TA7260P

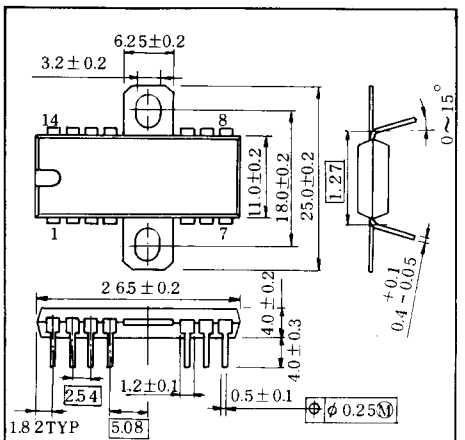
DC MOTOR DRIVER (2 PHASE Bi-DIRECTIONAL)

The TA7260P is a 2 Phase Bi-Directional type Motor Driver IC designed for use Floppy Disk, VTR and Tape Deck Motor Drivers.
It contains Output Power Drivers, Position Sensing Amplifiers, Control Amplifier and Voltage Regulator for external circuit.

FEATURES:

. Output Current is up to 0.9A(AVE).
. Built in Reverse Rotation Detector.
. Voltage Regulator for External Circuit
  : V_{OUT}=10.7V(Typ.), I_O=50mA(Max.)
. Few External Parts Required.

Unit in mm



Package width and length do not include mold protrusion.
Allowable mold protrusion is 0.15mm.

JEDEC	--
TOSHIBA	HDIP14-P-500

MAXIMUM RATINGS (Ta=25°C)

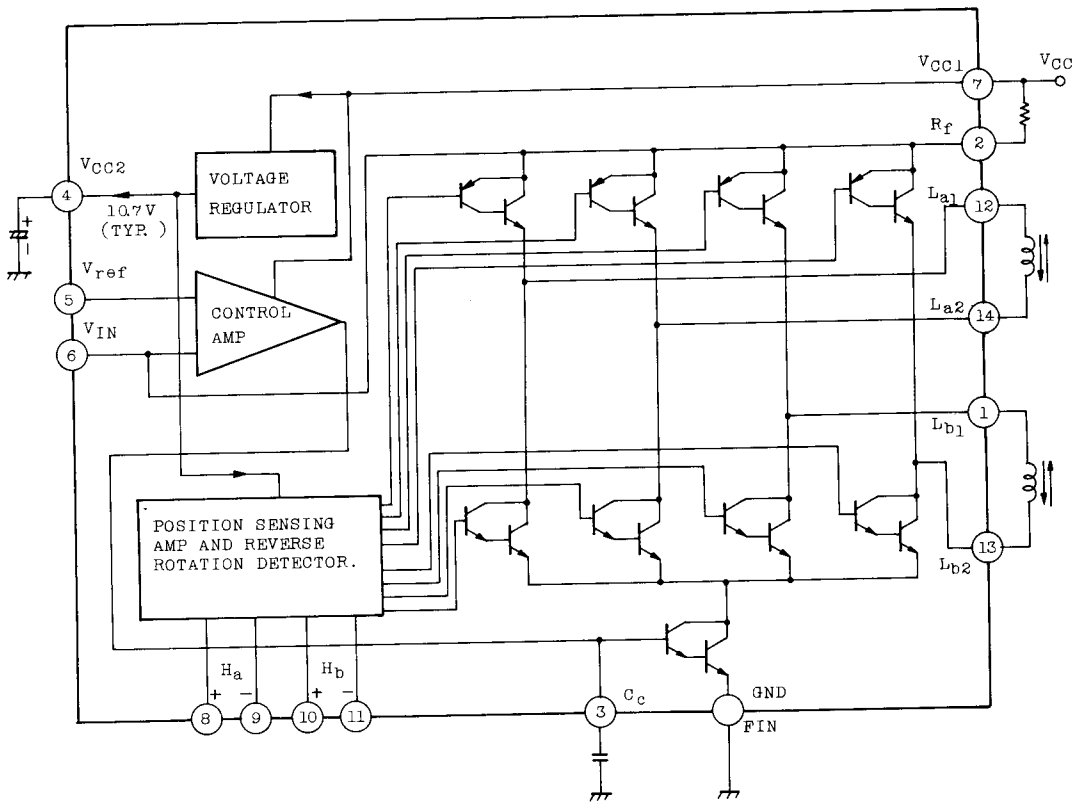
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	35	V
Output Current	I_{OUT}	900	mA
Regulator Output Current	I_{CC2}	50	mA
Power Dissipation	P_D	2.3	W
Operating Temperature	T_{opr}	-30 ~ 75	°C
Storage Temperature	T_{stg}	-55 ~ 150	°C

