

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7262P, TA7262P(LB), TA7262F

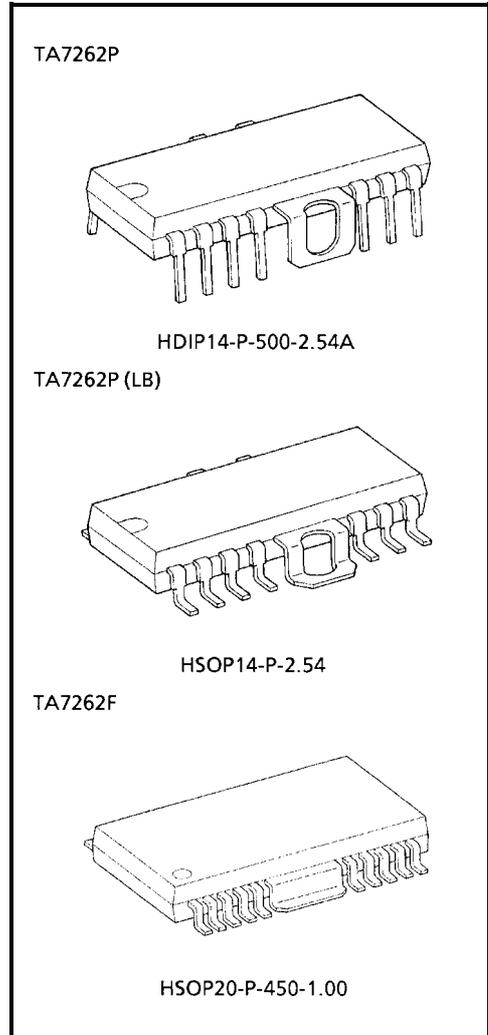
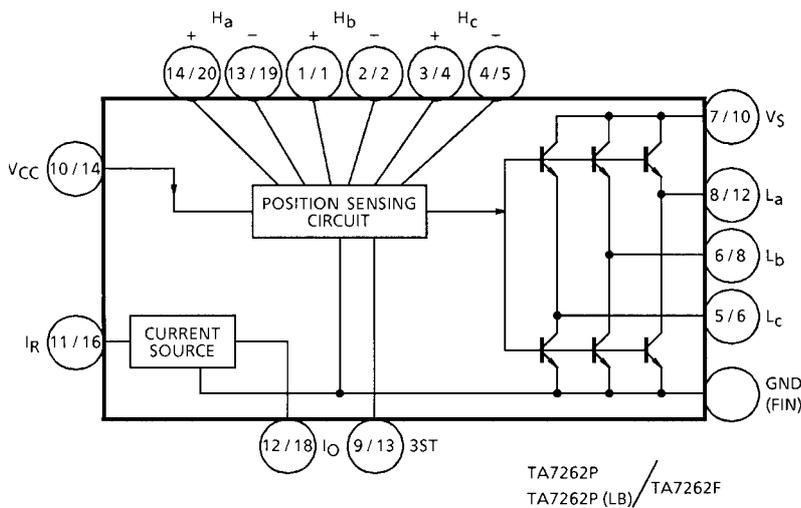
DC MOTOR DRIVER (3 PHASE Bi-DIRECTIONAL)

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



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 _b +	b-phase Hall Amp. positive input terminal
2	2	H _b -	b-phase Hall Amp. negative input terminal
3	4	H _c +	c-phase Hall Amp. positive input terminal
4	5	H _c -	c-phase Hall Amp. negative input terminal
5	6	L _c	c-phase drive output terminal
6	8	L _b	b-phase drive output terminal
7	10	V _S	Supply voltage terminal for motor driver
8	12	L _a	a-phase drive output terminal
9	13	3ST	Forward rotation / Reverse rotation / Stop switch terminal
10	14	V _{CC}	Power supply input terminal for small signal
11	16	I _R	Hall element bias current control terminal
12	18	I _O	Hall element bias negative-side connector terminal
13	19	H _a -	a-phase Hall Amp. negative input terminal
14	20	H _a +	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 _a	H _b	H _c	L _a	L _b	L _c
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)

