

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8410P, TA8410F, TA8410K, TA8410AK

DUAL POWER OPERATIONAL AMPLIFIER

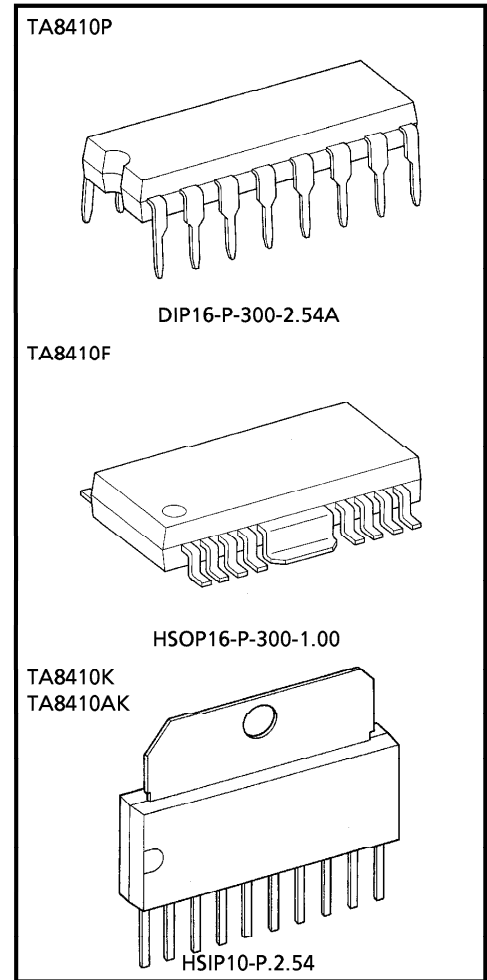
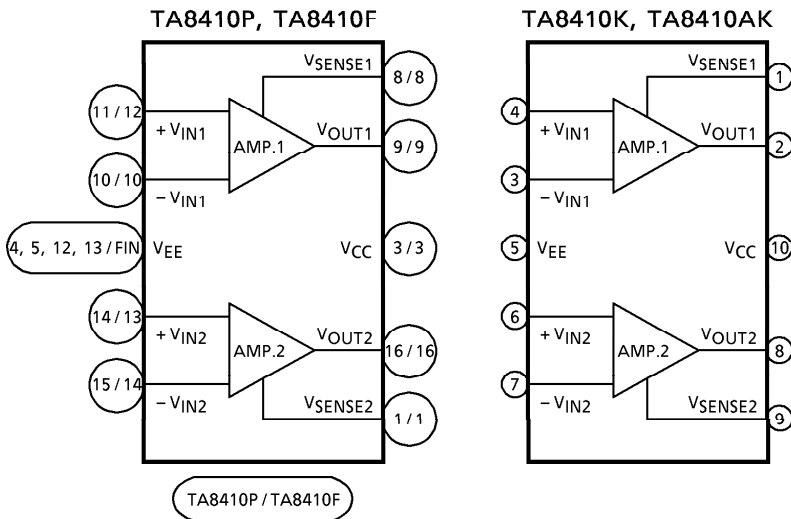
The TA8410 series are a dual power operational amplifier.

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 Hard Disk Drivers) and any other power driver applications.

FEATURES

- Built-in over current protector
- Few external parts required
- Output current up to 600mA (AVE)
- Package TA8410P : DIP16
 TA8410F : HSOP 16
 TA8410K/AK : HSIP 10

BLOCK DIAGRAM



Weight

DIP16-P-300-2.54A	: 1.0g (Typ.)
HSOP16-P-300-1.00	: 0.5g (Typ.)
HSIP10-P-2.54	: 3.0g (Typ.)

