

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

## TA7262P, TA7262P(LB), TA7262F

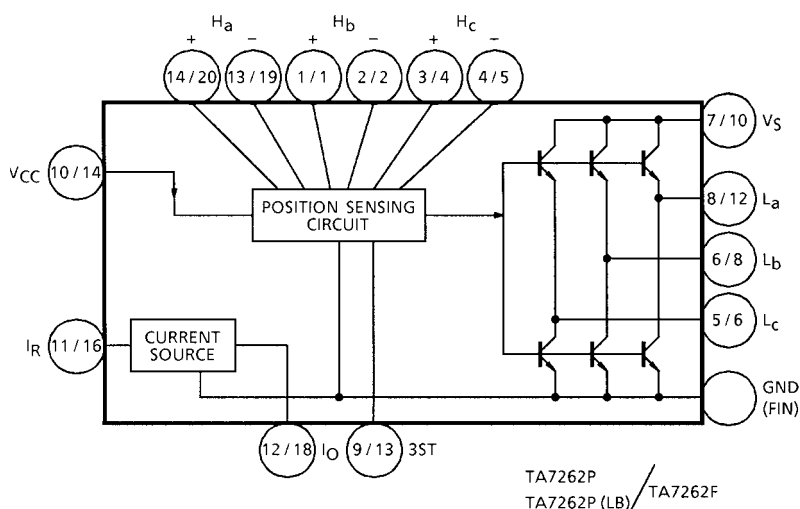
### DC Motor Driver (3-Phase Bi-Directional)

The TA7262P/P (LB)/F are 3-Phase Bi-Directional supply-voltage-control Motor Driver IC. It's designed especially for energy saving Motor Control System. It contains Power Drivers, CW/CCW control circuit position sensing amplifiers and current regulator for external connected position sensing elements.

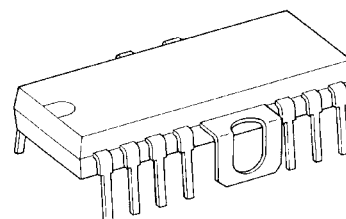
### Features

- Output current is up to 1.5 A (AVE.).
- Supply voltage control motor driver.
- Variable current source for hall sensor including.
- Few external parts required.
- High sensitivity of position sensing inputs.

### Block Diagram

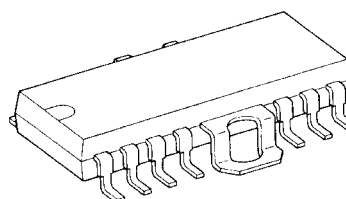


TA7262P



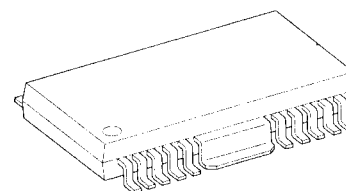
HDIP14-P-500-2.54A

TA7262P (LB)



HSOP14-P-2.54

TA7262F



HSOP20-P-450-1.00

### Weight

HDIP14-P-500-2.54A: 3.00 g (typ.)  
 HSOP14-P-2.54: 3.00 g (typ.)  
 HSOP20-P-450-1.00: 0.79 g (typ.)

## Pin Function

Pin No.		Symbol	Function Description
P Type	F Type		
1	1	H <sub>b</sub> +	b-phase Hall Amp. positive input terminal
2	2	H <sub>b</sub> -	b-phase Hall Amp. negative input terminal
3	4	H <sub>c</sub> +	c-phase Hall Amp. positive input terminal
4	5	H <sub>c</sub> -	c-phase Hall Amp. negative input terminal
5	6	L <sub>c</sub>	c-phase drive output terminal
6	8	L <sub>b</sub>	b-phase drive output terminal
7	10	V <sub>S</sub>	Supply voltage terminal for motor driver
8	12	L <sub>a</sub>	a-phase drive output terminal
9	13	3ST	Forward rotation/Reverse rotation/Stop switch terminal
10	14	V <sub>CC</sub>	Power supply input terminal for small signal
11	16	I <sub>R</sub>	Hall element bias current control terminal
12	18	I <sub>O</sub>	Hall element bias negative-side connector terminal
13	19	H <sub>a</sub> -	a-phase Hall Amp. negative input terminal
14	20	H <sub>a</sub> +	a-phase Hall Amp. positive input terminal
Fin	Fin	GND	—

F Type: Pin (3), (7), (9), (11), (15), (17) N. C.

