

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8406P, TA8406F

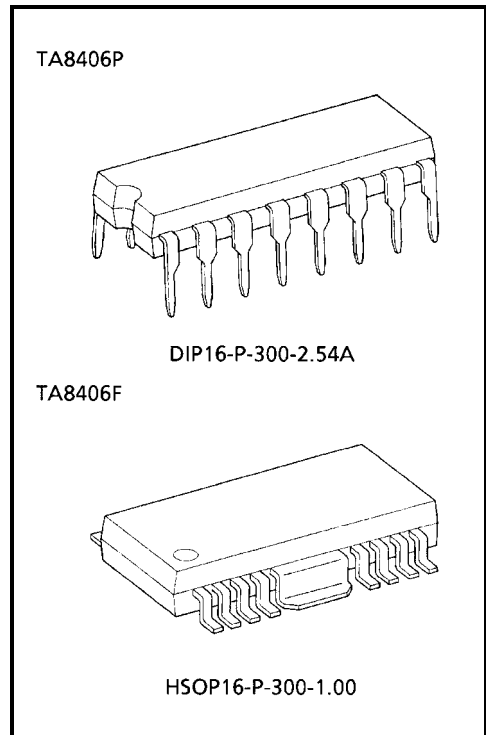
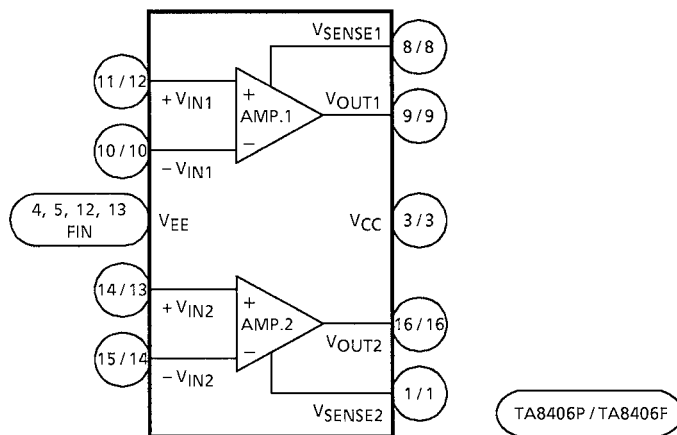
DUAL POWER OPERATIONAL AMPLIFIER

TA8406P, TA8406F are dual power operational amplifier. It is intended for use especially DC MOTOR positioning system applications such as Arm Driver (for Audiodisk Players), head or voice coil motor drivers (for Floppy and Winchester Disk Drivers) and any other power driver applications.

FEATURES

- Built-in over current protector
- Few external parts are required.
- Output current up to 500mA (AVE.) and 1.0 A (PEAK)
- Excellent crosstalk characteristics

BLOCK DIAGRAM



Weight :
 DIP16-P-300-2.54A : 1.11g (Typ.)
 HSOP16-P-300-1.00 : 0.50g (Typ.)

PIN FUNCTION

TA8406P

| PIN No. | SYMBOL | FUNCTION DESCRIPTION |
|---------|---------------------|---|
| 1 | V _{SENSE2} | AMP.2 output current detection terminal |
| 2 | NC | No connection |
| 3 | V _{CC} | Positive side voltage terminal |
| 4 | V _{EE} | Negative side voltage terminal |
| 5 | V _{EE} | Negative side voltage terminal |
| 6 | NC | No connection |
| 7 | NC | No connection |
| 8 | V _{SENSE1} | AMP.1 output current detection terminal |
| 9 | V _{OUT1} | AMP.1 output terminal |
| 10 | -V _{IN1} | AMP.1 negative input terminal |
| 11 | +V _{IN1} | AMP.1 positive input terminal |
| 12 | V _{EE} | Negative side voltage terminal |
| 13 | V _{EE} | Negative side voltage terminal |
| 14 | +V _{IN2} | AMP.2 positive input terminal |
| 15 | -V _{IN2} | AMP.2 negative input terminal |
| 16 | V _{OUT2} | AMP.2 output terminal |

