

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA8407P, TA8407F

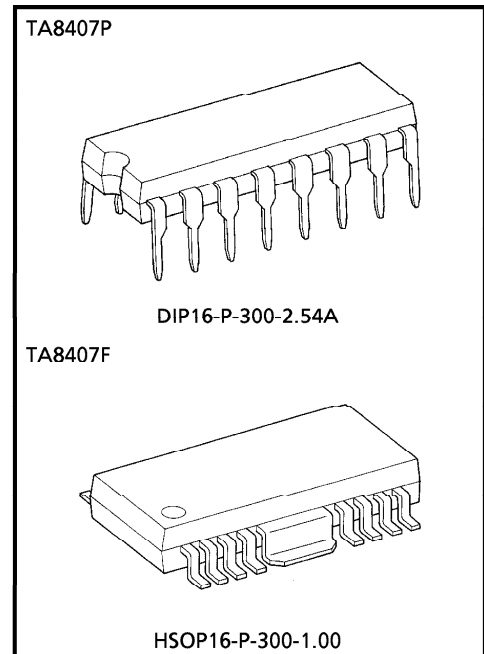
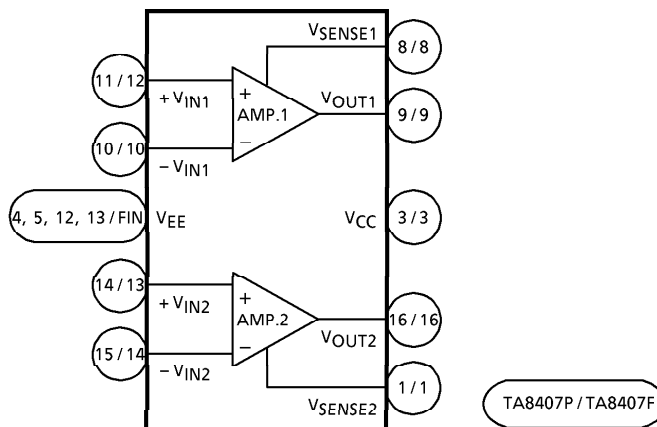
## DUAL POWER OPERATIONAL AMPLIFIER

The TA8407P, TA8407F 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 1.2A Max. (AVE)
- Excellent crosstalk characteristics

### BLOCK DIAGRAM



Weight  
 DIP16-P-300-2.54A : 1.0g (Typ.)  
 HSOP16-P-300-1.00 : 0.5g (Typ.)

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● TOSHIBA is continually working to improve the quality and the 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 observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product 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 products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

**PIN FUNCTION**  
TA8407P

PIN No.	SYMBOL	FUNCTION DESCRIPTION
1	VSENSE2	Amp.2 output current detection terminal.
2	NC	No connection.
3	VCC	Positive-side power supply terminal.
4	VEE	Negative-side power supply terminal.
5	VEE	Negative-side power supply 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 input terminal (-).
11	+VIN1	Amp.1 input terminal (+).
12	VEE	Negative-side power supply terminal.
13	VEE	Negative-side power supply terminal.
14	+VIN2	Amp.2 input terminal (+).
15	-VIN2	Amp.2 input terminal (-).
16	VOUT2	Amp.2 output terminal

TA8407F

PIN No.	SYMBOL	FUNCTION DESCRIPTION
1	VSENSE2	AMP.2 output current detection terminal.
2	NC	No connection.
3	VCC	Positive-side power supply terminal.
4	NC	No connection
5	NC	No connection
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 input terminal (-).
11	NC	No connection.
12	+VIN1	AMP.1 input terminal (+).
13	+VIN2	AMP.2 input terminal (+).
14	-VIN2	AMP.2 input terminal (-).
15	NC	No connection.
16	VOUT2	AMP.2 output terminal.
FIN	VEE	Negative-side power supply terminal.

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- 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.