## Function

FRS Input	Position Sensing Input			Coil Output		
	H <sub>a</sub>	H <sub>b</sub>	H <sub>c</sub>	L <sub>a</sub>	L <sub>b</sub>	L <sub>c</sub>
CW	1	0	1	H	L	M
	1	0	0	H	M	L
	1	1	0	M	H	L
	0	1	0	L	H	M
	0	1	1	L	M	H
	0	0	1	M	L	H
CCW	1	0	1	L	H	M
	1	0	0	L	M	H
	1	1	0	M	L	H
	0	1	0	H	L	M
	0	1	1	H	M	L
	0	0	1	M	H	L
STOP	1	0	1	High impedance		
	1	0	0			
	1	1	0			
	0	1	0			
	0	1	1			
	0	0	1			

## Maximum Ratings (Ta = 25°C)

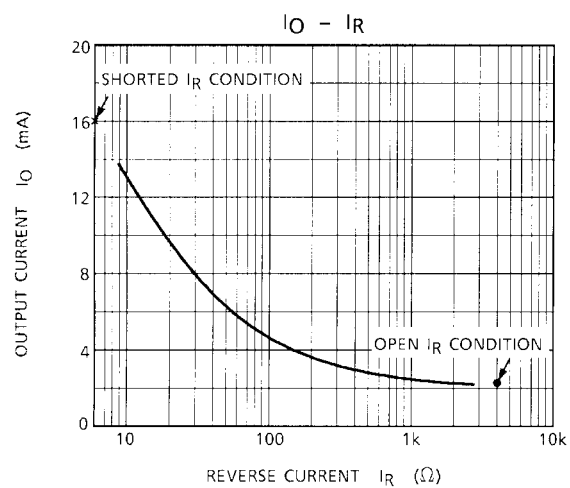
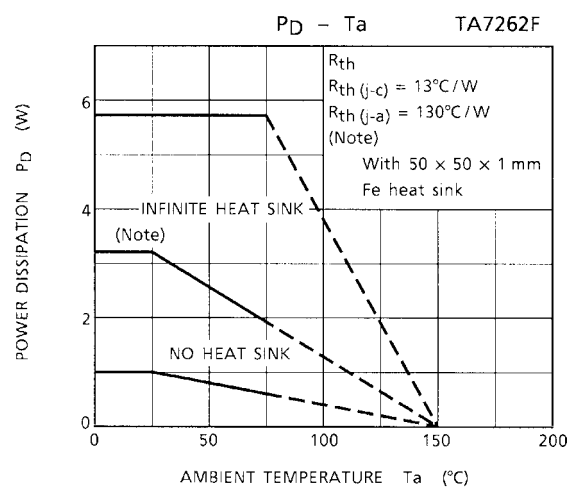
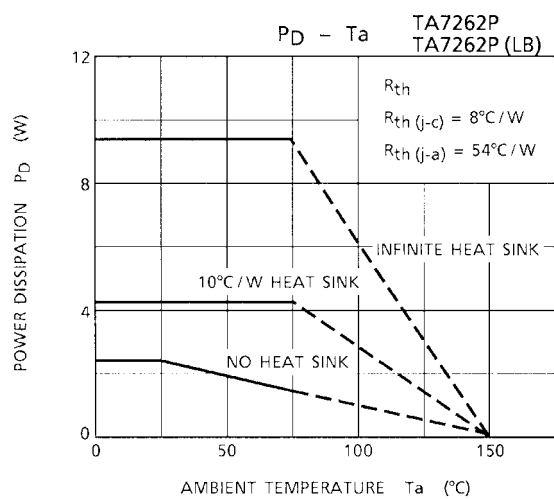
Characteristics		Symbol	Rating	Unit
Supply voltage (MOTOR)		V <sub>S</sub>	25	V
Supply voltage (CONTROL)		V <sub>CC</sub>	25	V
Output current (MOTOR)		I <sub>O</sub>	1.5	A
Output current		I <sub>CS</sub>	40	mA
Position sensing Input voltage		V <sub>H</sub>	400	mV <sub>p-p</sub>
Power dissipation	TA7262P	P <sub>D</sub> (Note)	2.3	W
	TA7262P (LB)		2.3	
	TA7262F		1.0	
Operating temperature		T <sub>opr</sub>	-30 to 75	°C
Storage temperature		T <sub>stg</sub>	-55 to 150	°C

