

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA8406P, TA8406F

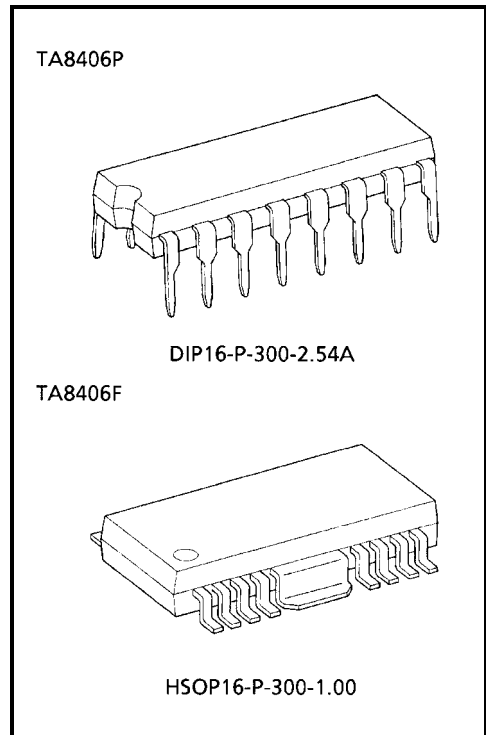
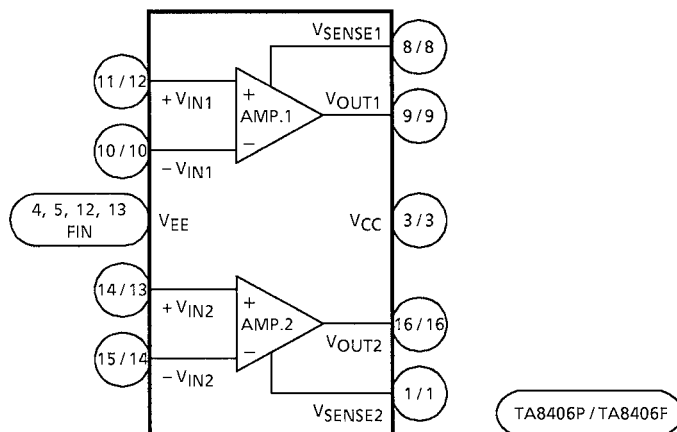
## DUAL POWER OPERATIONAL AMPLIFIER

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 <sub>SENSE2</sub>	AMP.2 output current detection terminal
2	NC	No connection
3	V <sub>CC</sub>	Positive side voltage terminal
4	V <sub>EE</sub>	Negative side voltage terminal
5	V <sub>EE</sub>	Negative side voltage terminal
6	NC	No connection
7	NC	No connection
8	V <sub>SENSE1</sub>	AMP.1 output current detection terminal
9	V <sub>OUT1</sub>	AMP.1 output terminal
10	-V <sub>IN1</sub>	AMP.1 negative input terminal
11	+V <sub>IN1</sub>	AMP.1 positive input terminal
12	V <sub>EE</sub>	Negative side voltage terminal
13	V <sub>EE</sub>	Negative side voltage terminal
14	+V <sub>IN2</sub>	AMP.2 positive input terminal
15	-V <sub>IN2</sub>	AMP.2 negative input terminal
16	V <sub>OUT2</sub>	AMP.2 output terminal