**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		$V_{CC}, V_{EE}$	$\pm 18$	V
Output Current		$I_O$ (AVE.)	(Note 1) 1.2	A
Power Dissipation	TA8407P	$P_D$	(Note 2) 1.4	W
	TA8407P		(Note 3) 2.7	
Operating Temperature		$T_{opr}$	- 30~75	°C
Storage Temperature		$T_{stg}$	- 55~150	°C

(Note 1)  $V_{CC} = 6V, V_{EE} = -6V$

(Note 2) No heat sink

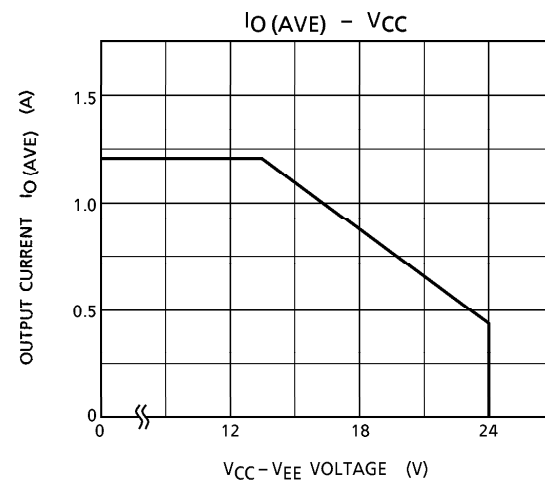
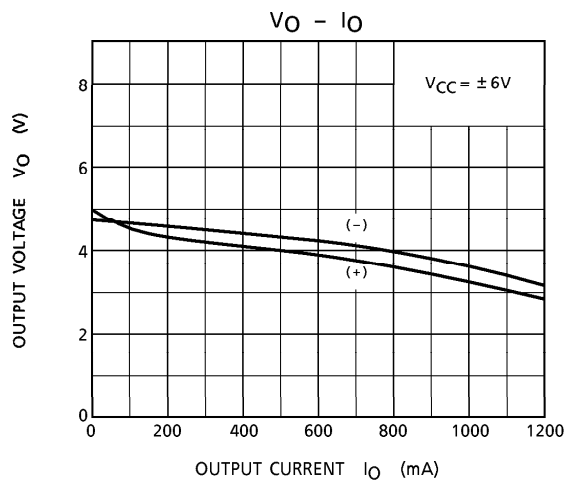
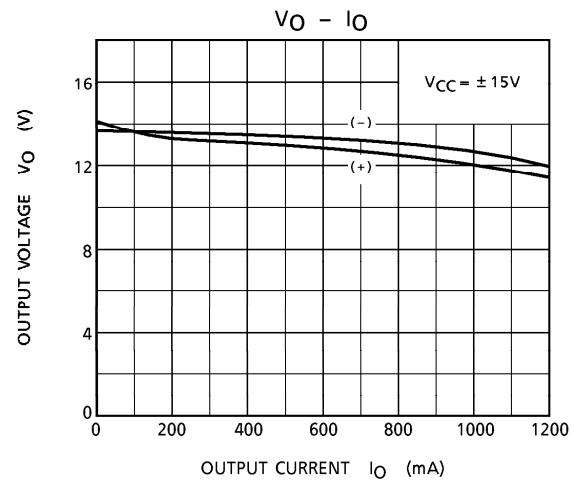
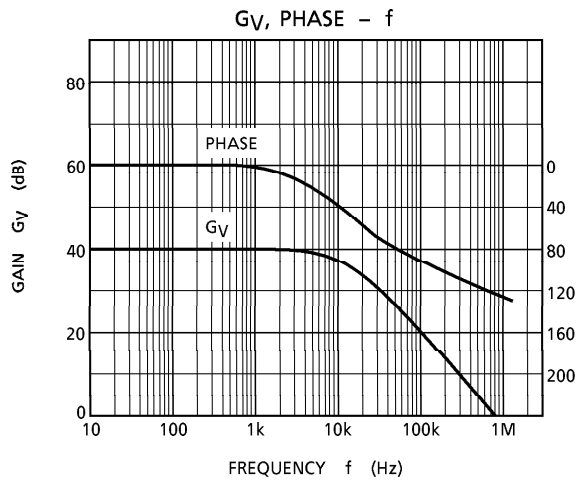
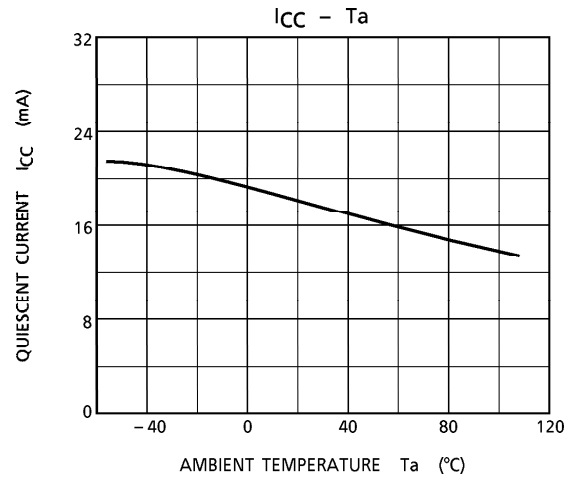
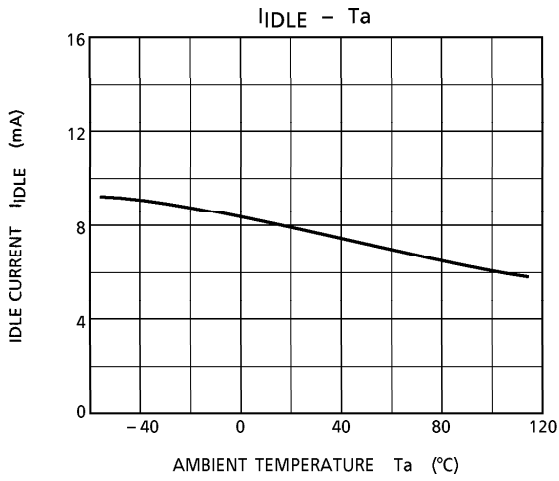
(Note 3) This value is obtained by 50×50×0.8mm PCB mounting occupied in excess of 60% of copper area.

