TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7259P,TA7259P(LB),TA7259F

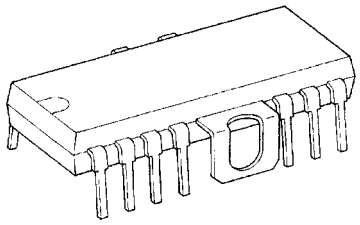
DC MOTOR DRIVER IC

The TA7259P is a 3−phase Bi−directional motor driver IC.
It designed for use VTR tape deck, floppy disk and record player motor drivers.
It contains output power drivers, position sensing circuits, control amplifier and CW / CCW control circuit.

FEATURES

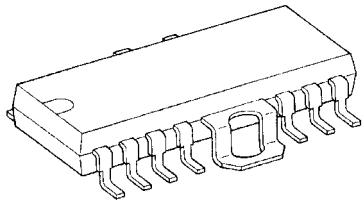
- 3−phase Bi−directional driver and output current up to ±1.2 A.
- Few external parts required.
- Wide operating supply voltage range: $V_{CC\ (opr.)}$ MIN. = 7 V
- Forward and reverse rotation is controlled simply by means of a CW / CCW control signal fed into FRS.
- High sensitivity of position sensing amplifier.
  (V_H = 10 mV (Typ.), recommend to use TOSHIBA Ga−As hall sensor "THS" series.
- Surge protect diode connected for all input terminals.
  (Position sensing, control, CW / CCW control inputs.)
- DIP−14F power package.

TA7259P



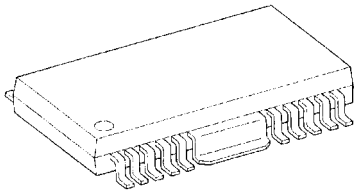
HDIP14-P-500-2.54A

TA7259P (LB)



HSOP14-P-2.54

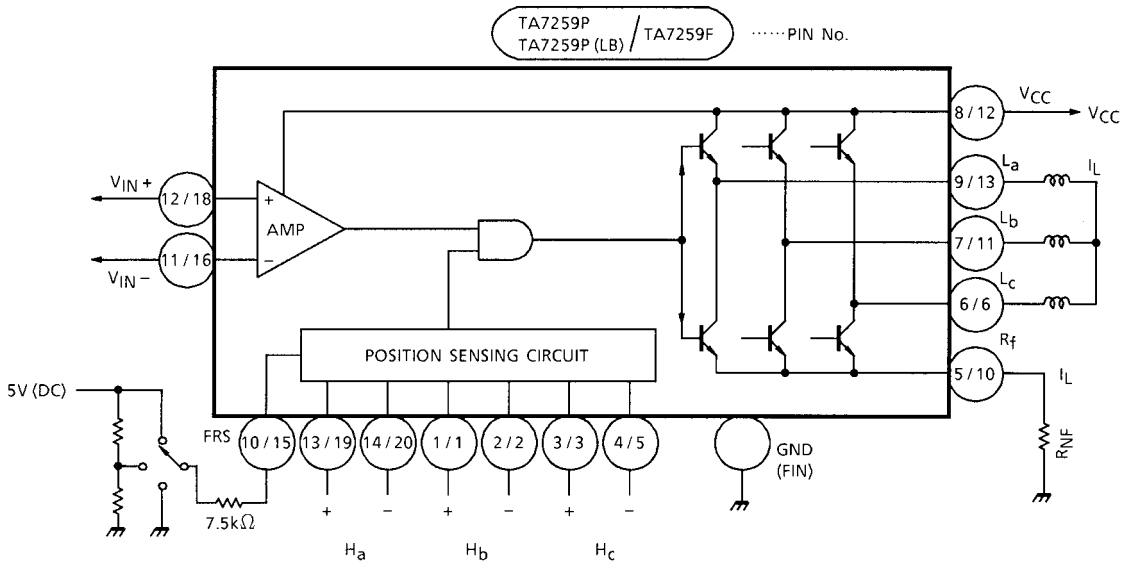
TA7259F



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.)