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PIN FUNCTION

PIN No.	SYMBOL	FUNCTION DESCRIPTION
1, (1), [9]	V _{SENSE2}	Amp.2 output current sensing terminal.
2, (2), [—]	NC	Non connection
3, (3), [10]	V _{CC}	Positive-side voltage supply terminal.
4, (FIN), [5]	V _{EE}	Negative-side voltage supply terminal.
5, (FIN), [—]	V _{EE}	
6, (6), [—]	NC	Non connection
7, (7), [—]	NC	Non connection
8, (8), [1]	V _{SENSE1}	Amp.1 output current sensing terminal.
9, (9), [2]	V _{OUT1}	Amp.1 output terminal.
10, (10), [3]	-V _{IN1}	Amp.1 input terminal (-)
11, (12), [4]	+V _{IN1}	Amp.1 input terminal (+)
12, (FIN), [—]	V _{EE}	Negative-side voltage supply terminal.
13, (FIN), [—]	V _{EE}	
14, (13), [6]	+V _{IN2}	Amp.2 input terminal (+)
15, (14), [7]	-V _{IN2}	Amp.2 input terminal (-)
16, (16), [8]	V _{OUT2}	Amp.2 output terminal.
(4) (5) (11) (15)	—	NC

() : TA8410F, [] : TA8410K, TA8410AK

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage	TA8410P TA8410F TA8410K	V _{CC} V _{EE}	+9	V
	TA8410AK		+15	
Output Current		I _O (AVE)	0.6	A
Power Dissipation	TA8410P	P _D	1.4 (Note 1)	W
	TA8410F		+2.7 (Note 2)	
	TA8410K		1.4 (Note 3)	
	TA8410AK		12.5 (Note 4)	
Operating Temperature		T _{opr}	-30~75	°C
Storage Temperature		T _{stg}	-55~150	°C

(Note 1) No heat sink

(Note 2) 50×50×0.8mm PCB mounting occupied copper area in excess of 60%.

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

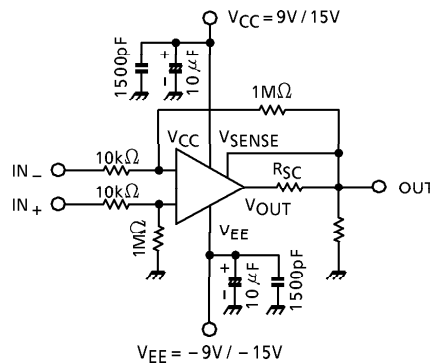
(Note 4) T_c = 25°C

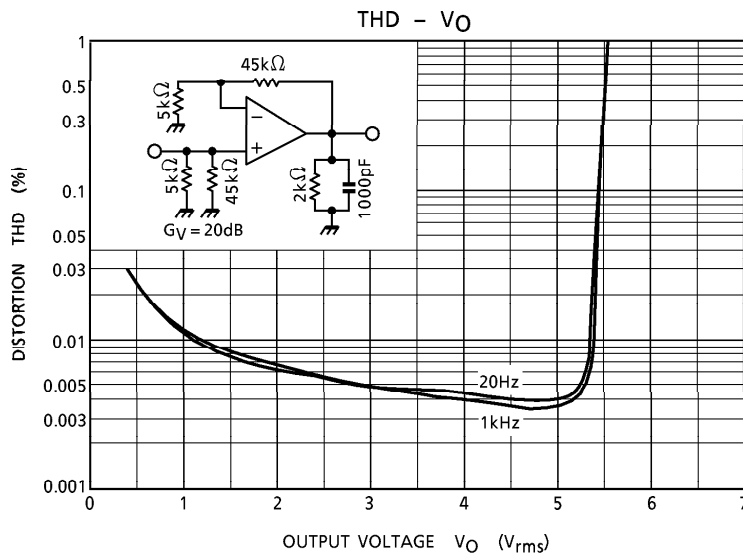
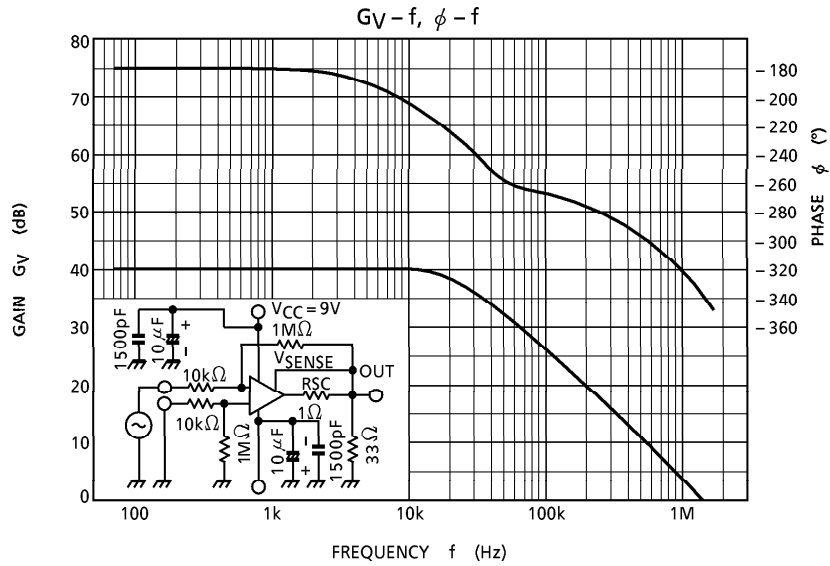
ELECTRICAL CHARACTERISTICS