TA8406F

| PIN No. | SYMBOL | FUNCTION DESCRIPTION |
|---------|---------------------|---|
| 1 | V _{SENSE2} | AMP.2 output current detection terminal |
| 2 | NC | No connection |
| 3 | V _{CC} | Positive-side voltage terminal |
| 4 | NC | No connection |
| 5 | NC | No connection |
| 6 | NC | No connection |
| 7 | NC | No connection |
| 8 | V _{SENSE1} | AMP.1 output current detection |
| 9 | V _{OUT1} | AMP.1 output terminal |
| 10 | -V _{IN1} | AMP.1 negative input terminal |
| 11 | NC | No connection |
| 12 | +V _{IN1} | AMP.1 positive input terminal |
| 13 | +V _{IN2} | AMP.2 positive input terminal |
| 14 | -V _{IN2} | AMP.2 negative input terminal |
| 15 | NC | No connection |
| 16 | V _{OUT2} | AMP.2 output terminal |
| FIN | V _{EE} | Negative side voltage terminal |

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|-----------------------|---------|-----------------------------------|--------------|------|
| Supply Voltage | | V _{CC} , V _{EE} | ±18 | V |
| Output Current | | I _{O (AVE.)} | 0.5 | A |
| Power Dissipation | TA8406P | P _D | 1.4 (Note 1) | W |
| | | | 2.7 (Note 2) | |
| | TA8406P | | 1.4 (Note 3) | |
| Operating Temperature | | T _{opr} | -30~75 | °C |
| Storage Temperature | | T _{stg} | -55~150 | °C |

Note 1: No heat sink

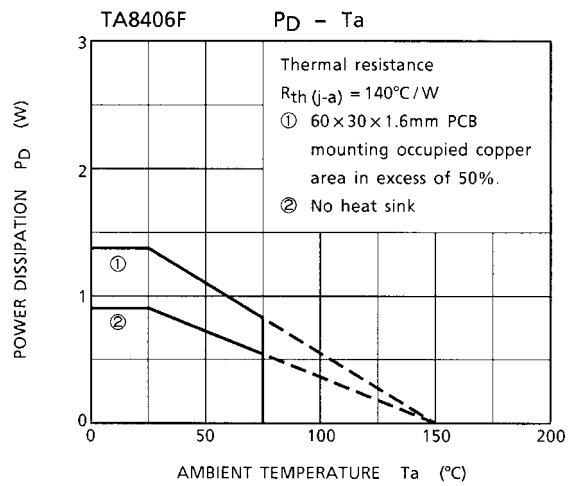
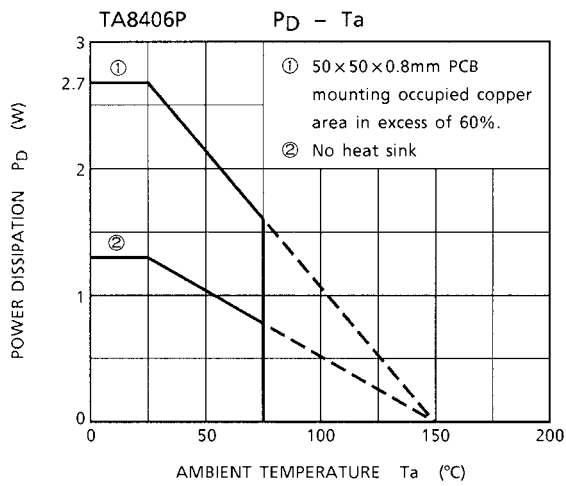
Note 2: This value is obtained by 50 × 50 × 0.8 mm PCB mounting occupied in excess of 60% of copper area.

Note 3: This value is obtained by 60 × 30 × 1.6 mm PCB mounting occupied in excess of 50% of copper area.

