

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA8406P, TA8406F

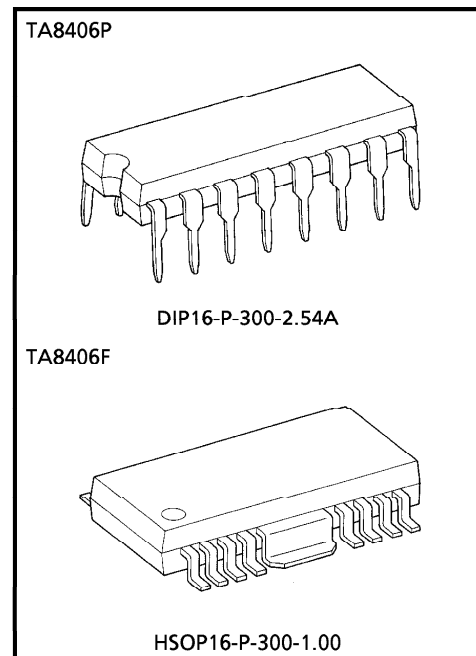
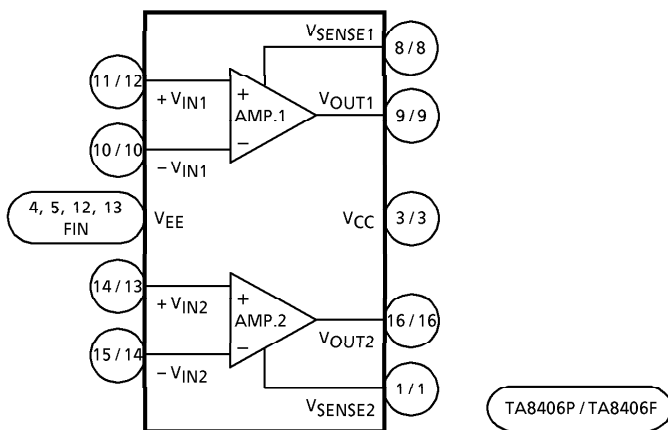
## DUAL POWER OPERATIONAL AMPLIFIER

The 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 1.0A (PEAK)
- Excellent crosstalk characteristics

### BLOCK DIAGRAM



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

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**PIN FUNCTION**  
TA8406P

PIN No.	SYMBOL	FUNCTION DESCRIPTION
1	VSENSE2	AMP.2 output current detection terminal
2	NC	No connection
3	VCC	Positive side voltage terminal
4	VEE	Negative side voltage terminal
5	VEE	Negative side voltage terminal
6	NC	No connection
7	NC	No connection
8	VSENSE1	AMP.1 output current detection terminal
9	VOUT1	AMP.1 output terminal
10	-VIN1	AMP.1 negative input terminal
11	+VIN1	AMP.1 positive input terminal
12	VEE	Negative side voltage terminal
13	VEE	Negative side voltage terminal
14	+VIN2	AMP.2 positive input terminal
15	-VIN2	AMP.2 negative input terminal
16	VOUT2	AMP.2 output terminal

TA8406F

PIN No.	SYMBOL	FUNCTION DESCRIPTION
1	VSENSE2	AMP.2 output current detection terminal
2	NC	No connection
3	VCC	Positive-side voltage terminal
4	NC	No connection
5	NC	No connection
6	NC	No connection
7	NC	No connection
8	VSENSE1	AMP.1 output current detection
9	VOUT1	AMP.1 output terminal
10	-VIN1	AMP.1 negative input terminal
11	NC	No connection
12	+VIN1	AMP.1 positive input terminal
13	+VIN2	AMP.2 positive input terminal
14	-VIN2	AMP.2 negative input terminal
15	NC	No connection
16	VOUT2	AMP.2 output terminal
FIN	VEE	Negative side voltage terminal

**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		$V_{CC}, V_{EE}$	$\pm 18$	V
Output Current		$I_O$ (AVE.)	0.5	A
Power Dissipation	TA8406P	$P_D$	(Note 1) 1.4	W
			(Note 2) 2.7	
	TA8406P		(Note 3) 1.4	
Operating Temperature		$T_{opr}$	- 30~75	°C
Storage Temperature		$T_{stg}$	- 55~150	°C