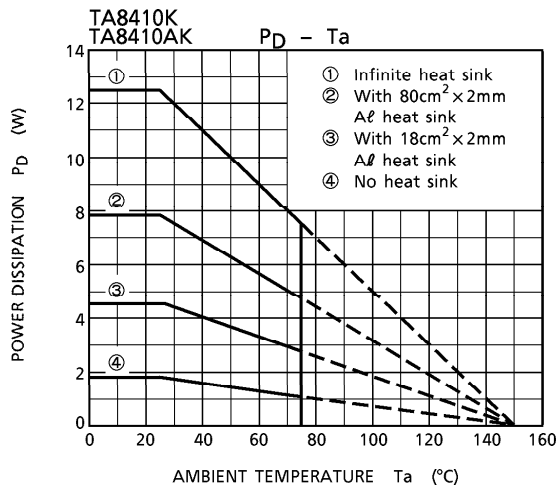
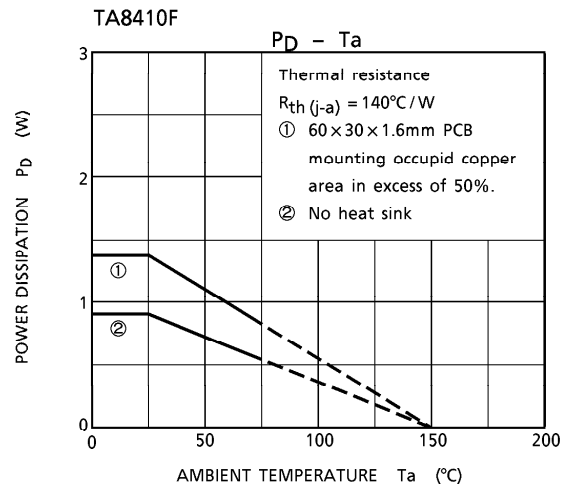
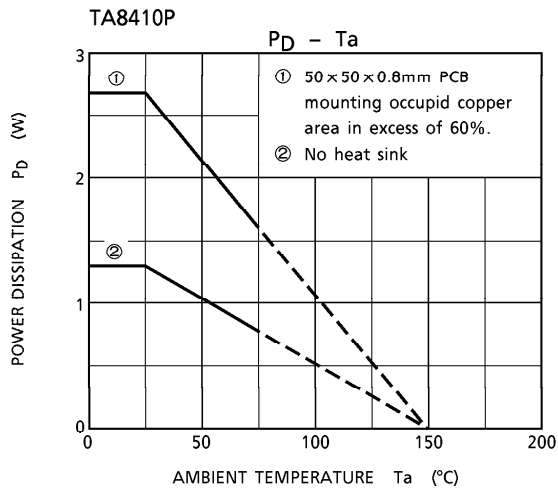
Unless otherwise specified, $T_a = 25^\circ\text{C}$, (TA8410P/F/K, $V_{CC} = 9\text{V}$, $V_{EE} = -9\text{V}$)
 (TA8410AK, $V_{CC} = 15\text{V}$, $V_{EE} = -15\text{V}$)

