

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7259P, TA7259P(LB), TA7259F

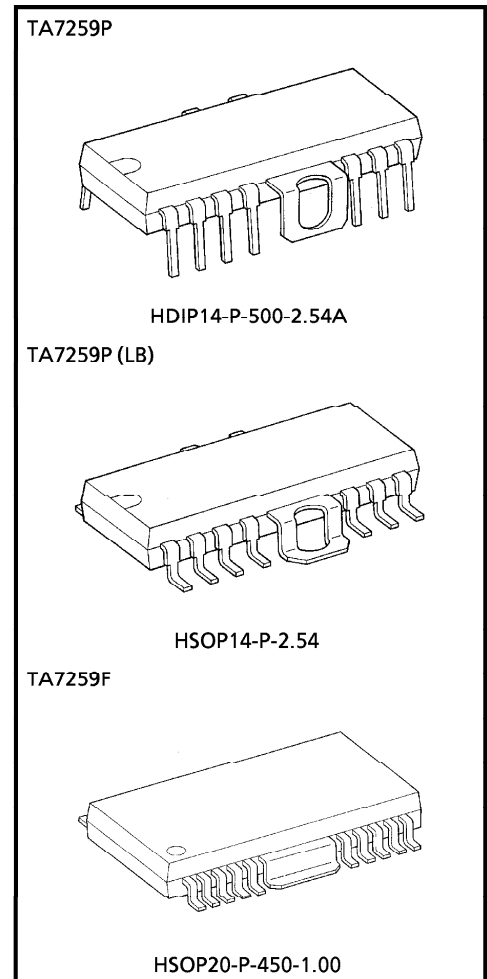
DC MOTOR DRIVER IC

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 $\pm 1.2A$.
- Few external parts required.
- Wide operating supply voltage range : V_{CC} (opr.) MIN. = 7V
- Forward and reverse rotation is controlled simply by means of a CW/CCW control signal fed into FRS.
- High sensitivity of position sensing amplifier. ($V_H = 10mV$ (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.

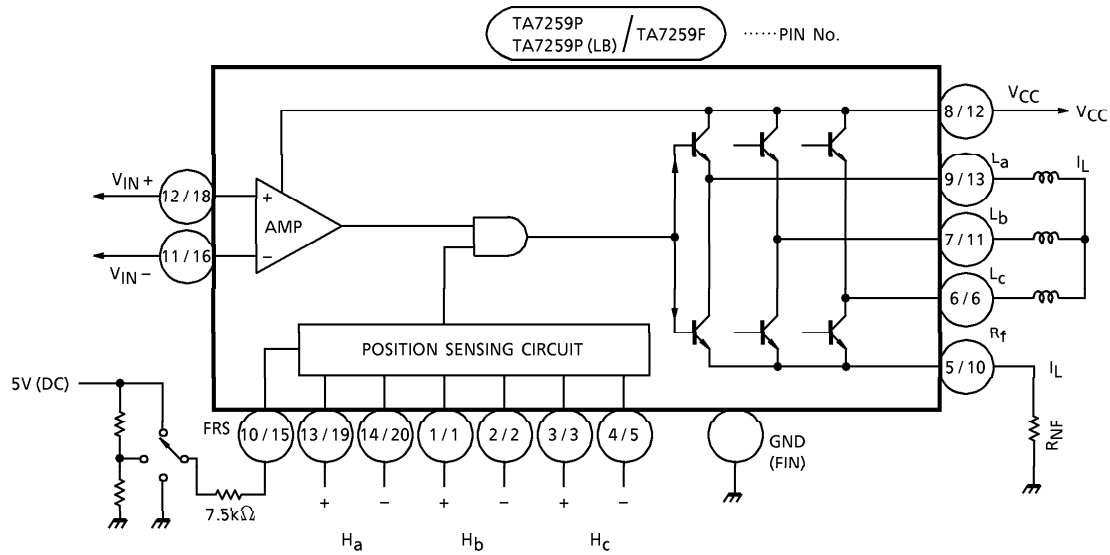


Weight
 HDIP14-P-500-2.54A : 3.00g (Typ.)
 HSOP14-P-2.54 : 3.00g (Typ.)
 HSOP20-P-450-1.00 : 0.79g (Typ.)