(Note 1) No heat sink

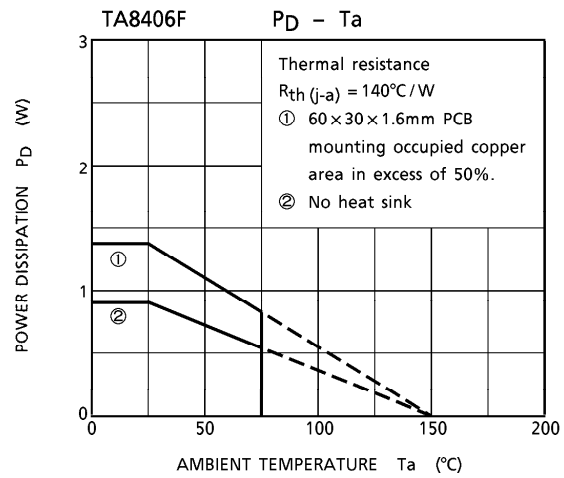
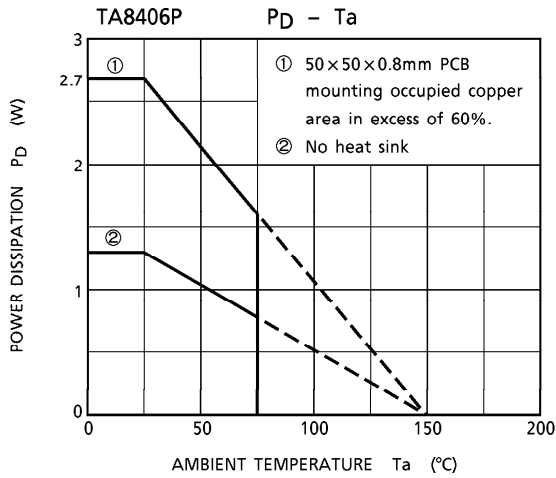
(Note 2) This value is obtained by 50×50×0.8mm PCB mounting occupied in excess of 60% of copper area.

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

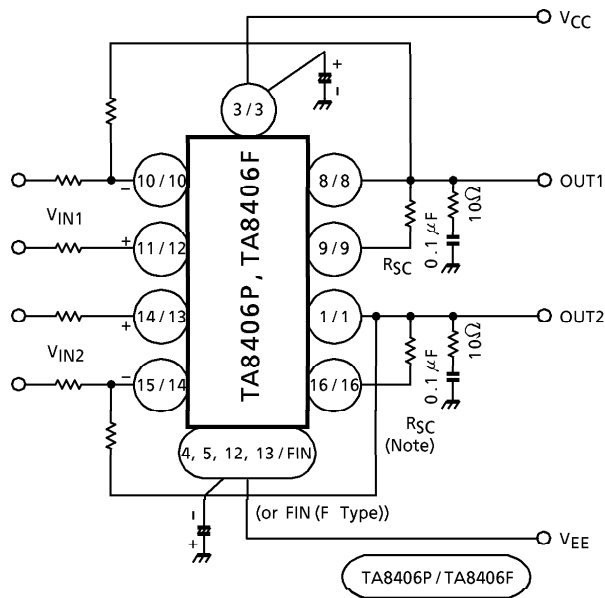
**ELECTRICAL CHARACTERISTICS**

(Unless otherwise specified,  $V_{CC} = 15V, V_{EE} = -15V, T_a = 25^\circ C$ )

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	$V_{OH}$	—	$R_L = 33\Omega$	12	13.0	—	V
	Lower	$V_{OL}$			- 12	- 13.0	—	
Open Loop Gain		$G_{VO}$	—	—	—	100	—	dB
Input Common Mode Voltage Range		CMR	—	—	$\pm 12$	$\pm 14$	—	
Common Mode Rejection Ratio		CMRR	—	—	70	90	—	dB
Supply Voltage Rejection Ratio		SVRR	—	—	—	50	150	$\mu V/V$
Band Width		$f_T$	—	Open loop	—	1.0	—	MHz
Slew Rate		SR	—	$G_V = 0, R_L = 33\Omega, R = 10\Omega, C = 0.1\mu F$	—	0.15	—	V / $\mu s$
Short Circuit Current		$I_{SC}$	—	$R_{SC} = 2.2\Omega$	—	0.35	—	A
Cross Talk		CT	—	$R_L = 33\Omega, V_{OUT} = 1V_{p-p}$	—	60	—	dB