Note: No heat sink

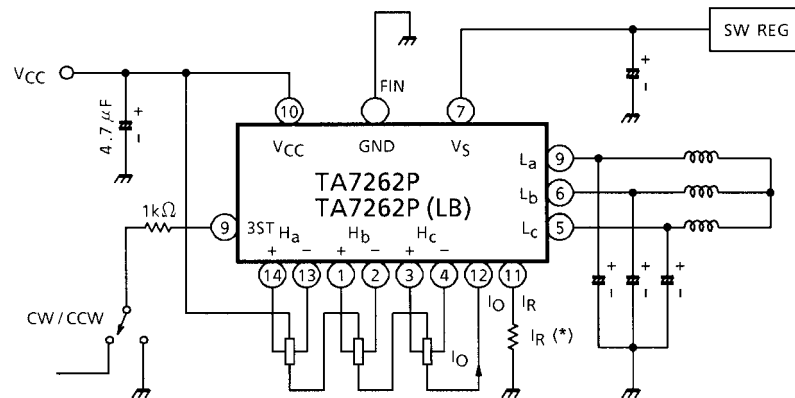
## Electrical Characteristics

(unless otherwise specified, V<sub>CC</sub> = 9 V, V<sub>S</sub> = 12.8 V, 3ST = 5 V, V<sub>H</sub> = ±20 mV, R<sub>L</sub> = 6 Ω, Ta = 25°C)

Characteristics		Symbol	Test Circuit	Test condition (ta7262p, ta7262p (lb))	Min	Typ.	Max	Unit
Quiescent current		I <sub>CC-1</sub>	—	V <sub>CC</sub> = 9 V, 3 ST GND, V <sub>S</sub> open	—	5.7	6.5	mA
		I <sub>CC-2</sub>		V <sub>CC</sub> = 25 V, 3 ST GND, V <sub>S</sub> open	—	8.0	11.0	
		I <sub>CC-3</sub>		Stop (3 ST = V <sub>CC</sub> )	—	—	4	
Saturation voltage		V <sub>SAT</sub>	—	I <sub>O</sub> = 1 A, (total)	—	—	2.0	V
Saturation voltage differential		D-V <sub>SAT</sub>	—	I <sub>O</sub> = 1 A	—	100	180	mV
Cut-off current	Upper	I <sub>CC-U</sub>	—	V <sub>S</sub> = 22 V	—	—	50	μA
	Lower	I <sub>CC-L</sub>		V <sub>S</sub> = 22 V	—	—	50	
Position sensing input voltage	Input sensitivity	V <sub>H</sub>	—	—	—	20	—	mV <sub>p-p</sub>
	Input offset	V <sub>OFST</sub>		—	—	0	5	mV
	Operating DC level	CMR		—	2	—	V <sub>CC</sub> - 2.5	V
CW/CCW control operating voltage	CW	V <sub>FW</sub>	—	—	1.2	—	7.8	V
	Stop	V <sub>STP</sub>		—	8.6	V <sub>CC</sub>	—	
	CCW	V <sub>RV</sub>		—	—	0	0.4	
Output current of current source		I <sub>CS-1</sub>	—	I <sub>R</sub> open	1.5	2.2	3.0	mA
		I <sub>CS-2</sub>		I <sub>R</sub> = 100 Ω	3.0	4.4	5.5	