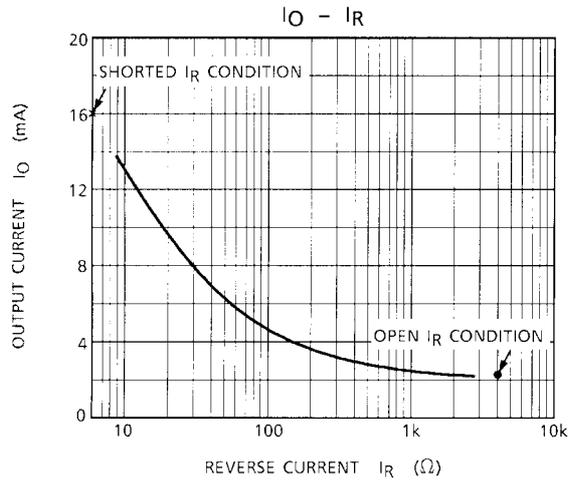
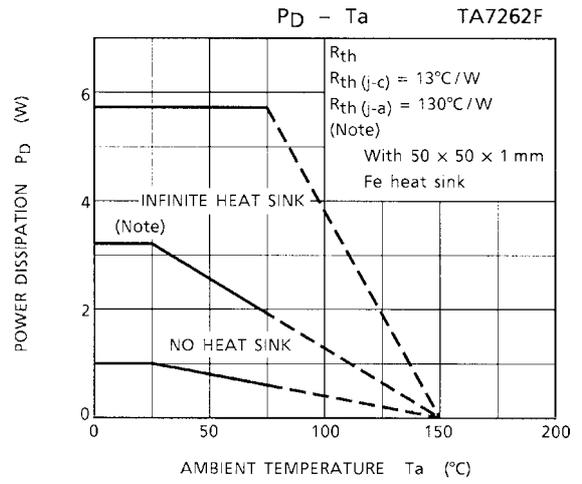
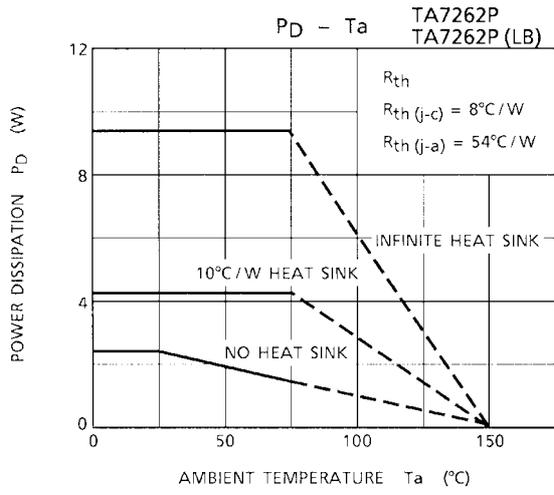
CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage (MOTOR)		V _S	25	V
Supply Voltage (CONTROL)		V _{CC}	25	V
Output Current (MOTOR)		I _O	1.5	A
Output Current		I _{CS}	40	mA
Position Sensing Input Voltage		V _H	400	mV _{p-p}
Power Dissipation	TA7262P	P _D (Note)	2.3	W
	TA7262P (LB)		2.3	
	TA7262F		1.0	
Operating Temperature		T _{opr}	-30~75	°C
Storage Temperature		T _{stg}	-55~150	°C

Note: No heat sink

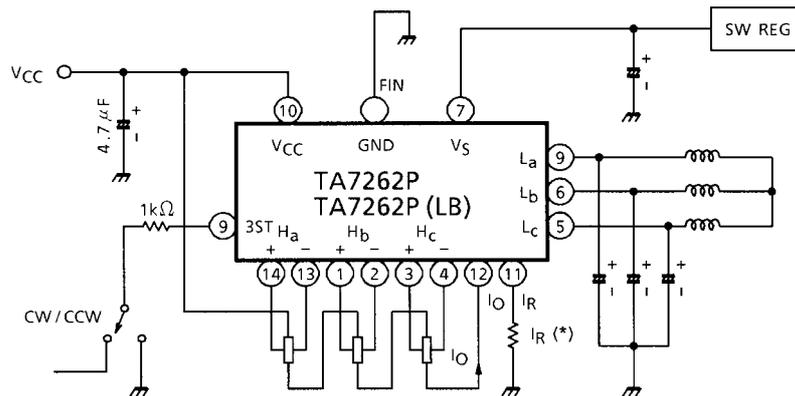
ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, V_{CC} = 9 V, V_S = 12.8 V, 3ST = 5 V, V_H = ±20 mV, R_L = 6 Ω, Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION (TA7262P, TA7262P (LB))	MIN	TYP.	MAX	UNIT	
Quiescent Current		I _{CC-1}	—	V _{CC} = 9 V, 3 ST GND, V _S open	—	5.7	6.5	mA	
		I _{CC-2}		V _{CC} = 25 V, 3 ST GND, V _S open	—	8.0	11.0		
		I _{CC-3}		Stop (3 ST = V _{CC})	—	—	4		
Saturation Voltage		V _{SAT}	—	I _O = 1 A, (total)	—	—	2.0	V	
Saturation Voltage Differential		D-V _{SAT}	—	I _O = 1 A	—	100	180	mV	
Cut-off Current	Upper	I _{CC-U}	—	V _S = 22 V	—	—	50	μA	
	Lower	I _{CC-L}		V _S = 22 V	—	—	50		
Position Sensing Input Voltage	Input Sensitivity	V _H	—	—	—	20	—	mV _{p-p}	
	Input Offset	V _{OFST}		—	—	—	0	5	mV
	Operating DC Level	CMR		—	—	2	—	V _{CC} - 2.5	V
CW / CCW Control Operating Voltage	CW	V _{FW}	—	—	1.2	—	7.8	V	
	Stop	V _{STP}		—	—	8.6	V _{CC}		—
	CCW	V _{RV}		—	—	—	0		0.4
Output Current of Current Source		I _{CS-1}	—	I _R open	1.5	2.2	3.0	mA	
		I _{CS-2}		I _R = 100 Ω	3.0	4.4	5.5		