(Note 4) This value is obtained by 60×30×1.6mm PCB mounting occupied in excess of 50% of copper area.

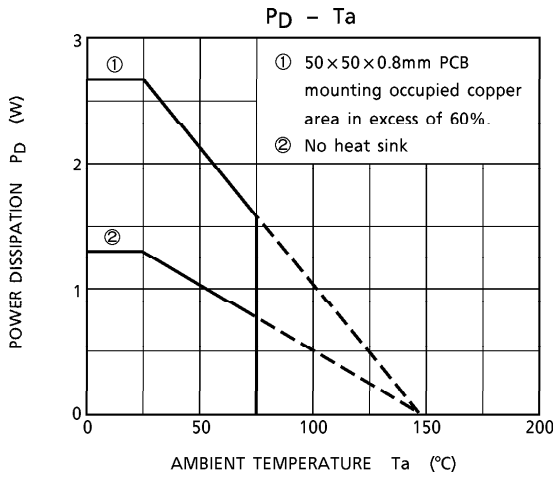
**ELECTRICAL CHARACTERISTICS**

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

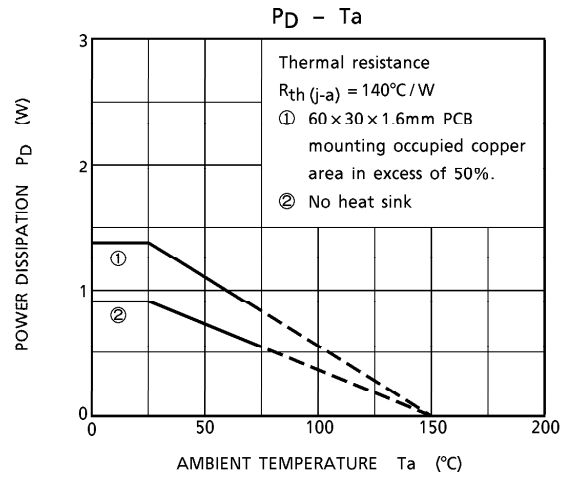
CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current		$I_{CC}$	—	—	—	20	35	mA
Input Off Set Current		$I_{IO}$	—	—	—	2	100	nA
Input Bias Current		$I_I$	—	—	—	50	300	nA
Input Off Set Voltage		$V_{IO}$	—	—	—	1.0	7.0	mV
Output Voltage Swing	Upper	$V_{OH}$	—	$V_{CC} = \pm 15V, I_O = 1A$	11.5	12.1	—	V
	Lower	$V_{OL}$	—		- 11.5	- 12.3	—	
	Upper	$V_{OH}$	—	$V_{CC} = \pm 6V, I_O = 1A$	2.2	3.3	—	V
	Lower	$V_{OL}$	—		- 2.2	- 3.7	—	
Open Loop Gain		$G_{VO}$	—	—	—	90	—	dB
Input Common Mode Voltage Range		CMR	—	—	—	$\pm 14$	—	
Common Mode Rejection Ratio		CMRR	—	—	—	95	—	dB
Supply Voltage Rejection Ratio		SVRR	—	—	—	45	150	$\mu V/V$
Slew Rate		SR	—	—	—	0.4	—	V/ $\mu s$
Short Circuit Current		$I_{SC}$	—	$R_{SC} = 0.68\Omega$	0.8	1.0	—	A
Cross Talk		CT	—	—	—	60	—	dB



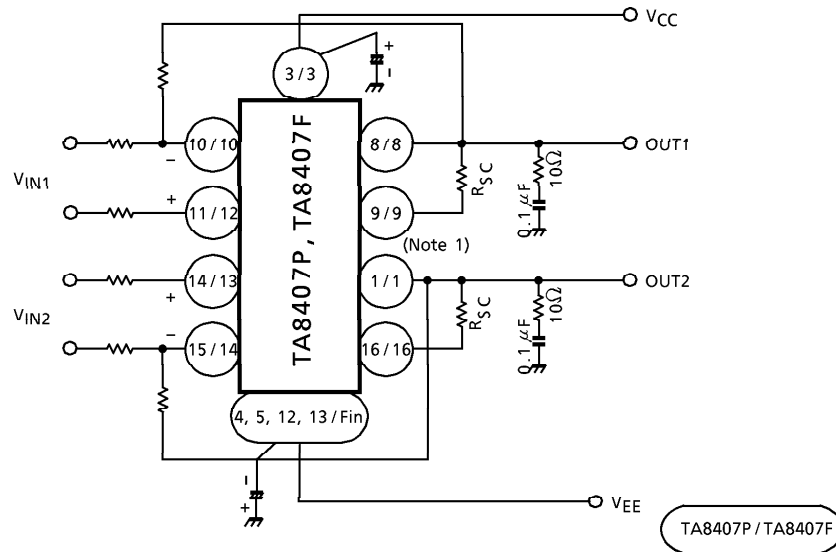
TA8407P



TA8407F



APPLICATION CIRCUIT 1.