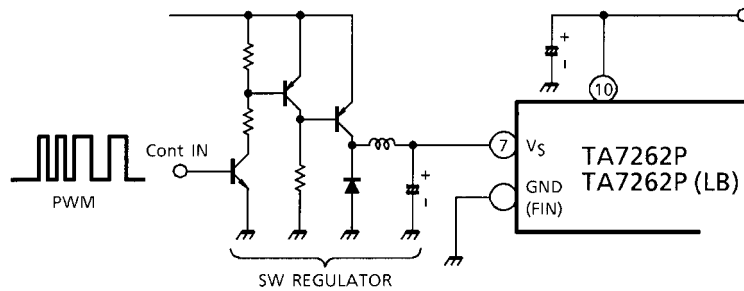


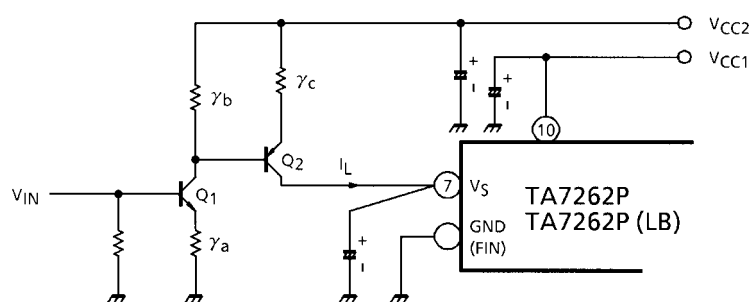
## Application Circuit 1



\*: Hall sensor driving current ( $I_O$ ) can be changed by  $I_R$ .  
Refer to  $I_R$  vs  $I_O$  characteristics.

## Application Circuit 2

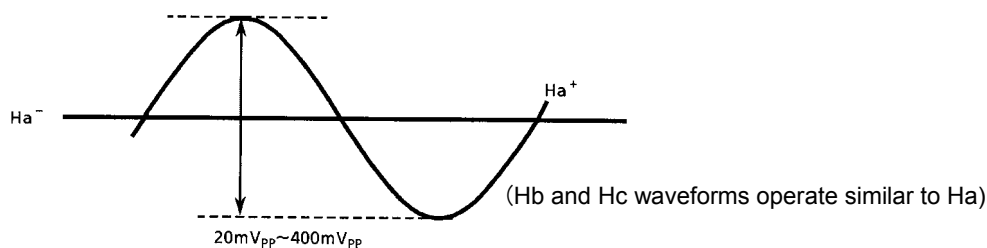




$$I_L \doteq \frac{\gamma_b}{\gamma_a \gamma_c} \cdot V_{IN} - \frac{1}{\gamma_c} \left( \frac{\gamma_b}{\gamma_c} \cdot V_{BE1} + V_{BE2} \right)$$