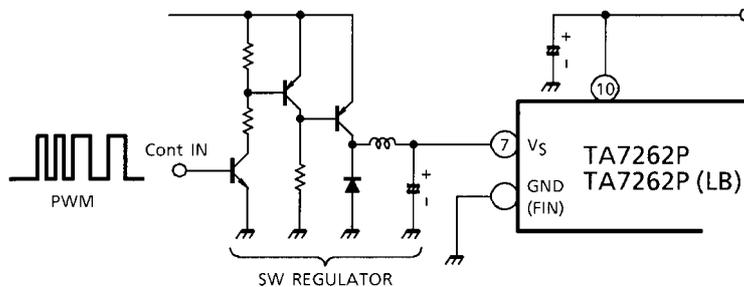


APPLICATION CIRCUIT 1

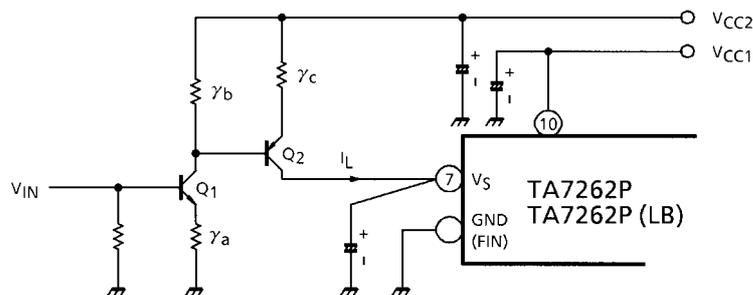


*: Hall sensor driving current (I_O) can be changed by I_R .
Refer to I_R vs I_O characteristics.

APPLICATION CIRCUIT 2



APPLICATION CIRCUIT 3



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

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

Q_2 works as a Current Regulator for Output Coil. Therefore, Collector to Emitter Voltage of Q_2 is varied in accordance with required coil current.

