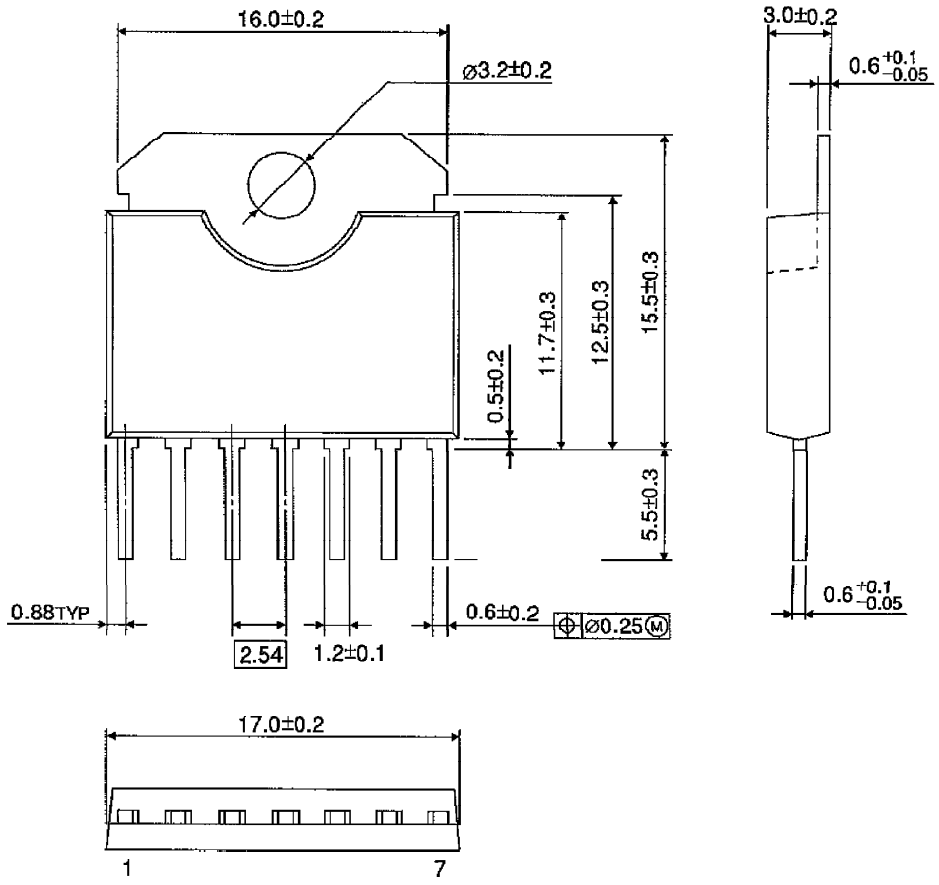
Fig.4

(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

HSIP7-P-2.54

Unit : mm



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