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, V_{CC}=30V, R_f=2.2Ω, R_L=54Ω, Ta=25°C)

CHARACTERISTIC			SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current			I_{CC}			5	-	20	mA
Input Offset Voltage			V_{IO}		V_{Rf}=20mV	-9	-	200	mV
Input Dead Band			V_{ID}		V_{Rf}=20mV	20	-	300	mV
Residual Output Voltage			V_{OR}			-	-	10	mV
Voltage Gain			G_V			0.85	1.0	1.5	
Saturation Voltage		Upper	V_{SAT1}			-	-	2.5	V
		Lower	V_{SAT2}			-	-	4.0	
Cut-off Current			I_ℓ			-	-	50	μA
Regulator		Output Voltage	V_{CC2}			10.0	10.7	11.4	V
		Load Regulation	ΔV_{CC2}		I_O=0 ~ 20mA	-	5	70	mV
		Temperature Coefficient	Tc V_{CC2}			-2	0	+2	mV/deg
Position Sensing Amp	Input Sensitivity		V_H			300	-	-	mV
	Operating DC Level	H_a Side	CMR (H_a)			V_{CC}-1	-	V_{CC2} +1	V
		H_b Side	CMR (H_b)			1	-	V_{CC2} -3.5	V
Operating Input Voltage (DC Level)		V_{IN} Side	CMR (V_{IN})			4	5	9	V
		V_{ref} Side	CMR (V_{ref})			4	5	9	

BLOCK DIAGRAM



TEST METHOD

(1) I_{CC} (Quiescent Current)

Use Measuring Circuit 1, $e_1 \sim e_4$ are specified in Table (Condition 1) e_5, e_6 are in Table 2 (Condition 1).

To measure a supply Current

(2) V_{IO} (Input Offset Voltage), V_{ID} (Input Dead Band), V_{OR} (Residual Output Voltage), G_V (Voltage Gain) (Refer to Input-Output Characteristics)

$e_1 \sim e_4$ are specification in Table 1 (Condition 1) and e_5 is 5.5V DC.

Measuring Procedures are follows.

a) Increase a e_6 voltage gradually from 5V DC, Measure a Input Voltage V_1 when the output voltage V_2 is equal to 120mV.
(In this condition $V_1=E_1$, $V_1=V_6-V_5$, $V_2=V_{Rf}=V_7 \sim V_2$)

b) More Increase the e_6 Voltage
Measure the V_1 when the V_2 is equal to 20mV (In this condition $V_1=E_3$)

c) Increase the e_6 Voltage 25mV above previous condition and measure the Input Voltage V_1. (In this condition $V_1=E_3$)

d) More increase the e_6 voltage gradually and measure the Input Voltage V_1 when the V_2 is equal to 120mV.
(In this condition $V_1=E_4$)

Electrical Characteristics are calculated by following equations.

$$V_{IO-} = E_2$$

$$V_{IO+} = E_4$$

$$V_{ID} = E_4-E_2$$

$$V_{OR-} = E_3$$

$$G_{V-} = \frac{100}{E_2-E_1 \ (mV)}$$

$$G_{V+} = \frac{100}{E_5-E_4 \ (mV)}$$

(3) $V_{SAT\ 1}$, $V_{SAT\ 2}$ (Output upper and lower side saturation voltage)
e_5 and e_6 are specified in Table 2 (Condition 2) $e_1 \sim e_4$ and condition of SW_1 and SW_2 are specified in Table 1 (Condition 1, 2, 3, 4) Measure V_3 and V_4 for each specified conditions.

(4) I_L (Leakage Current)
Measure a output transistor leakage current

(5) V_{CC2} (Built in Regulator output voltage)
Measure the V_{CC2} (4 PIN) DC voltage with specified load condition.