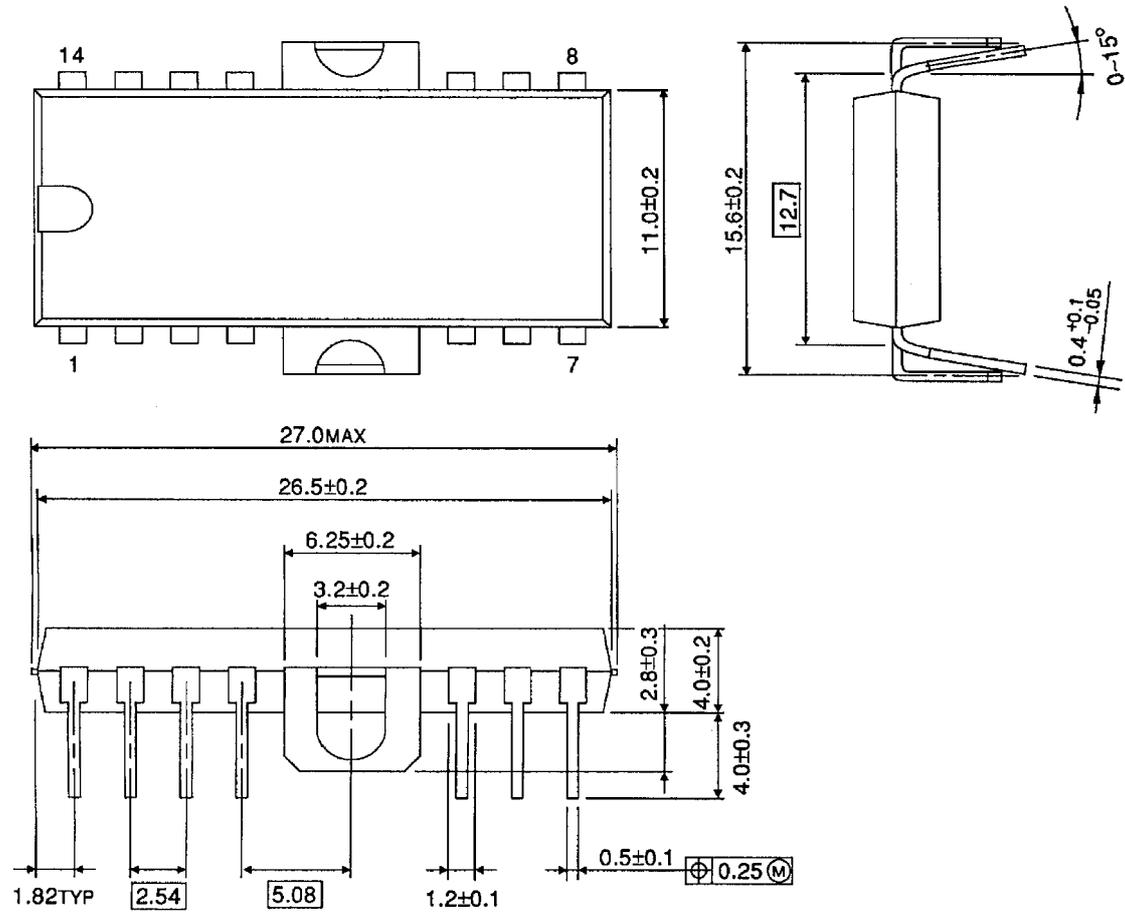
Note 1: Utmost care is necessary in the design of the output line, V_S and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

Note 2: Don't keep 3 ST terminal open.