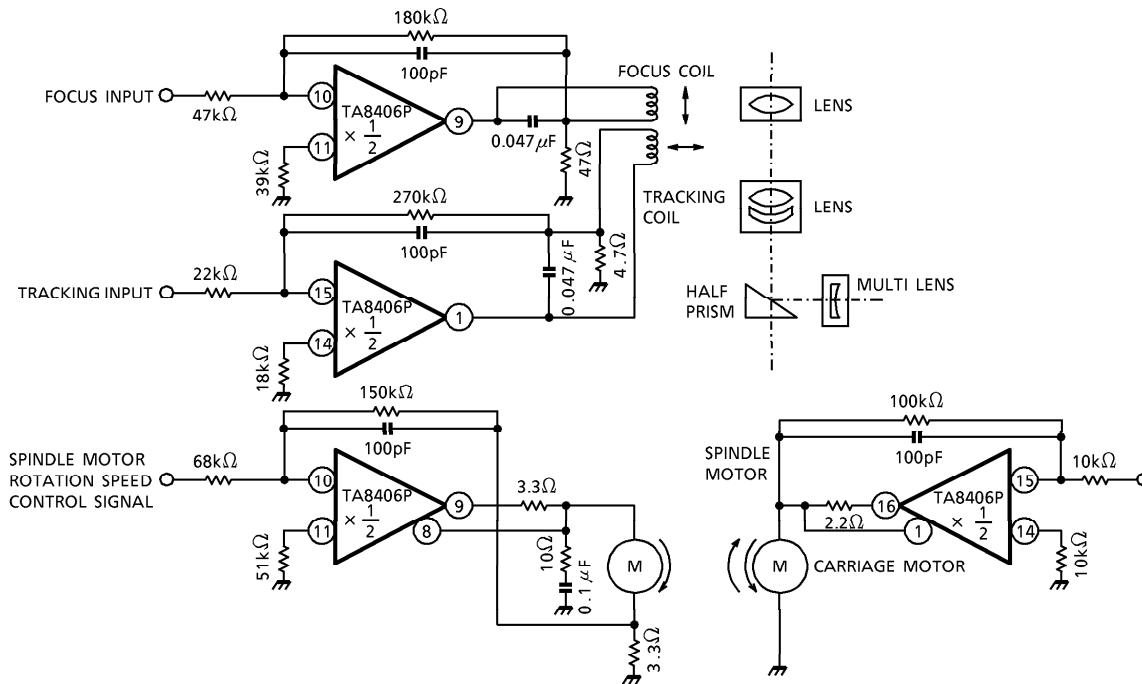


APPLICATION CIRCUIT 1



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

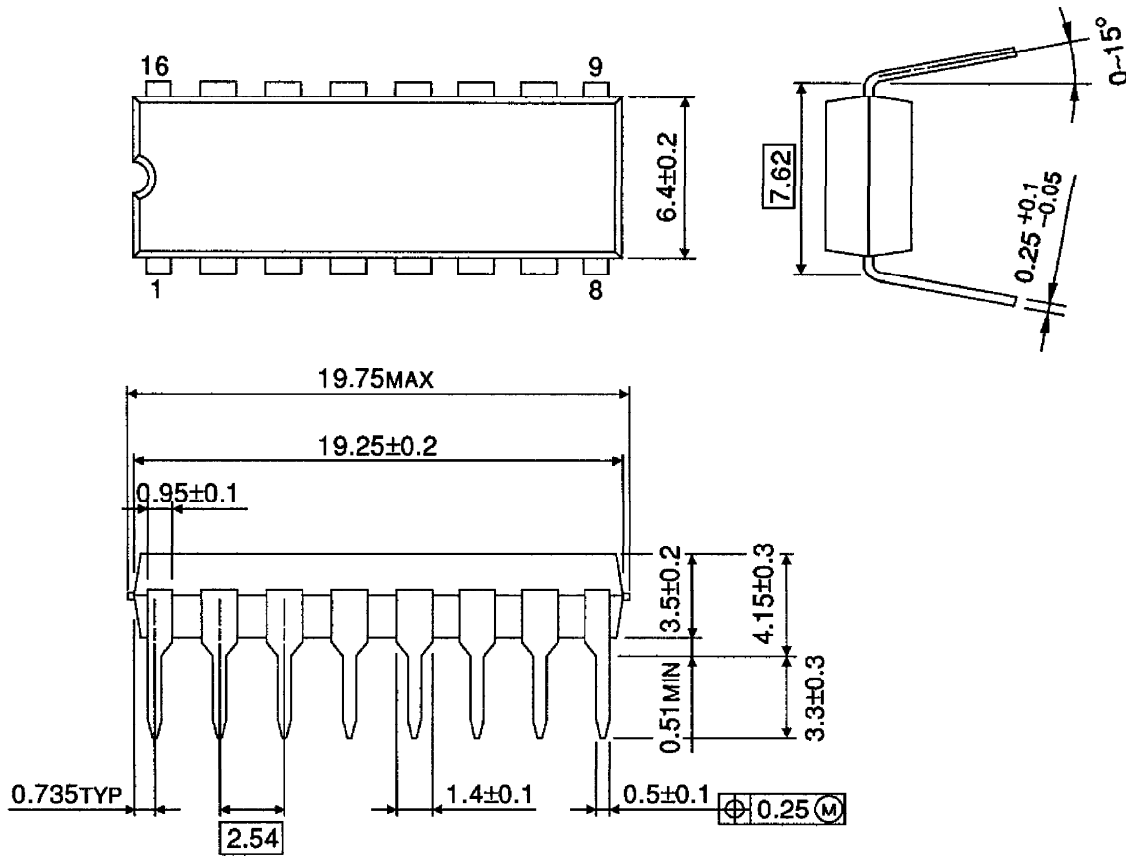
APPLICATION CIRCUIT 2 (Compact disk player motor system)