TABLE 1

(Unit:V)

	e_1	e_2	e_3	e_4	SW_1	SW_2
1	12.4	12.0	5.4	5.0	a	c
2	12.4	12.0	5.0	5.4	b	d
3	25.0	25.4	5.0	5.4	c	a
4	25.0	25.4	5.4	5.0	d	b

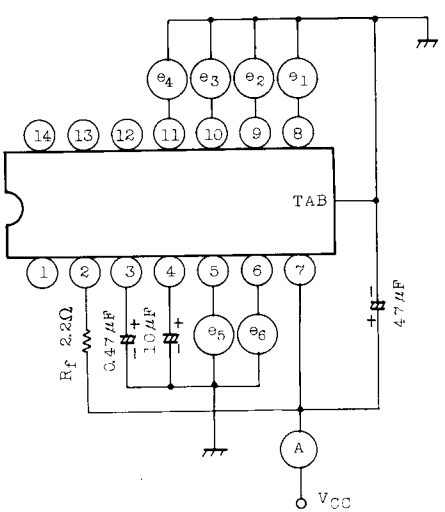
TABLE 2

(Unit:V)

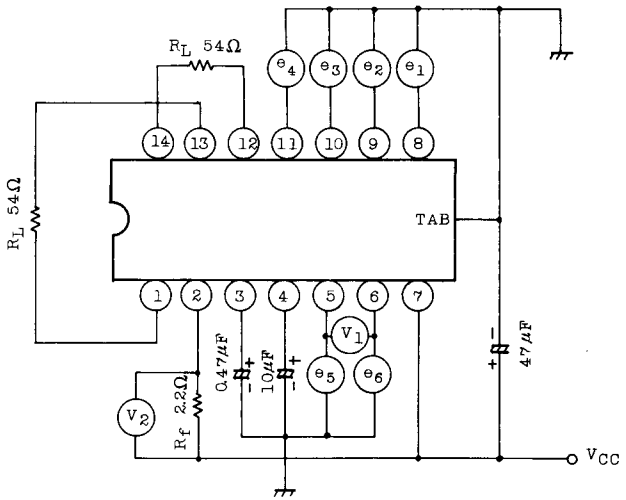
	e_5	e_6
1	5.5	5.5
2	6.5	5.5
2'	5.5	6.5

TEST CIRCUIT

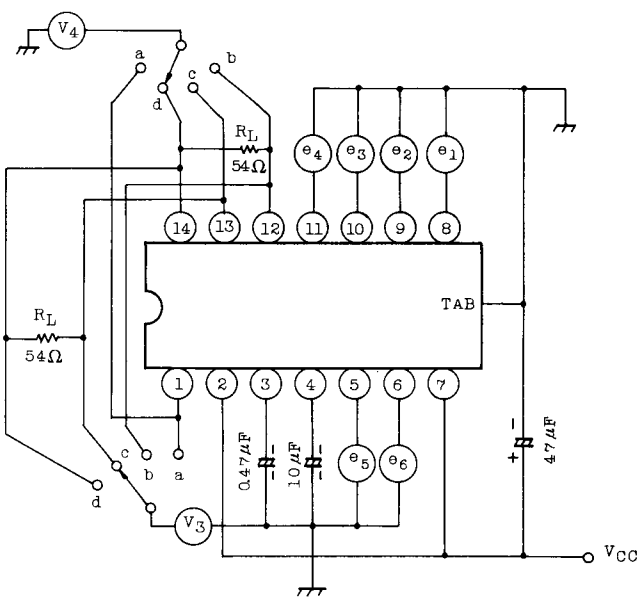
1. I_{CC}



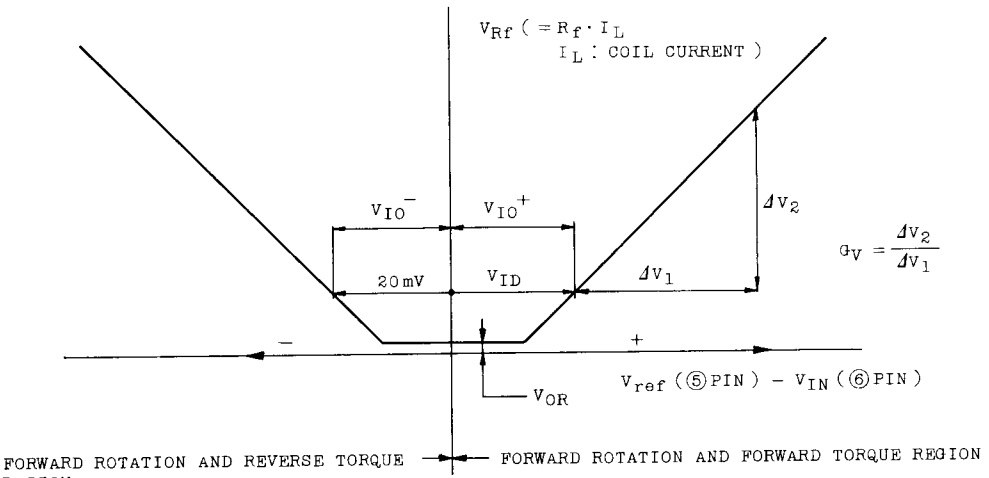
2. V_{IO}, V_{ID}, V_{OR}, G_V, V_{CC2}

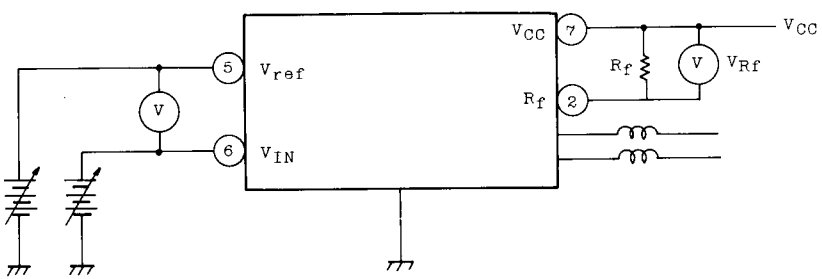


3. $V_{SAT\ 1}$, $V_{SAT\ 2}$



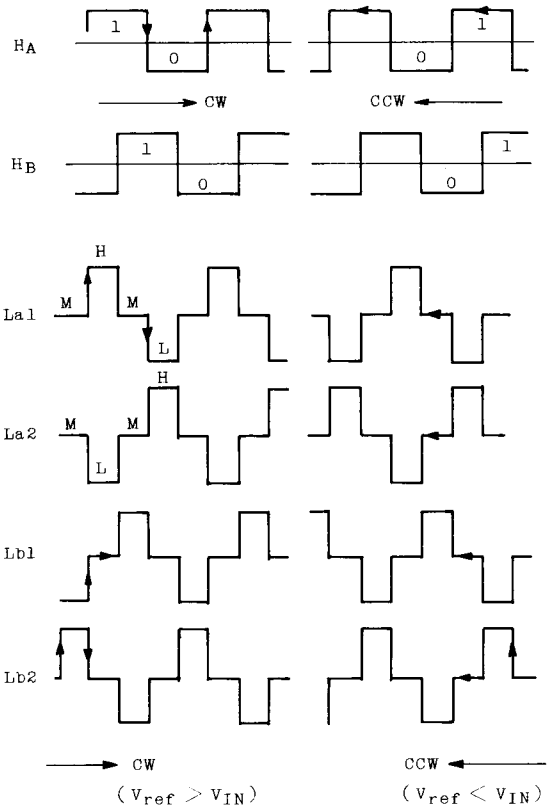
INPUT-OUTPUT CHARACTERISTICS