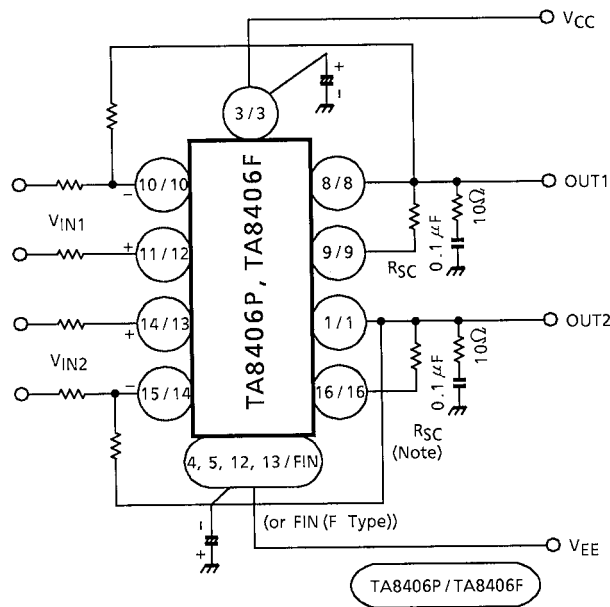
ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, V_{CC} = 15 V, V_{EE} = -15 V, Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN | TYP. | MAX | UNIT |
|---------------------------------|-------|-----------------|---------------|---|-----|-------|-----|--------|
| Quiescent Current | | I _{CC} | — | — | — | 10 | 20 | mA |
| Input Off Set Current | | I _{IO} | — | — | — | 10 | 200 | nA |
| Input Bias Current | | I _I | — | — | — | 100 | 700 | nA |
| Input Off Set Voltage | | V _{IO} | — | — | — | 2 | 6 | mV |
| Output Voltage Swing | Upper | V _{OH} | — | R _L = 33 Ω | 12 | 13.0 | — | V |
| | Lower | V _{OL} | — | | -12 | -13.0 | — | |
| Open Loop Gain | | G _{VO} | — | — | — | 100 | — | dB |
| Input Common Mode Voltage Range | | CMR | — | — | ±12 | ±14 | — | |
| Common Mode Rejection Ratio | | CMRR | — | — | 70 | 90 | — | dB |
| Supply Voltage Rejection Ratio | | SVRR | — | — | — | 50 | 150 | μV / V |
| Band Width | | f _T | — | Open loop | — | 1.0 | — | MHz |
| Slew Rate | | SR | — | G _V = 0, R _L = 33 Ω, R = 10 Ω, C = 0.1 μF | — | 0.15 | — | V / μs |
| Short Circuit Current | | I _{SC} | — | R _{SC} = 2.2 Ω | — | 0.35 | — | A |
| Cross Talk | | CT | — | R _L = 33 Ω, V _{OUT} = 1 V _{p-p} | — | 60 | — | dB |