$$\doteq K_1 \cdot V_{IN} + K_2 \quad (K_1, K_2 = \text{Constant})$$

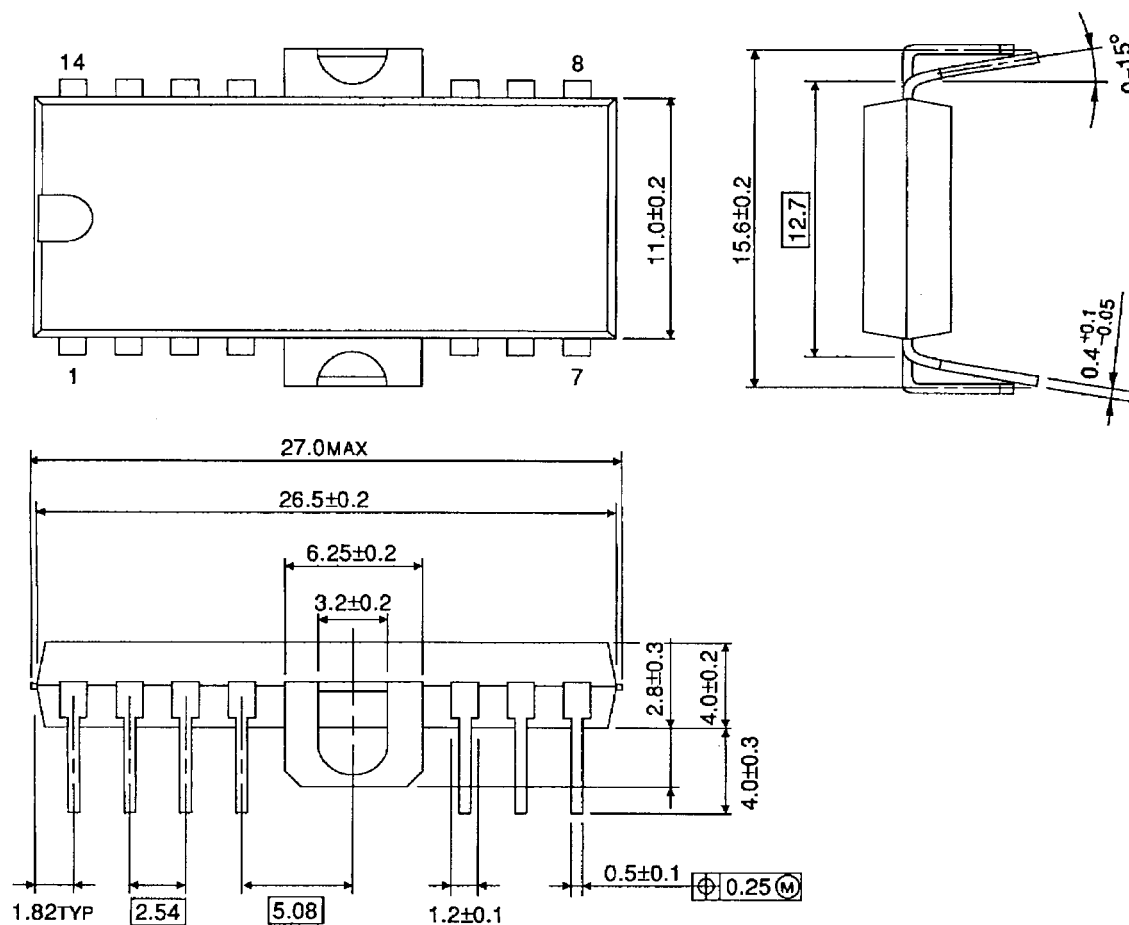
Note 3: Voltage of the position sensing input: 20mV<sub>PP</sub> to 400mV<sub>PP</sub>.