### TA8406F

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

## MAXIMUM RATINGS (Ta = 25°C)

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

Note 1: No heat sink

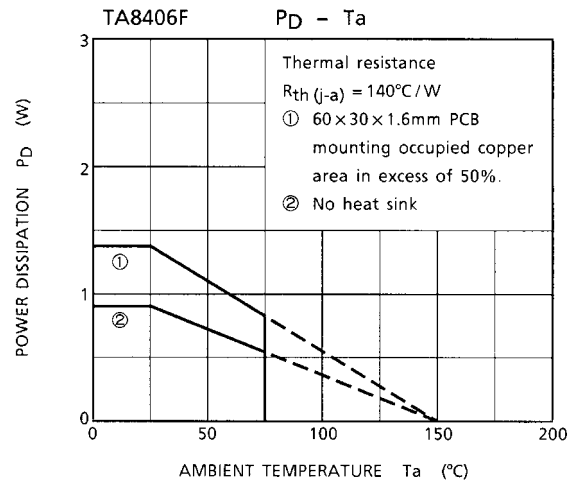
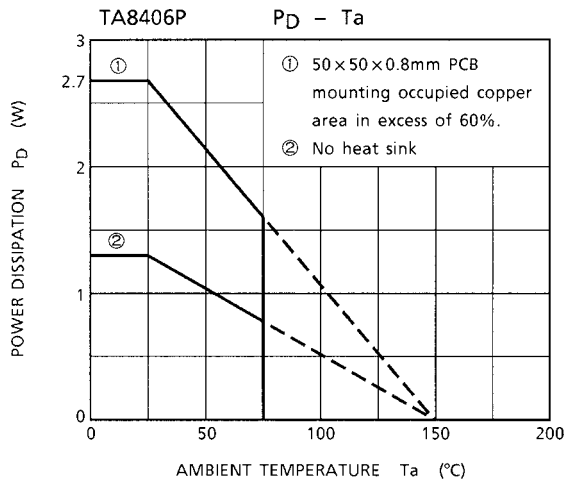
Note 2: This value is obtained by 50 × 50 × 0.8 mm PCB mounting occupied in excess of 60% of copper area.

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

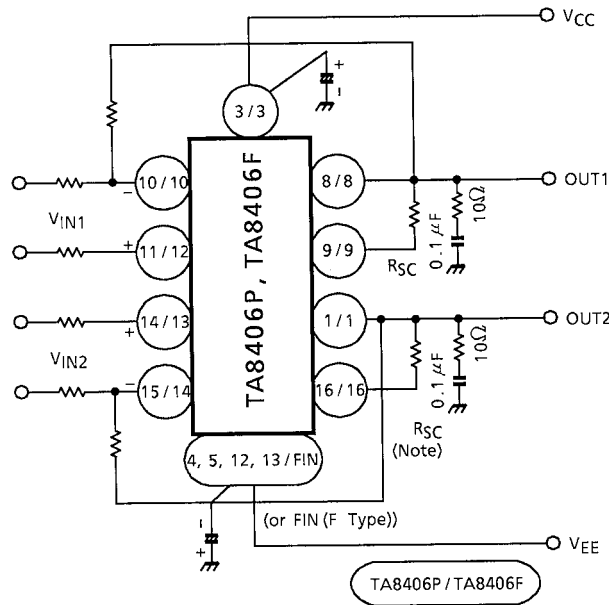
## ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, V<sub>CC</sub> = 15 V, V<sub>EE</sub> = -15 V, Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Quiescent Current		I <sub>CC</sub>	—	—	—	10	20	mA
Input Off Set Current		I <sub>IO</sub>	—	—	—	10	200	nA
Input Bias Current		I <sub>I</sub>	—	—	—	100	700	nA
Input Off Set Voltage		V <sub>IO</sub>	—	—	—	2	6	mV
Output Voltage Swing	Upper	V <sub>OH</sub>	—	R <sub>L</sub> = 33 Ω	12	13.0	—	V
	Lower	V <sub>OL</sub>	—		-12	-13.0	—	
Open Loop Gain		G <sub>VO</sub>	—	—	—	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 <sub>T</sub>	—	Open loop	—	1.0	—	MHz
Slew Rate		SR	—	G <sub>V</sub> = 0, R <sub>L</sub> = 33 Ω, R = 10 Ω, C = 0.1 μF	—	0.15	—	V / μs
Short Circuit Current		I <sub>SC</sub>	—	R <sub>SC</sub> = 2.2 Ω	—	0.35	—	A
Cross Talk		CT	—	R <sub>L</sub> = 33 Ω, V <sub>OUT</sub> = 1 V <sub>p-p</sub>	—	60	—	dB