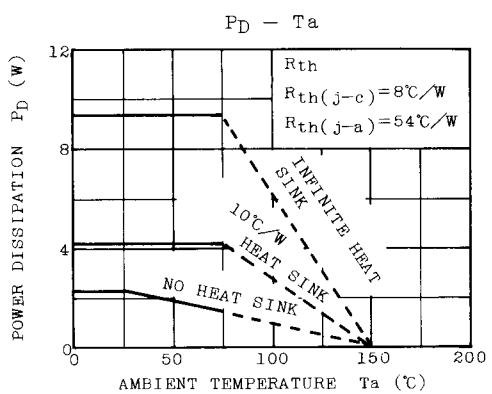




FUNCTION TABLE

	INPUT		OUTPUT			
	H_a	H_b	L_{a1}	L_{a2}	L_{b1}	L_{b2}
$V_{IN} < V_{ref}$	1	0	H	L	M	M
	1	1	M	M	H	L
	0	1	L	H	M	M
	0	0	M	M	L	H
$V_{IN} < V_{ref}$	1	1	M	M	L	H
	1	0	L	H	M	M
	0	0	M	M	H	L
	0	1	H	L	M	M


H_A
1
0
CW
CCW
H_B
H
M
L
La1
La2
Lb1
Lb2
CW
($V_{ref} > V_{IN}$)
CCW
($V_{ref} < V_{IN}$)


P_D – Ta
Rth
$R_{th(j-c)}$ = 8℃/W
$R_{th(j-a)}$ = 54℃/W
INFINITE HEAT SINK
10℃/W HEAT SINK
NO HEAT SINK
POWER DISSIPATION P_D (W)
12
8
4
0
0
50
100
150
200
AMBIENT TEMPERATURE Ta (℃)

APPLICATION CIRCUIT