(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.

OUTLINE DRAWING  
DIP16-P-300-2.54A

Unit : mm

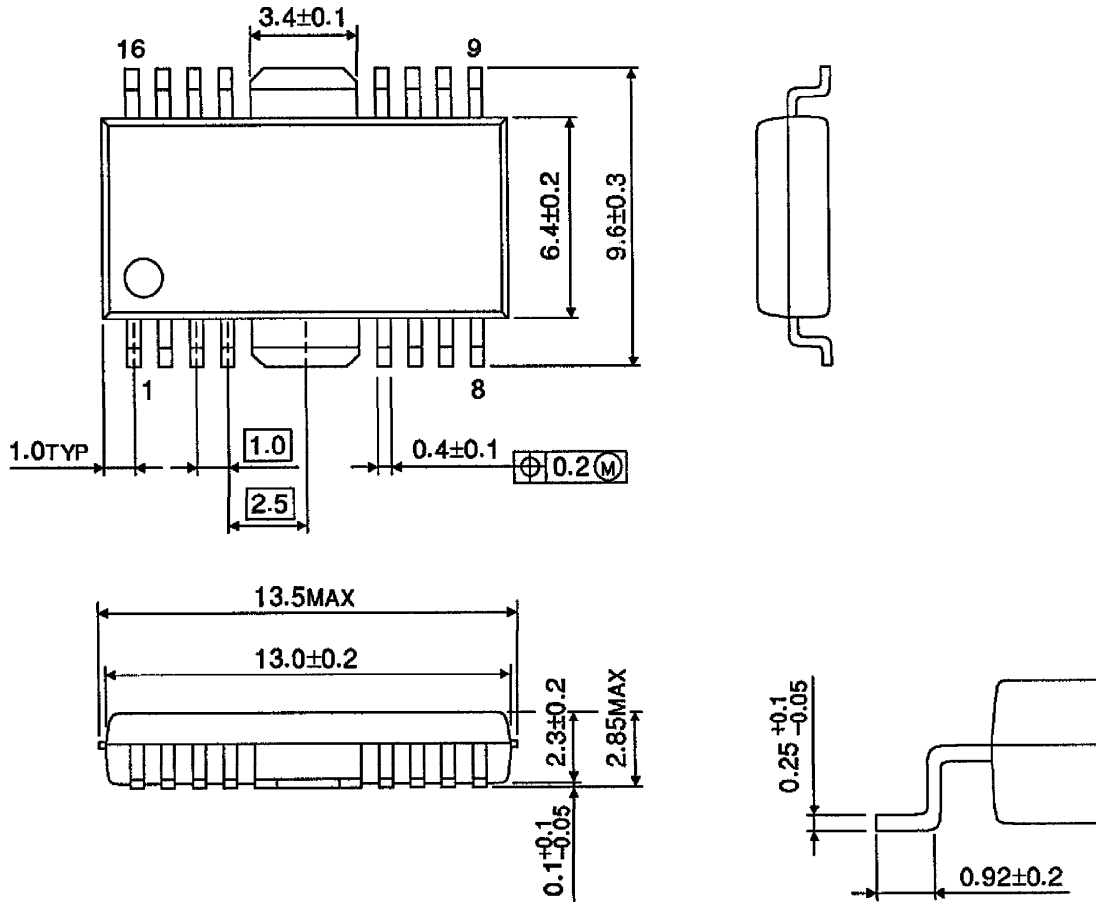


Weight : 1.11g (Typ.)

OUTLINE DRAWING

HSOP16-P-300-1.00

Unit : mm



Weight : 0.50g (Typ.)