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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 - | 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 | H _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)

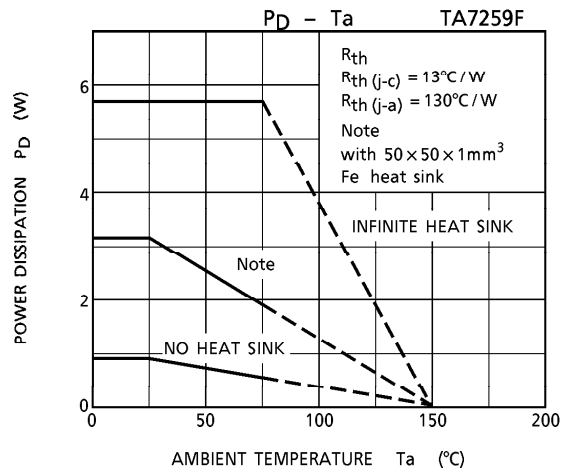
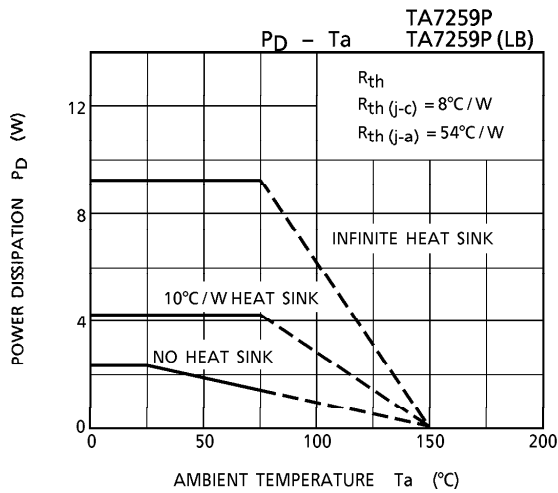
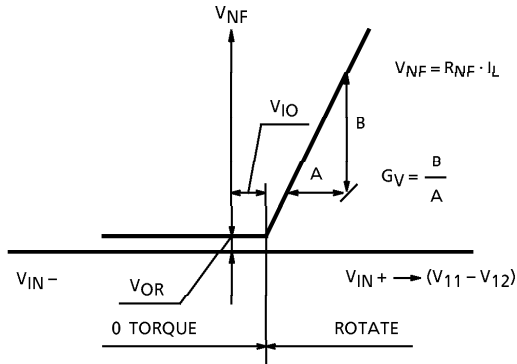
| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|--------------------------------|------------------|---------|------|
| Supply Voltage | V _{CC} | 26 | V |
| Output Current | I _O | 1.2 | A |
| Power Dissipation (Note) | TA7259P | 2.3 | W |
| | TA7259P (LB) | 2.3 | |
| | TA7259F | 1.0 | |
| Operating Temperature | T _{opr} | -30~75 | °C |
| Storage Temperature | T _{stg} | -55~150 | °C |

(Note) No heat sink.

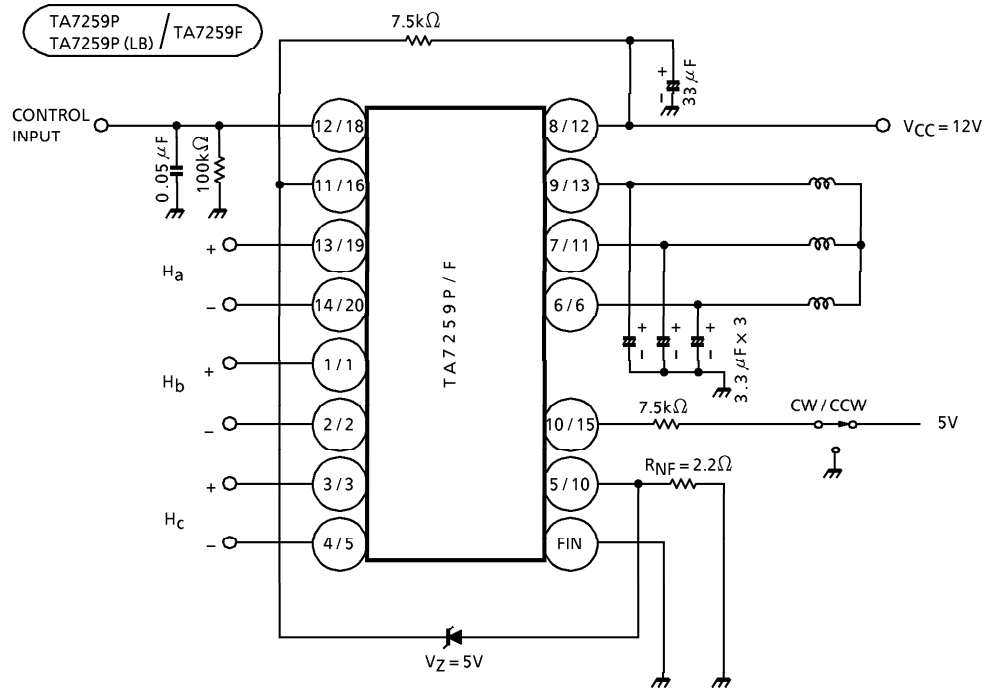
ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{CC} = 12V$, $T_a = 25^\circ C$)