BLOCK DIAGRAM



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	3	H_c +	c−phase Hall Amp. positive input terminal
4	5	H −	c−phase Hall Amp. negative input terminal
5	10	R_F	Output current detection terminal
6	6	L_c	c−phase drive output terminal
7	11	L_b	b−phase drive output terminal
8	12	V_{CC}	Power supply input terminal
9	13	L_a	a−phase drive output terminal
10	15	FRS	Forward / Reverse / Stop switch terminal
11	16	V_{IN} −	Control Amp, negative input terminal
12	18	V_{IN} +	Control Amp, positive input terminal
13	19	H_a +	a−phase Hall Amp. positive input terminal
14	20	H_a −	a−phase Hall Amp. negative input terminal
Fin	Fin	GND	GND Terminal

FUNCTION

FRS (10 PIN)	POSITION SENSING INPUT			COIL OUTPUT		
	H_a	H_b	H_c	L_a	L_b	L_c
L	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
H	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
M	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)

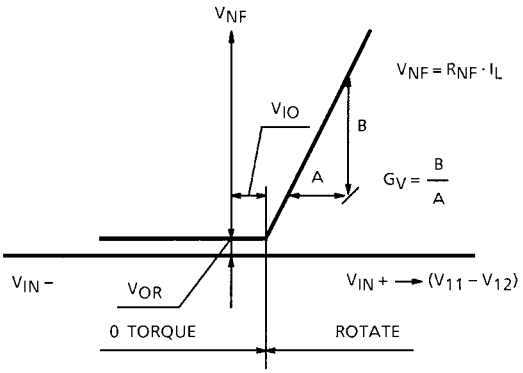
CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	26	V
Output Current		I_O	1.2	A
Power Dissipation (Note)	TA7259P	P_D	2.3	W
	TA7259P (LB)		2.3	
	TA7259F		1.0	
Operating Temperature		Topr	−30~75	°C
Storage Temperature		T_{stg}	−55~150	°C

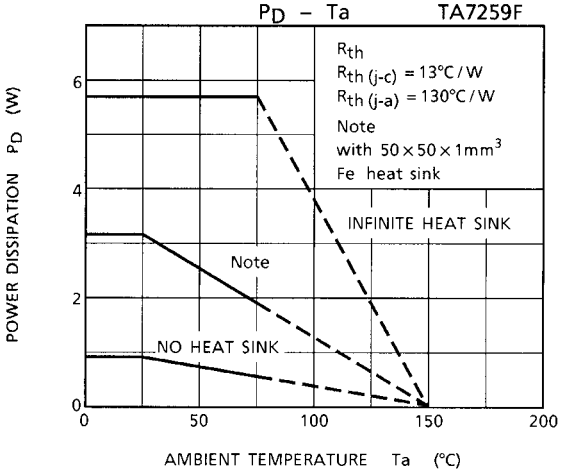
Note: No heat sink.

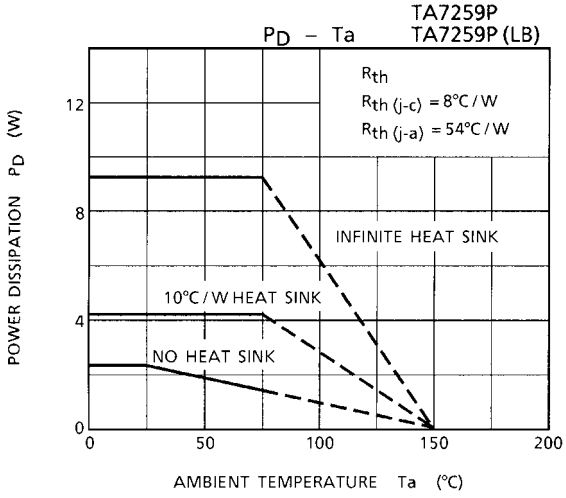
ELECTRICAL CHARACTERISTICS (Unless otherwise specified, V_{CC} = 12 V, Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Quiescent Current		I_{CC1}	—	FRS open	2	4	7	mA
		I_{CC2}		FRS = 5 V	2	5	9	
		I_{CC3}		V_{CC} = 22 V, FRS = GND	2	5	9	
Input Offset Voltage		V_{IO}	—	—	—	40	—	mV
Residual Output Voltage		V_{OR}	—	V_{IN} − = V_{IN} + = 7 V	—	0	10	mV
Voltage Gain		G_V	—	R_{NF} = 2.2 Ω	—	15.0	—	—
Saturation Voltage	Upper	V_{SAT1}	—	I_L = 400 mA	—	1.0	1.5	V
	Lower	V_{SAT2}	—		—	0.4	1.0	
Cut-off Current	Upper	I_{OC1}	—	V_C = 20 V	—	—	20	μA
	Lower	I_{OC2}	—		—	—	20	
Position sensing Input Sensitivity		V_H	—	—	—	10	—	mA
Maximum Position Sensing Input Voltage		V_H MAX.	—	—	—	—	400	mV_{p-p}
Input Operating Voltage	Position	CMR_H	—	—	2.0	—	V_{CC} − 2.5	V
	Control	CMR_C	—	—	2.0	—	V_{CC} − 2.5	
Rotation Control Input Voltage	CW	V_F	—		—	0	0.4	V
	STOP	V_S	—	—	2.5	3.0	3.5	
	CCW	V_R	—	—	4.5	5.0	5.8	