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Quiescent Current		I_{CC}	—	—	—	7	18	mA	
Input Off Set Current		I_{IO}	—	—	—	0	100	nA	
Input Bias Current		I_I	—	—	—	100	700	nA	
Input Off Set Voltage		V_{IO}	—	—	—	0	6	mV	
Output Voltage Swing	TA8410P TA8410F TA8410K	Upper	V_{OH-1}	—	$R_L = \infty$	7.4	7.6	—	V
			V_{OH-2}	—	$I_O = 0.6\text{A}$	5.5	6.2	—	
		Lower	V_{OL-1}	—	$R_L = \infty$	7.4	7.7	—	
			V_{OL-2}	—	$I_O = 0.6\text{A}$	5.6	6.2	—	
	TA8410K	Upper	V_{OH-1}	—	$R_L = \infty$	13.0	13.6	—	
			V_{OH-2}	—	$I_O = 0.6\text{A}$	11.0	11.6	—	
		Lower	V_{OL-1}	—	$R_L = \infty$	13.0	13.6	—	
			V_{OL-2}	—	$I_O = 0.6\text{A}$	11.0	11.7	—	
Open Loop Gain		G_{VO}	—	—	—	100	—	dB	
Input Common Mode Voltage Range	TA8410P TA8410F TA8410K	CMR	—	$G_V = 40\text{dB}$	± 8.0	± 8.3	—	V	
	TA8410AK	CMR	—	$G_V = 40\text{dB}$	14.0	± 14.3	—		
Common Mode Rejection Ratio		CMRR	—	—	70	82	—	dB	
Supply Voltage Rejection Ratio		SVRR	—	—	76	90	—	dB	
Unity Gain Cross Frequency		f_T	—	Open loop	—	1.0	—	MHz	
Slew Rate		SR	—	$R_L = 33\Omega$	—	0.5	—	$\text{V} / \mu\text{s}$	
Short Circuit Current		I_{SC}	—	$R_{SC} = 1.0\Omega$	—	0.6	—	A	
Cross Talk		C_T	—	$R_L = 33\Omega, V_{OUT} = 1\text{V}_{p-p}$	—	60	—	dB	