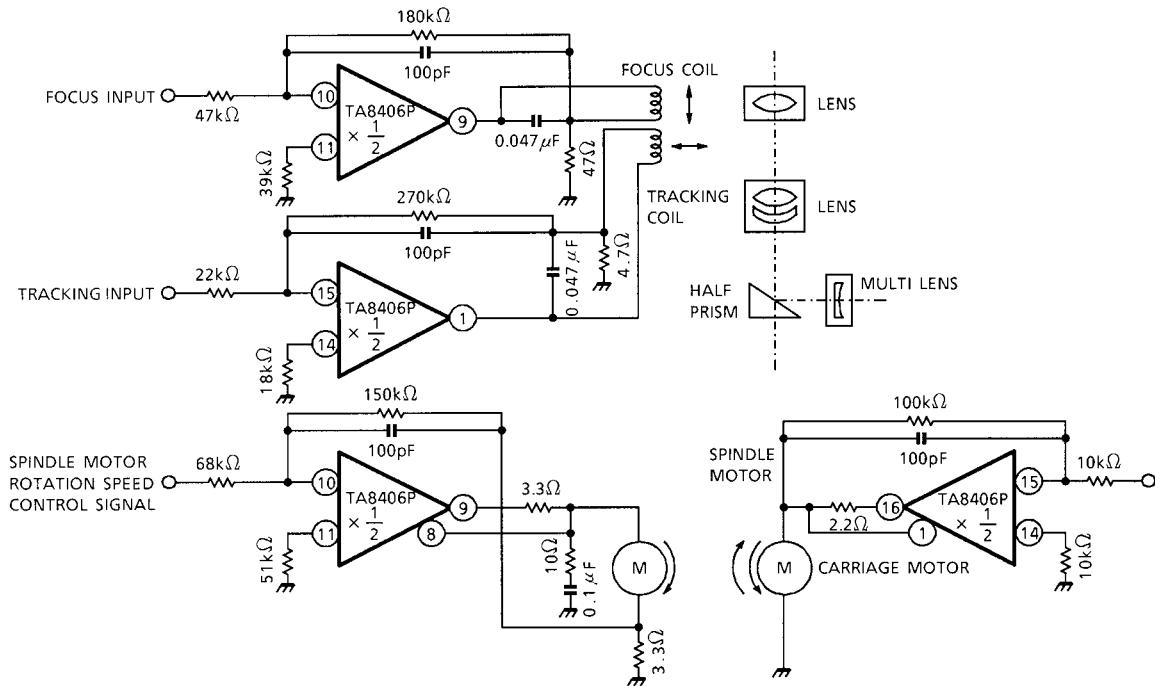


APPLICATIN CIRCUIT 1



Note: $I_{SC} \approx \frac{0.77(V)}{R_{SC}(\Omega)} (A)$

APPLICATION CIRCUIT 2 (Compact disk player motor system)

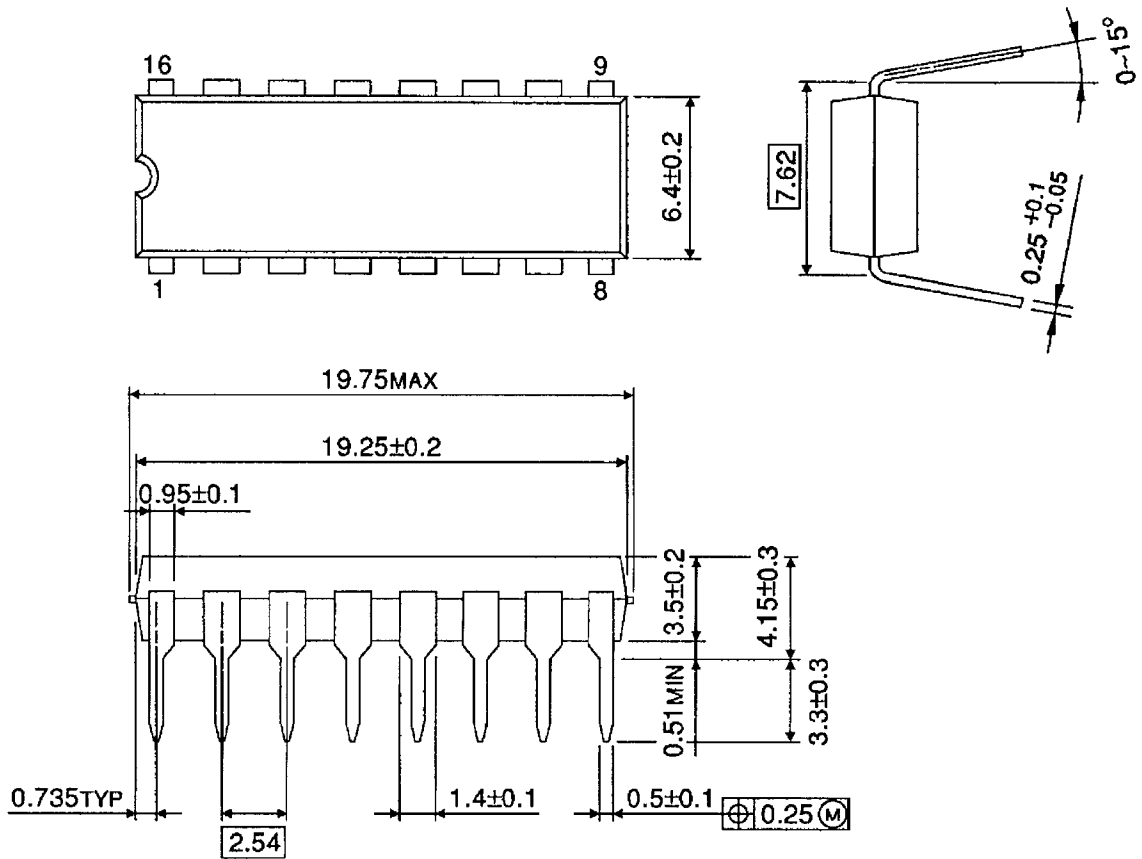


Note: Utmost care is necessary in the design of the output line, V_{CC}, V_{EE} and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