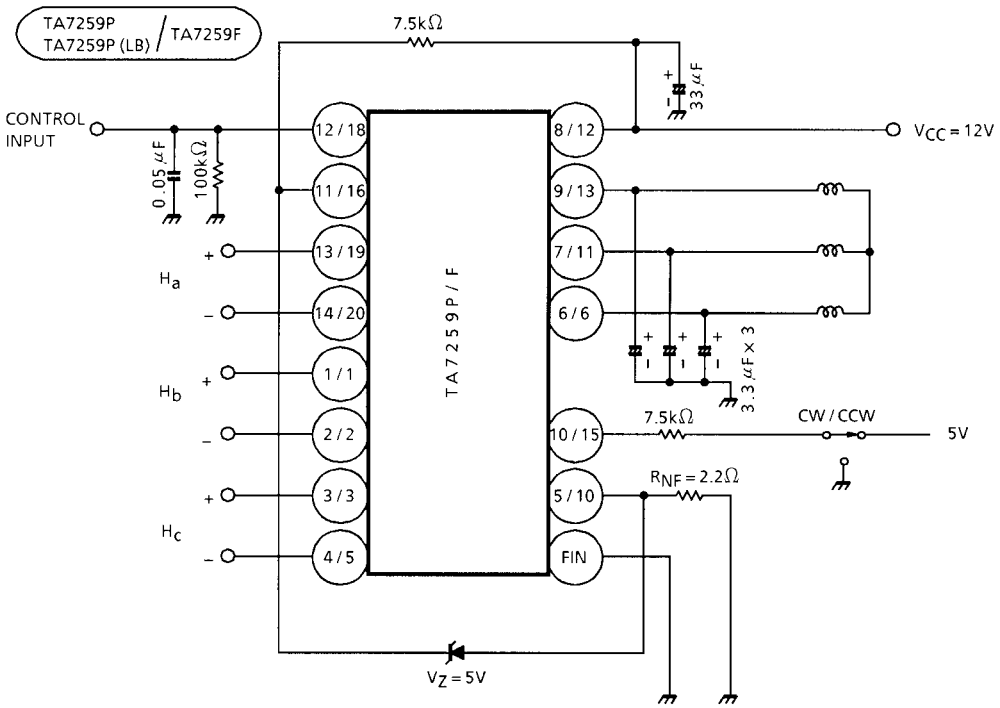
INPUT vs OUTPUT







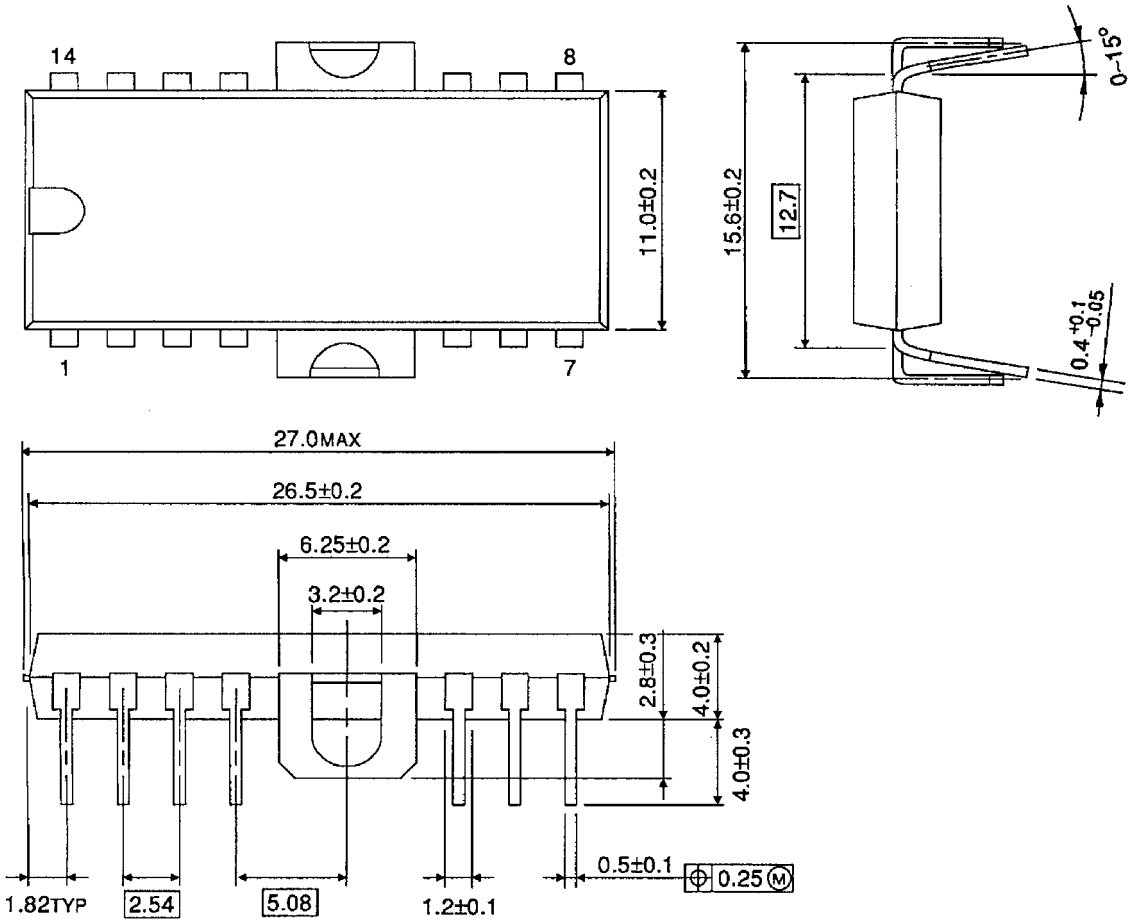
APPLICATION CIRCUIT



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