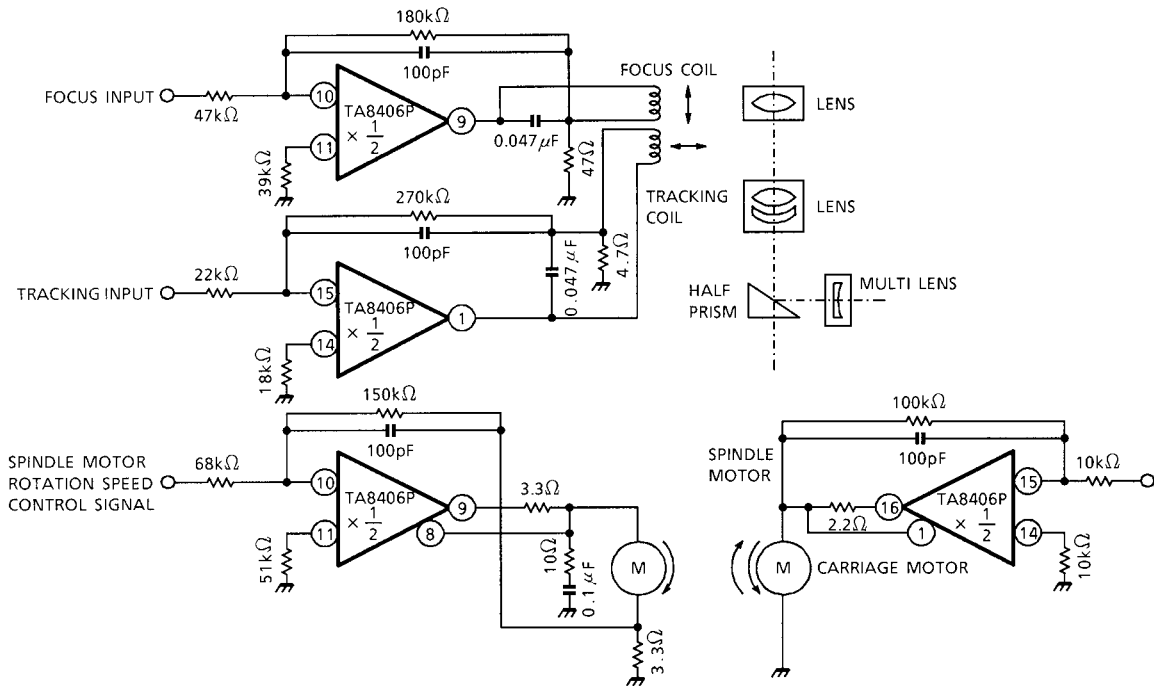


## APPLICATIN CIRCUIT 1



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

**APPLICATION CIRCUIT 2 (Compact disk player motor system)**

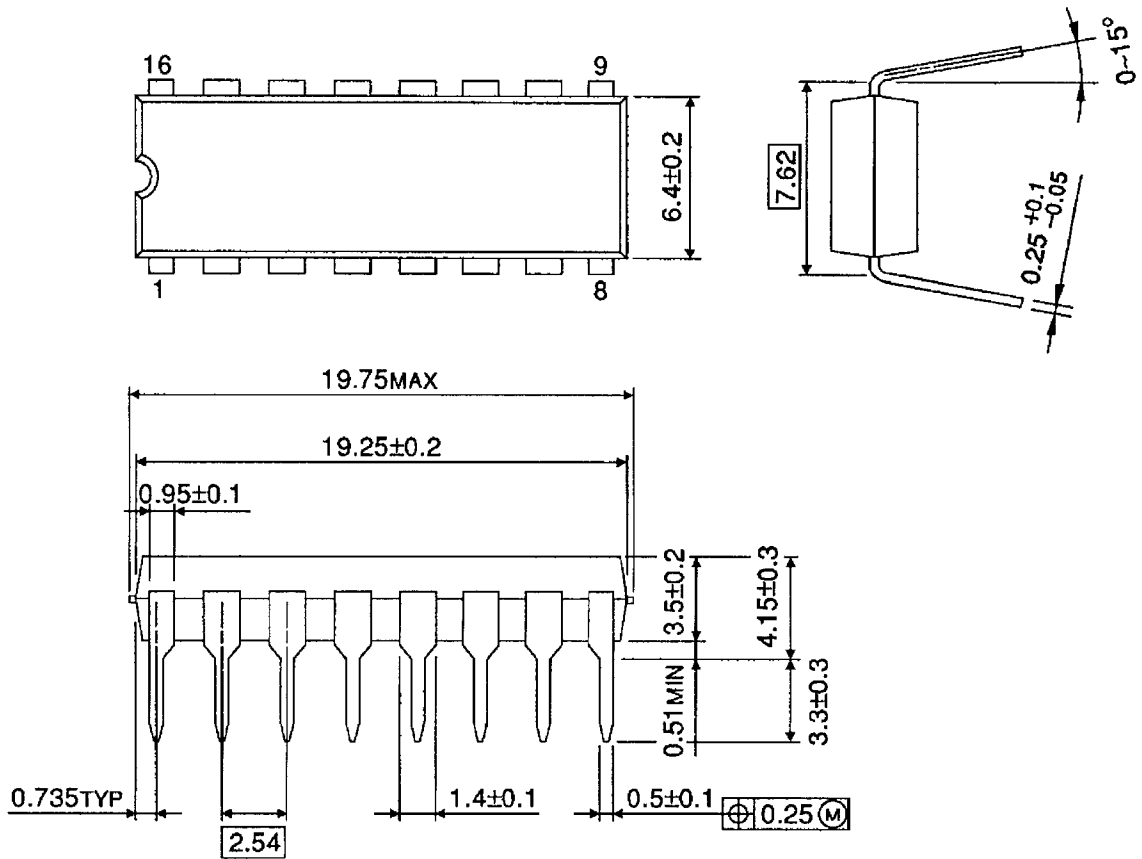


Note: Utmost care is necessary in the design of the output line, V<sub>CC</sub>, V<sub>EE</sub> and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