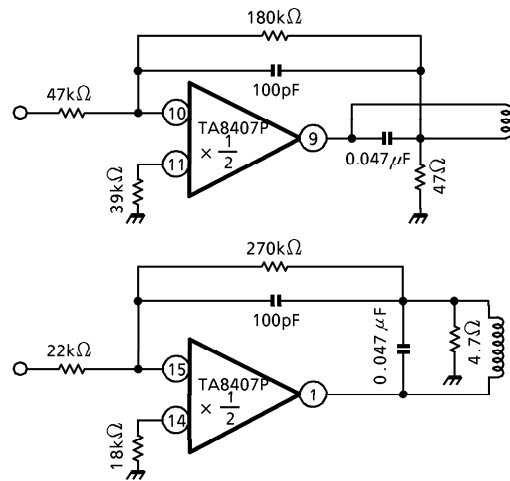


(Note 1)  $I_{SC} \doteq \frac{0.7(V)}{R_{SC}(\Omega)} (A)$

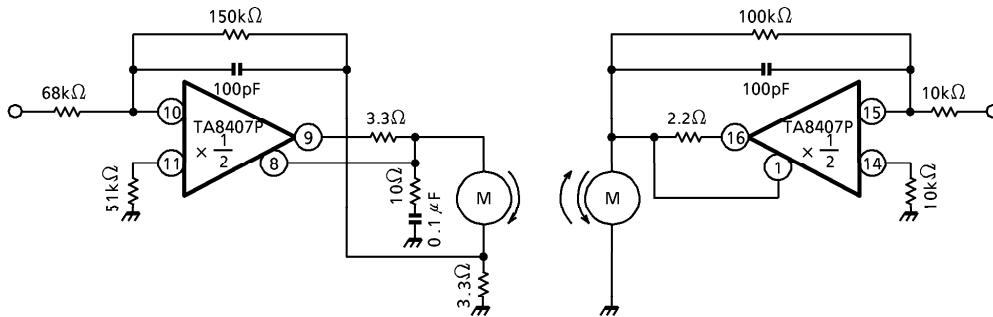
(Note 2) If crosstalk is recognizable remarkably in applications above 80kHz, change a capacitor to one having a value of about 0.33μF as a compensating circuit. Further, no resistor is needed in this case.

(Note 3) Utmost care is necessary in the design of the output line, V<sub>CC</sub> and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

APPLICATION CIRCUIT 2. (Actuator)

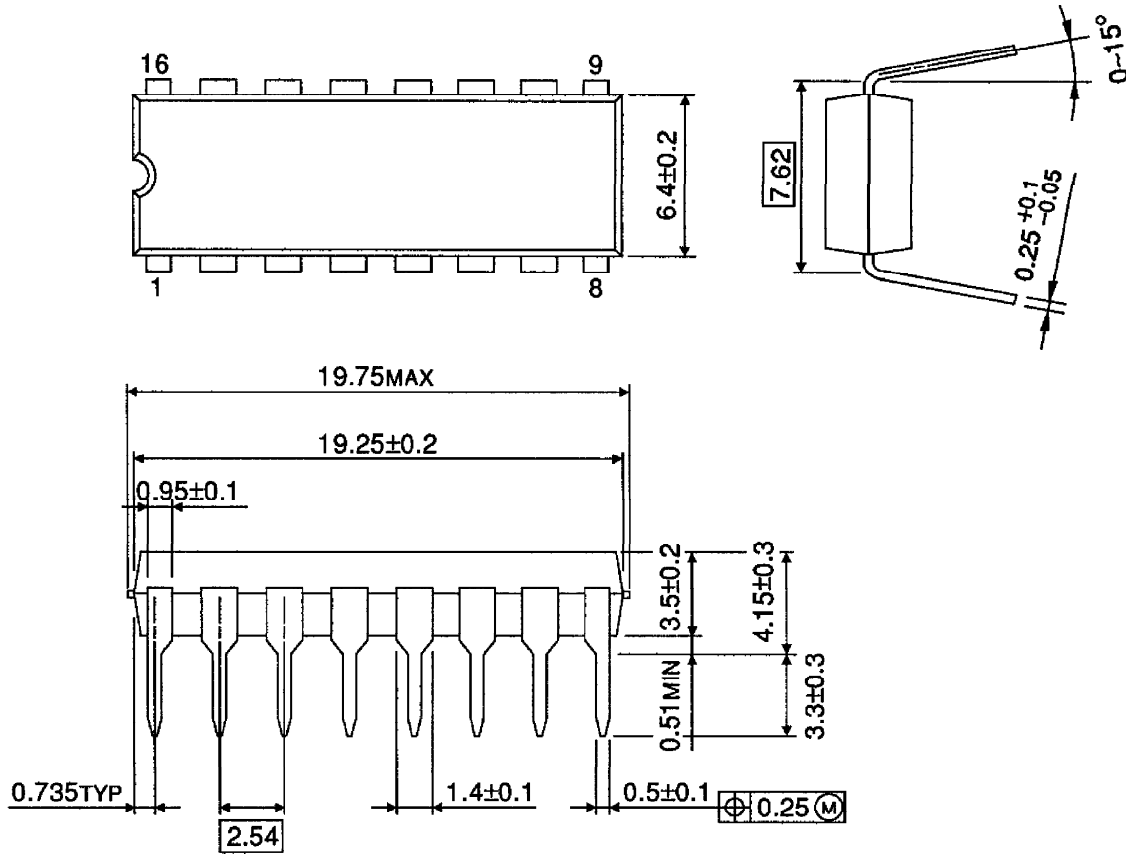


APPLICATION CIRCUIT 3. (Speed and carriage control)