PACKAGE DIMENSIONS

DIP16-P-300-2.54A

Unit: mm

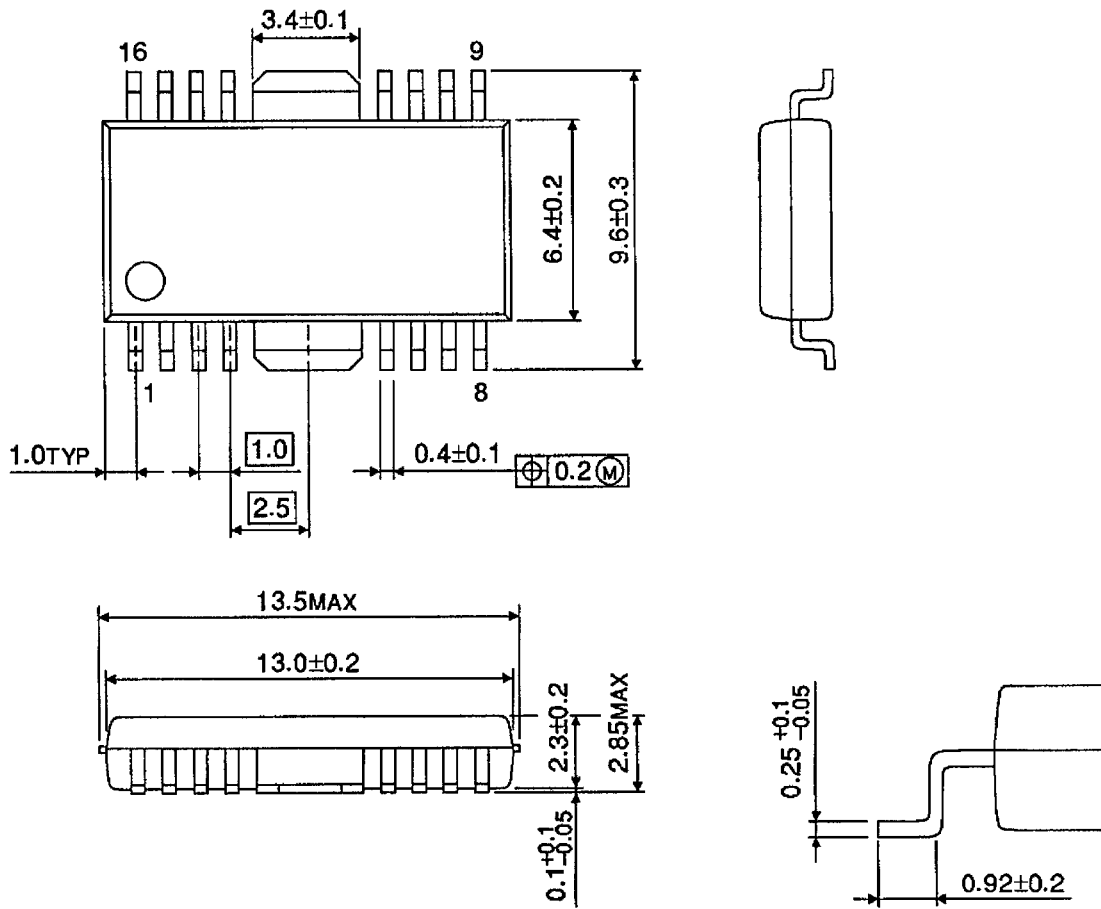


Weight: 1.11 g (Typ.)

PACKAGE DIMENSIONS

HSOP16-P-300-1.00

Unit: mm



Weight: 0.50 g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- The products described in this document are subject to the foreign exchange and foreign trade laws.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.