| CHARACTERISTIC | | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--|----------|--------------------|---------------|----------------------------|------|------|----------------|-------------------|
| Quiescent Current | | I_{CC1} | — | FRS open | 2 | 4 | 7 | mA |
| | | I_{CC2} | | FRS = 5V | 2 | 5 | 9 | |
| | | I_{CC3} | | $V_{CC} = 22V$, FRS = GND | 2 | 5 | 9 | |
| Input Offset Voltage | | V_{IO} | — | — | — | 40 | — | mV |
| Residual Output Voltage | | V_{OR} | — | $V_{IN-} = V_{IN+} = 7V$ | — | 0 | 10 | mV |
| Voltage Gain | | G_V | — | $R_{NF} = 2.2\Omega$ | — | 15.0 | — | — |
| Saturation Voltage | Upper | V_{SAT1} | — | $I_L = 400mA$ | — | 1.0 | 1.5 | V |
| | Lower | V_{SAT2} | — | | — | 0.4 | 1.0 | |
| Cut-off Current | Upper | I_{OC1} | — | $V_C = 20V$ | — | — | 20 | μA |
| | Lower | I_{OC2} | — | | — | — | 20 | |
| Position sensing Input Sensitivity | | V_H | — | — | — | 10 | — | mV |
| Maximum Position Sensing Input Voltage | | $V_H \text{ MAX.}$ | — | — | — | — | 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