## Package Dimensions

HDIP14-P-500-2.54A

Unit : mm

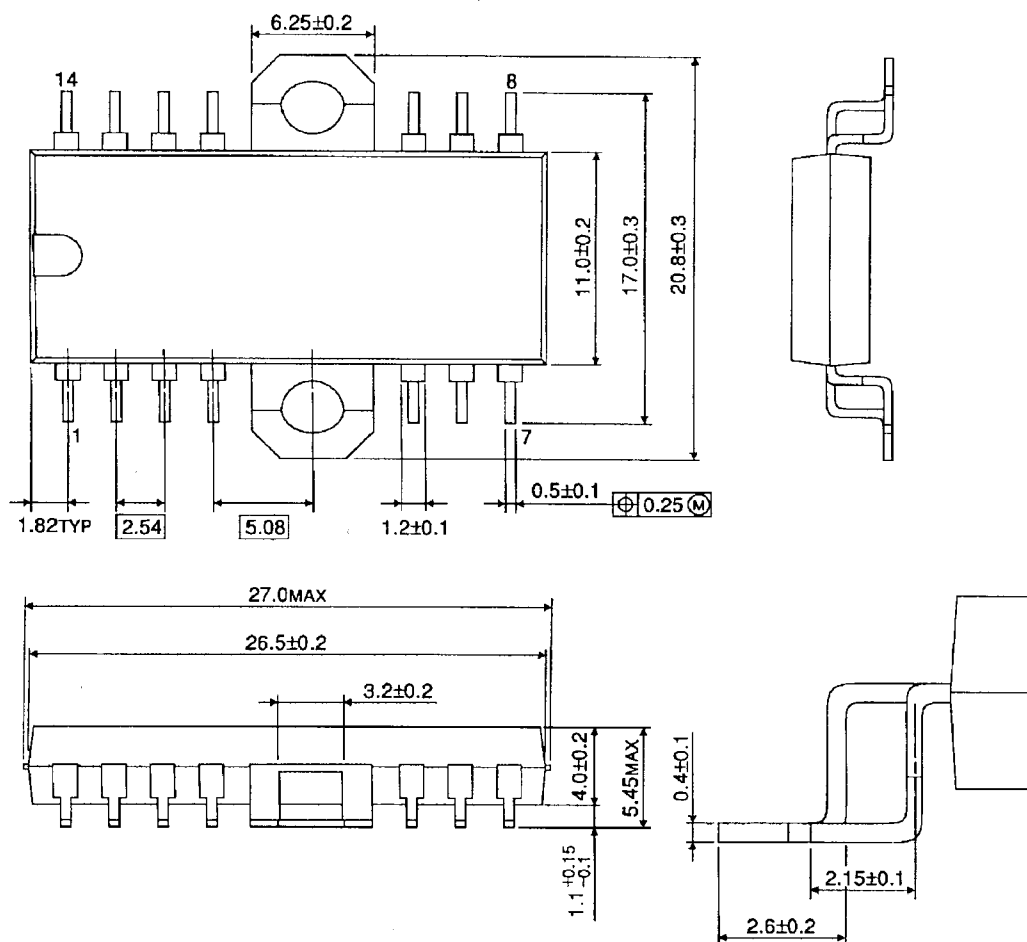


Weight: 3.00 g (typ.)

## Package Dimensions

HSOP14-P-2.54

Unit : mm



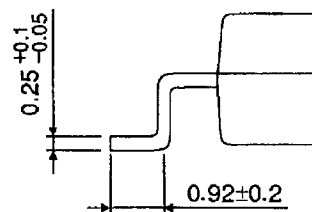
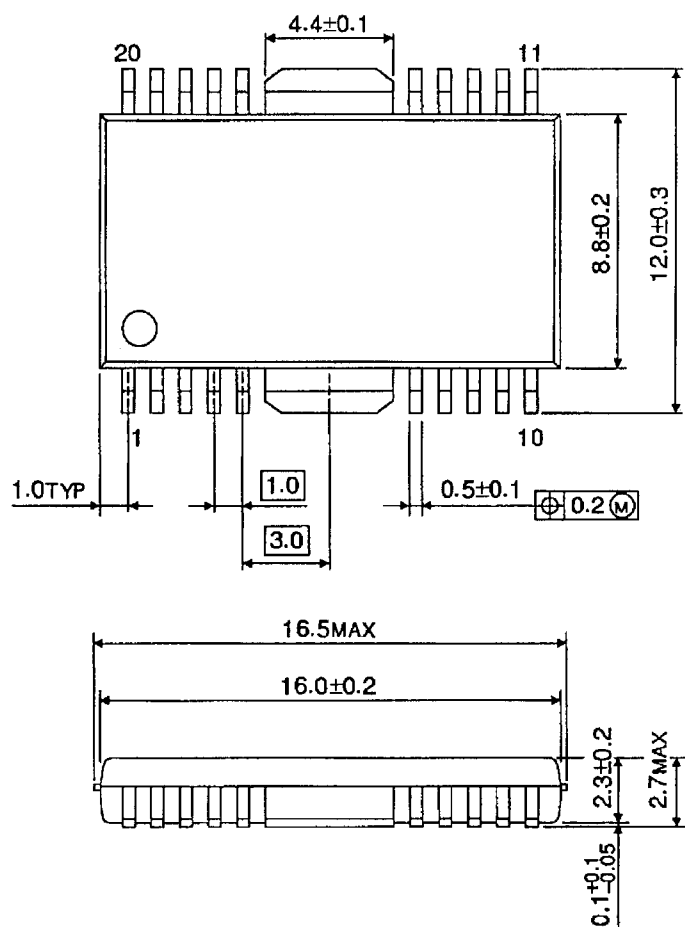
Weight: 3.00 g (typ.)



## Package Dimensions

HSOP20-P-450-1.00

Unit : mm



Weight: 0.79 g (typ.)

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