PACKAGE DIMENSIONS

HDIP14-P-500-2.54A

Unit: mm

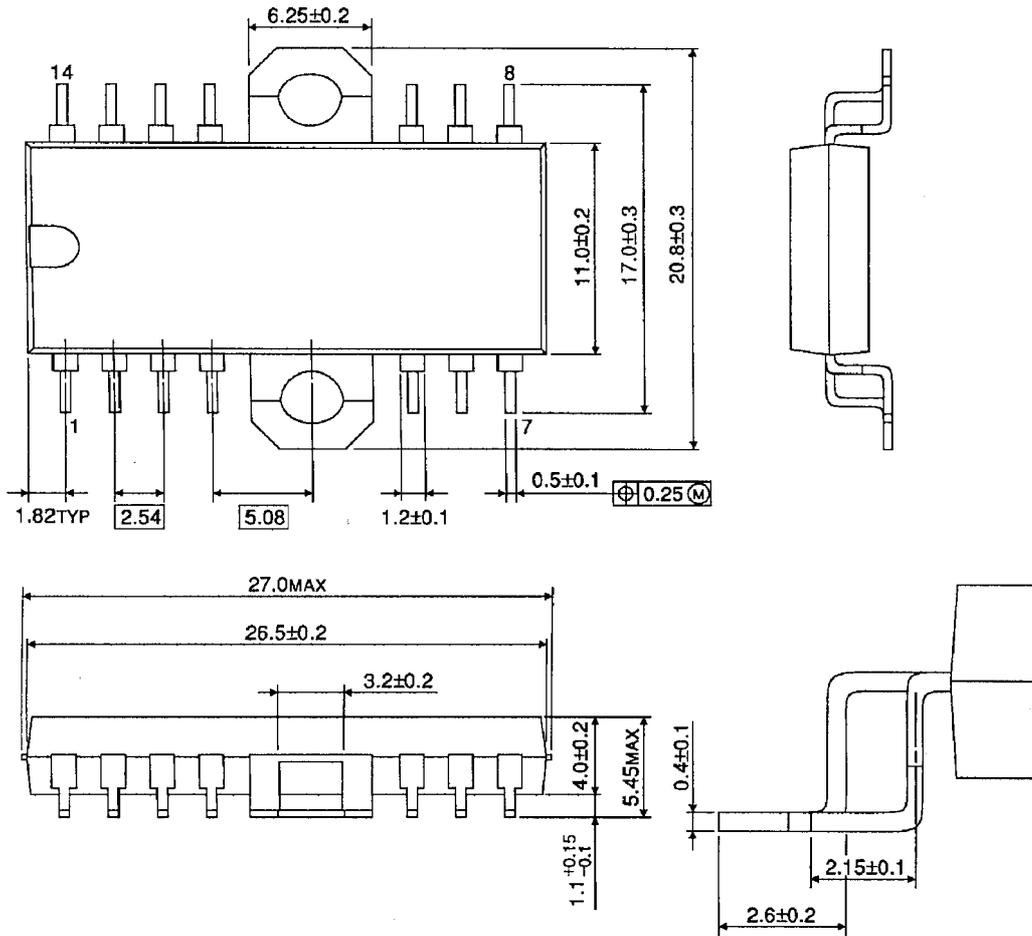


Weight: 3.00 g (Typ.)

PACKAGE DIMENSIONS

HSOP14-P-2.54

Unit: mm

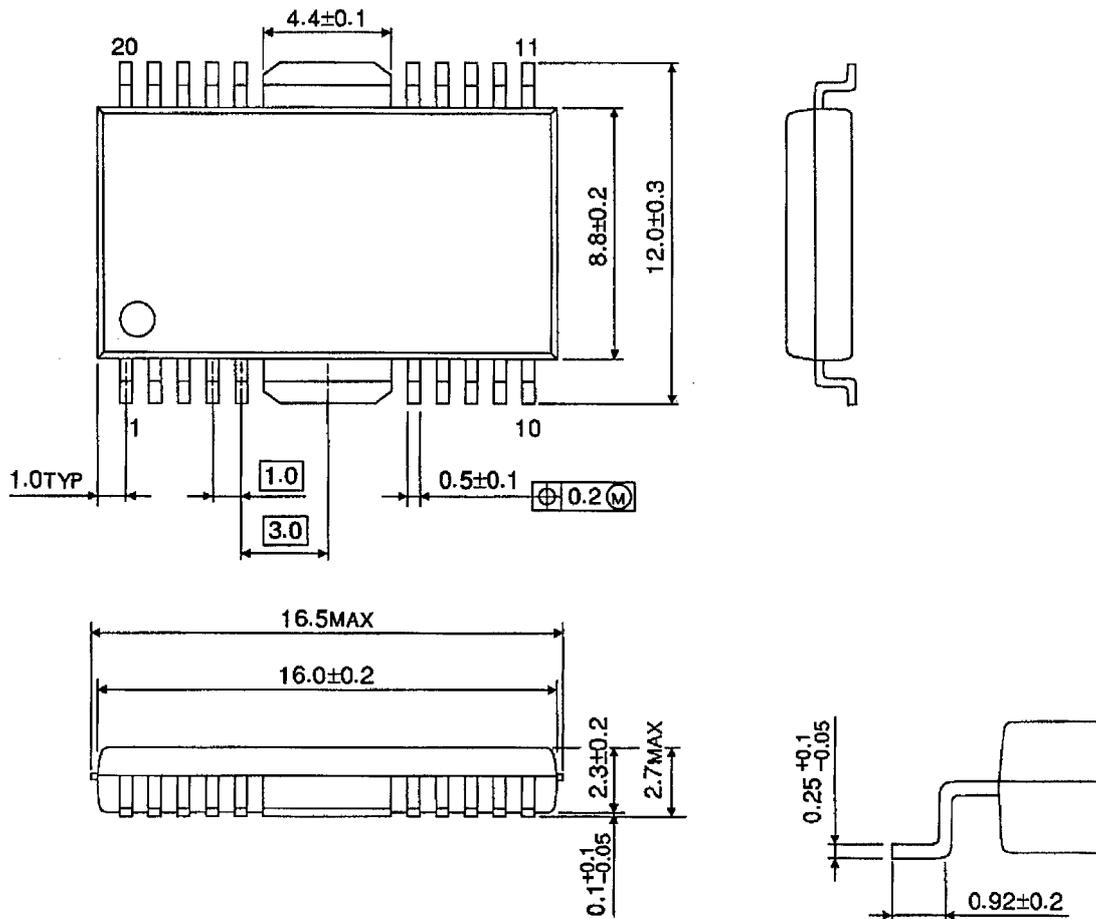


Weight: 3.00 g (Typ.)

PACKAGE DIMENSIONS

HSOP20-P-450-1.00

Unit: mm



Weight: 0.79 g (Typ.)

RESTRICTIONS ON PRODUCT USE

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