OUTLINE DRAWING  
DIP16-P-300-2.54A

Unit : mm

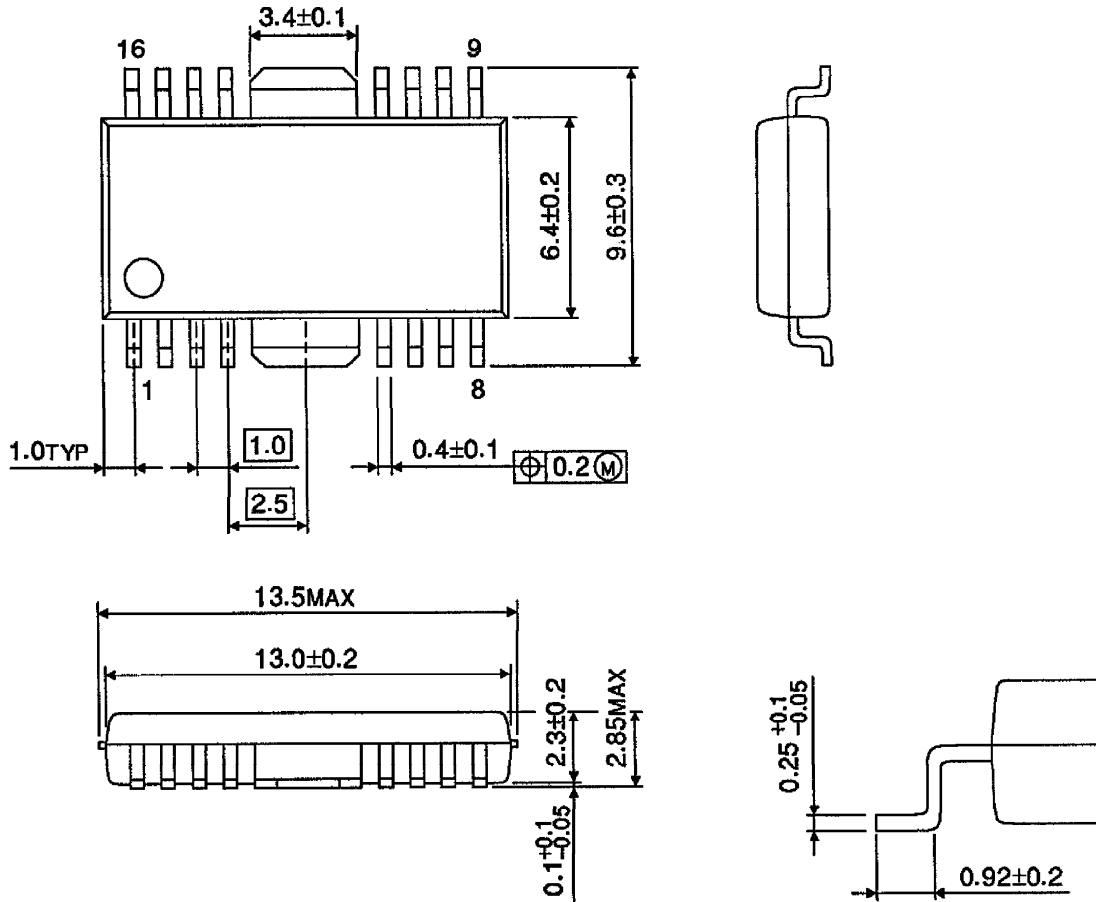


Weight : 1.0g (Typ.)

OUTLINE DRAWING

HSOP16-P-300-1.00

Unit : mm



Weight : 0.50g (Typ.)