## PACKAGE DIMENSIONS

DIP16-P-300-2.54A

Unit: mm

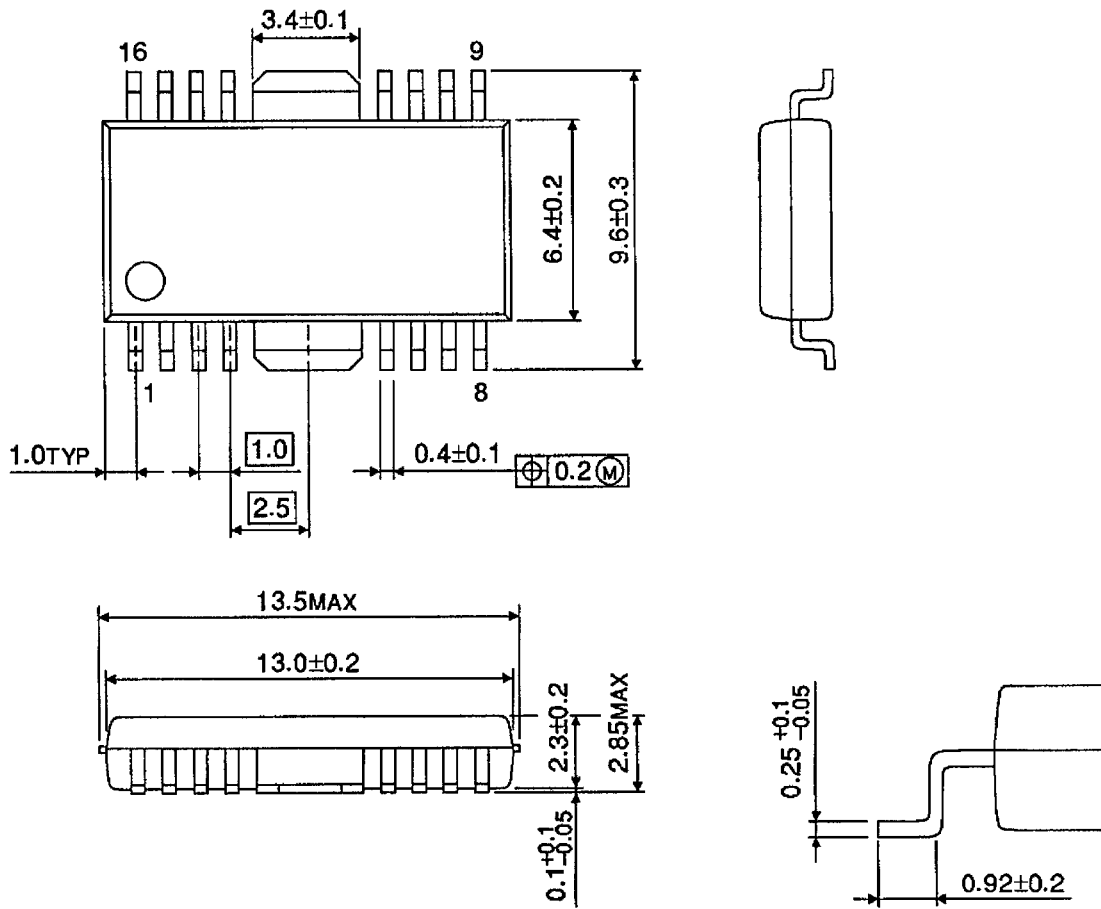


Weight: 1.11 g (Typ.)

## PACKAGE DIMENSIONS

HSOP16-P-300-1.00

Unit: mm



Weight: 0.50 g (Typ.)

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000707EBA

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