PACKAGE DIMENSIONS

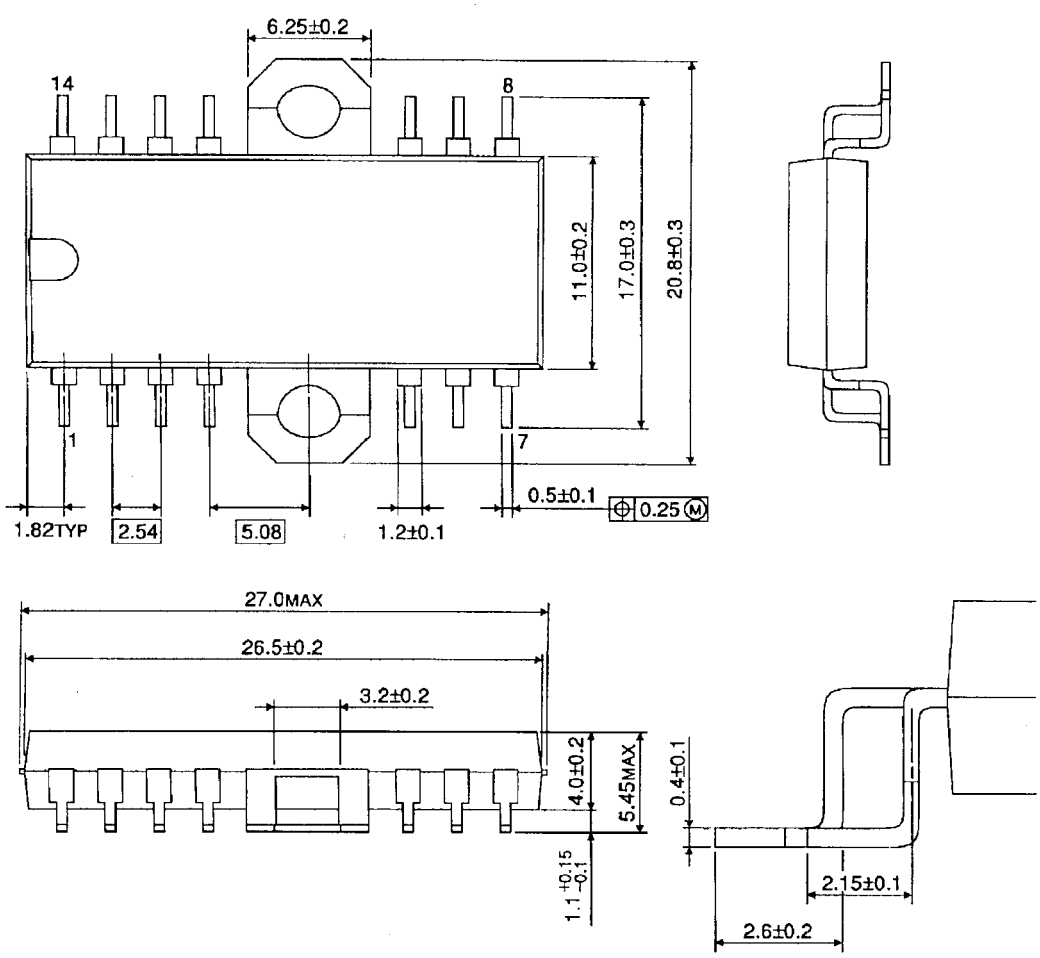
HDIP14−P−500−2.54A Unit: mm



Weight: 3.00 g (Typ.)

PACKAGE DIMENSIONS

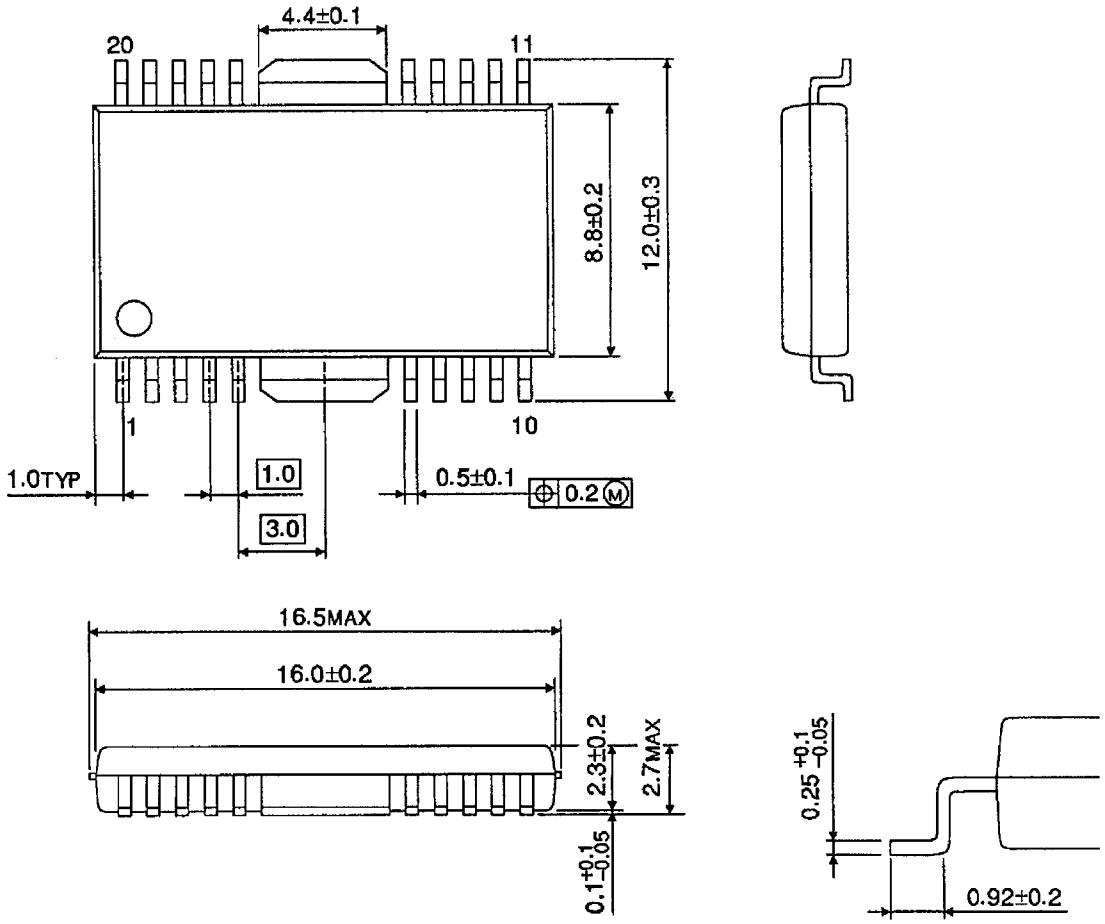
HSOP14-P-2.54 Unit : mm



Weight: 3.00 g (Typ.)

PACKAGE DIMENSIONS

HSOP20−P−450−1.00 Unit: mm



Weight: 0.79 g (Typ.)

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