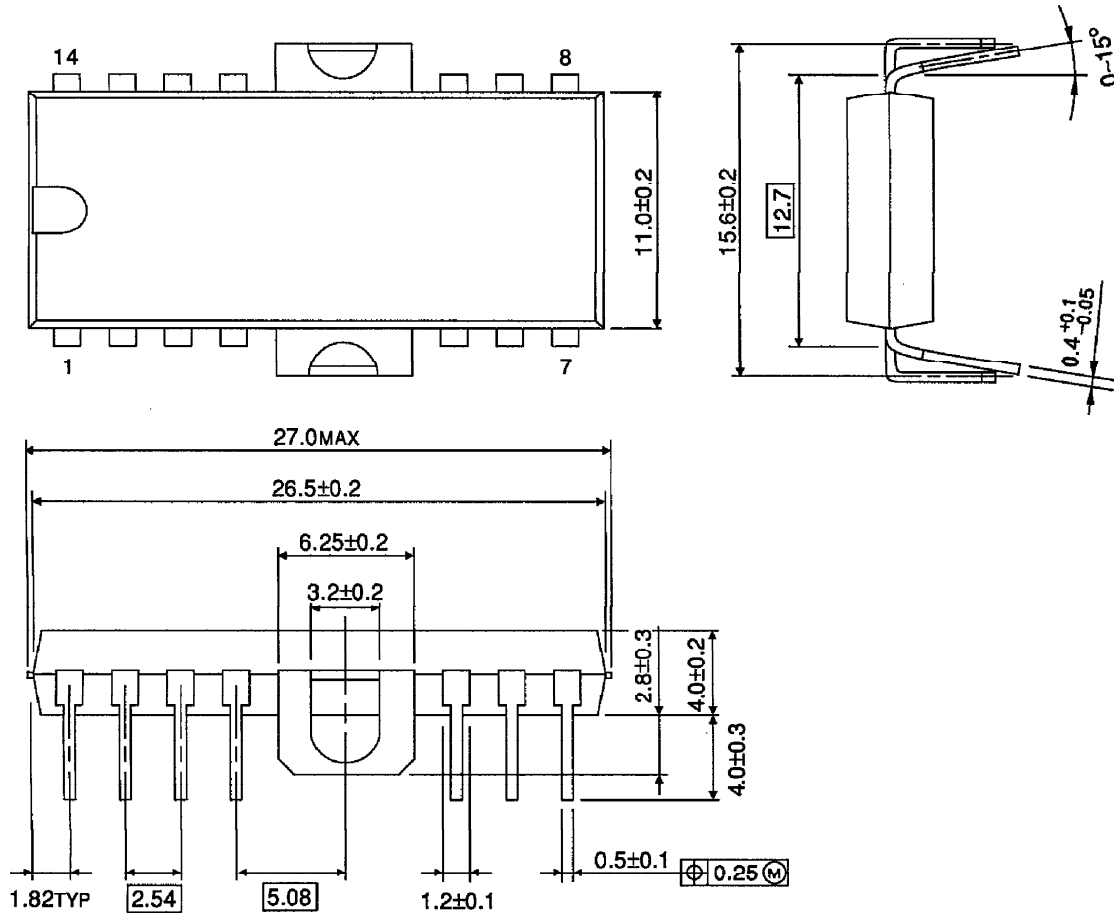
APPLICATION CIRCUIT



(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.

OUTLINE DRAWING
HDIP14-P-500-2.54A

Unit : mm

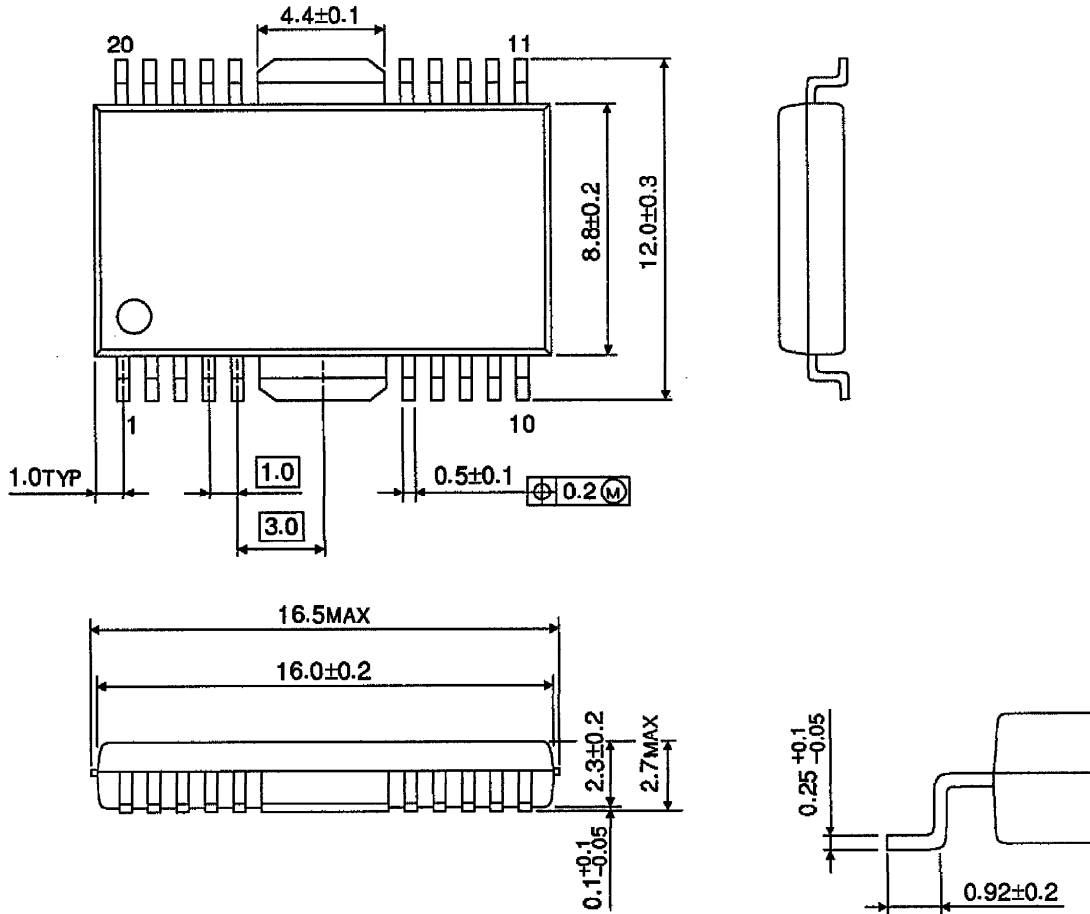


Weight : 3.00g (Typ.)

OUTLINE DRAWING

HSOP20-P-450-1.00

Unit : mm



Weight : 0.79g (Typ.)