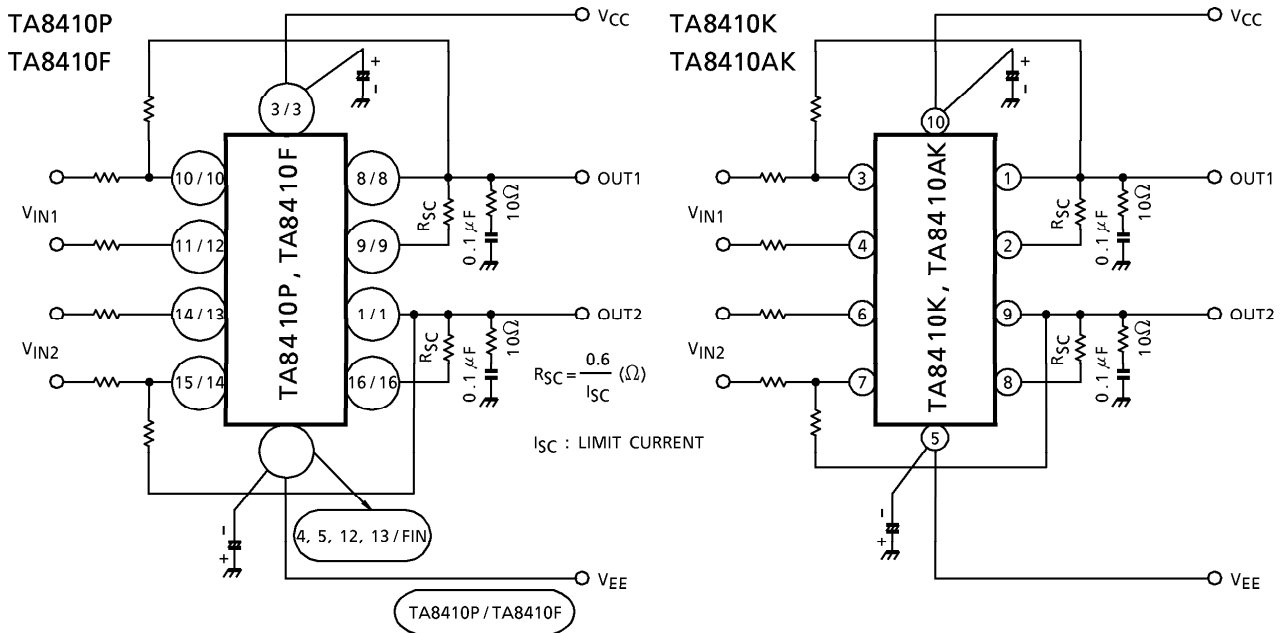
TEST CIRCUIT



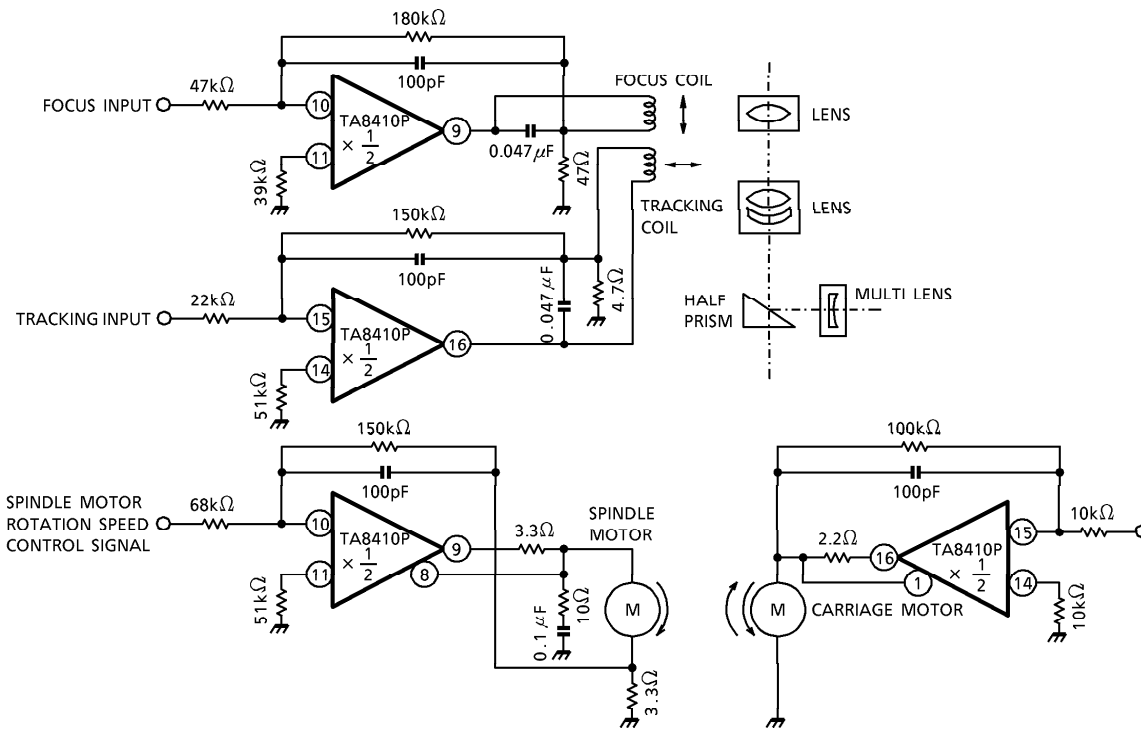




APPLICATION CIRCUIT 1



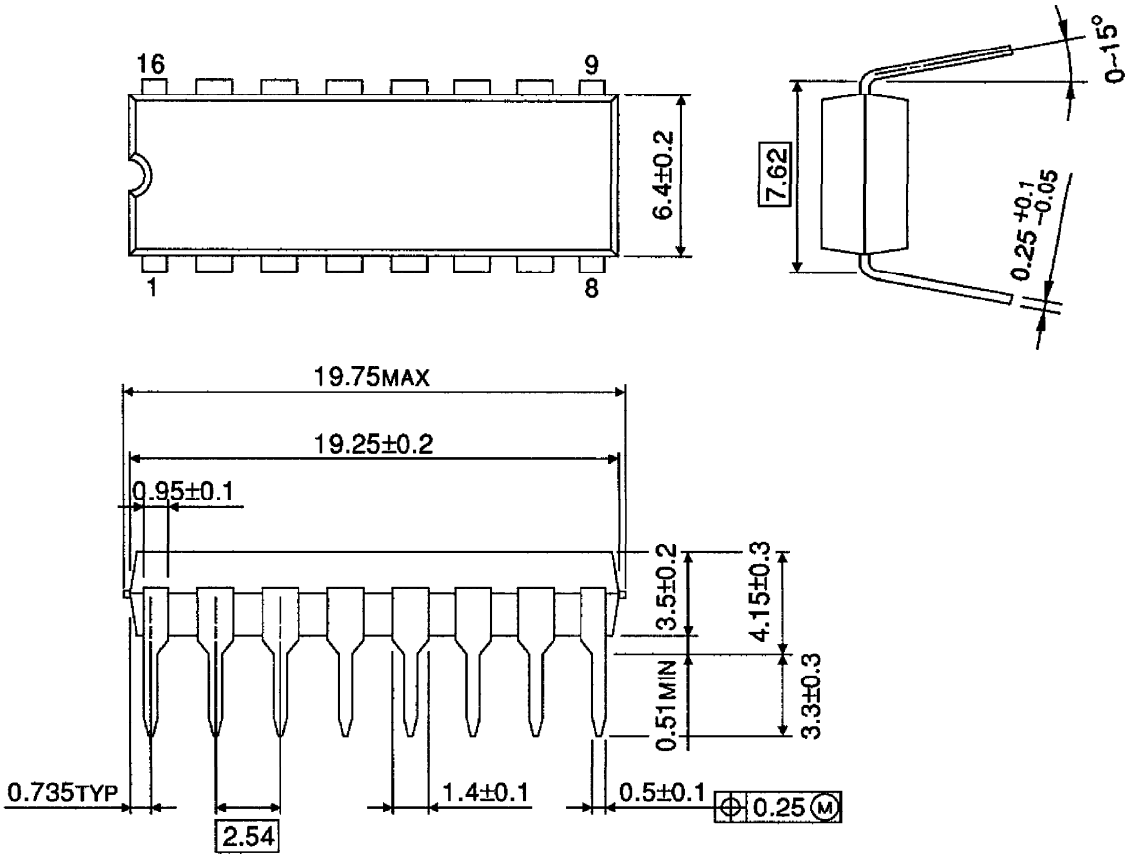
APPLICATION 2 (Drive circuit for CD player motors)



(Note) Utmost care is necessary in the design of the output line, V_{CC} and V_{EE} 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

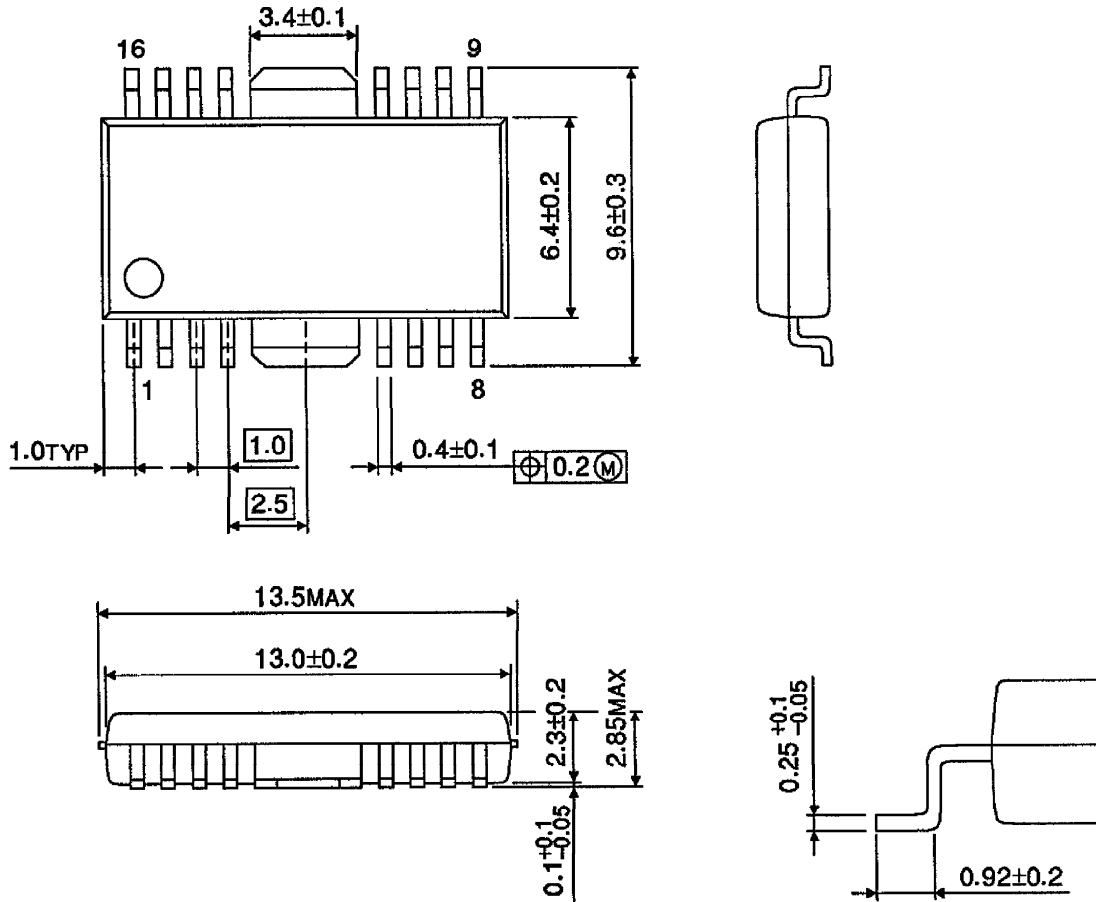
Unit : mm



Weight : 1.0g (Typ.)

OUTLINE DRAWING
HSOP16-P-300-1.00

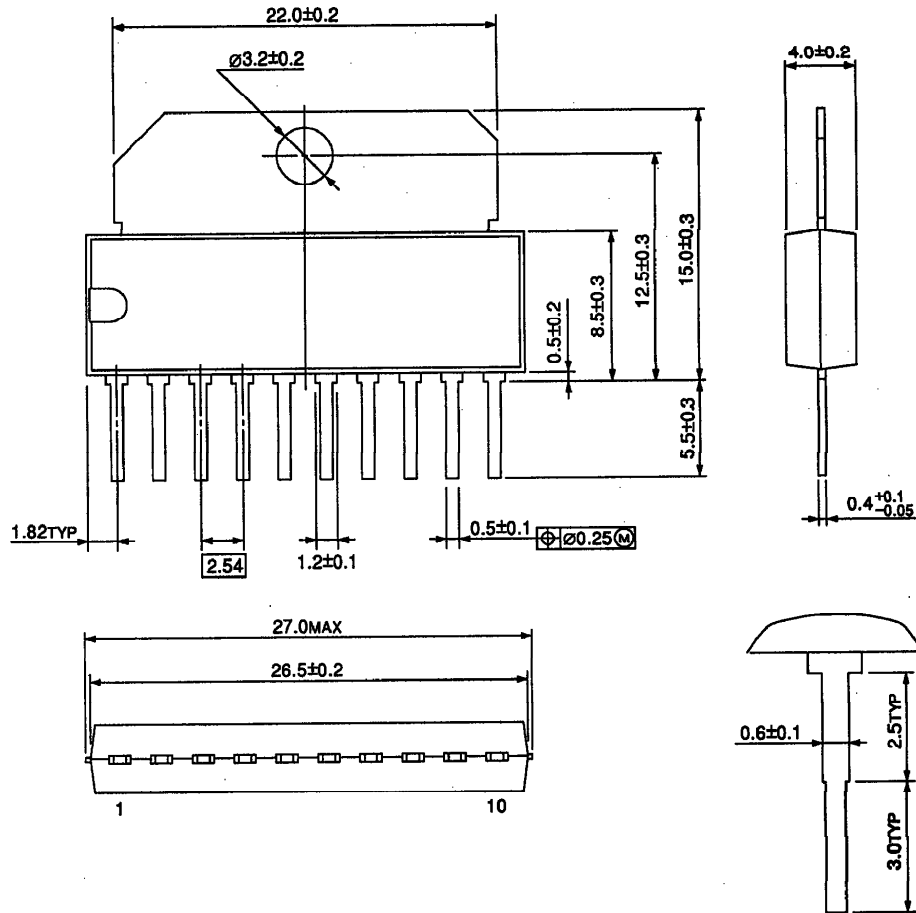
Unit : mm



Weight : 0.5g (Typ.)

OUTLINE DRAWING
HSIP10-P-2.54

Unit : mm



Weight : 3.0g (Typ.)