

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7796P, TA7796Z

5 BAND GRAPHIC EQUALIZER

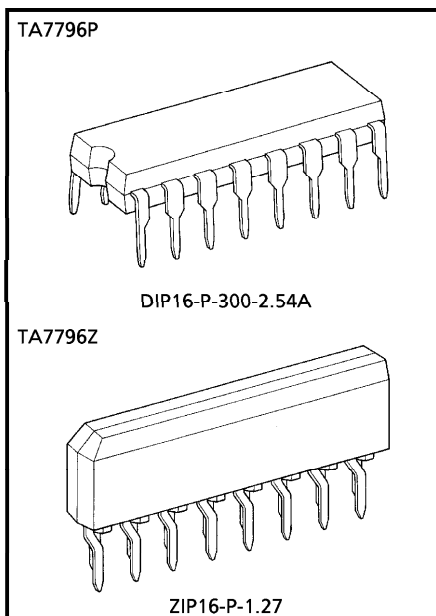
TA7796P, TA7796Z are 5-Band graphic equalizer IC, which have 5 resonance circuit and an output buffer amplifier. 5 band graphic equalizer for one channel can be formed easily by externally connecting capacitors and variable resistors which fix f_0 (resonance frequency).

Dual inline package 16pin TA7796P

Zig-Zag inline package 16pin TA7796Z

FEATURES

- Few External Parts
- Low Distortion
: THD = 0.007% (Typ.)
($V_O = 0.245V_{rms}$ (- 10dBm), $f = 1.1kHz$ BW = 20~20kHz, FLAT)
- Low Noise
: $V_{no} = 3.0\mu V_{rms}$ (Typ.)
($R_g = 620\Omega$, $V_{in} = 0$, BW = 20~20kHz, FLAT)
- Wide Operating Supply Voltage Range
: $V_{CC} = 4.0\sim 16V$ ($T_a = 25^\circ C$)



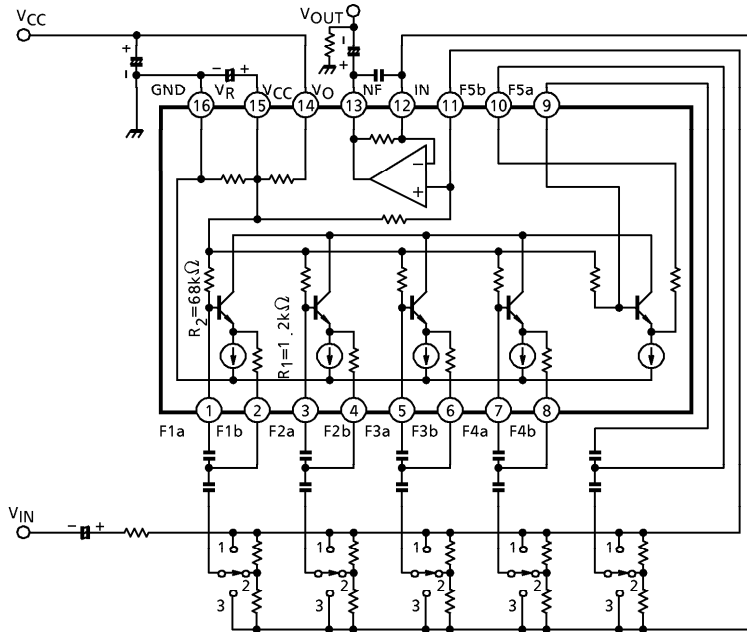
Weight
DIP16-P-300-2.54A : 1.0g (Typ.)
ZIP16-P-1.27 : 0.99g (Typ.)

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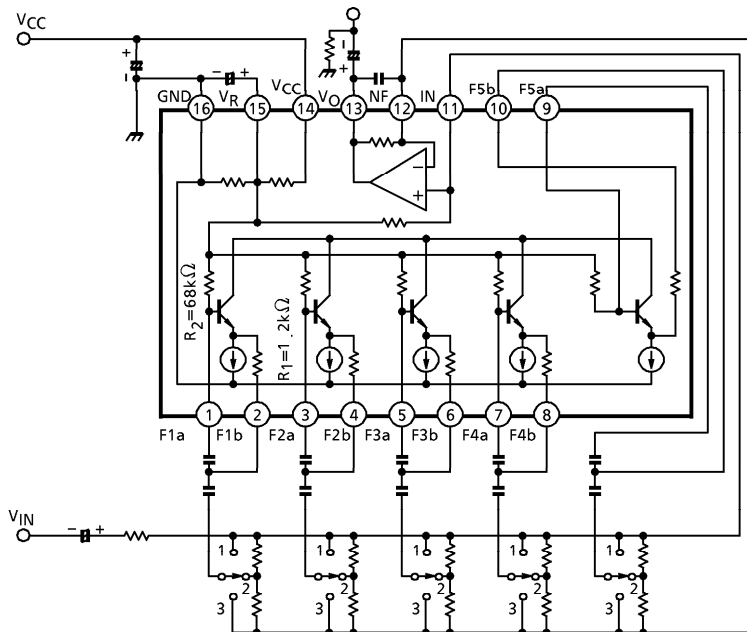
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BLOCK DIAGRAM

TA7796P



TA7796Z



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	16	V
Power Dissipation	P _D (Note)	750	mW
Operating Temperature	T _{opr}	-30~75	°C
Storage Temperature	T _{stg}	-55~150	°C

(Note) Derated above Ta = 25°C in the proportion of 6mW/°C for TA7796P, TA7796Z.

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, V_{CC} = 8V, f = 1.1kHz, R_L = 10Ω, Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I _{CCQ}	—	V _{in} = 0	3.5	6.1	9.3	mA
Voltage Gain	G _V (FLT)	—	V _{out} = 0.775V _{rms} (0dBm)	-2.5	-0.5	1.5	dB
			V _{out} = 0.775V _{rms} (0dBm), f = 110Hz	10.0	11.5	14.0	
	G _V (BST)	—	V _{out} = 0.775V _{rms} (0dBm), f = 340Hz	10.0	11.5	14.0	
			V _{out} = 0.775V _{rms} (0dBm), f = 1.1kHz	10.0	11.5	14.0	
			V _{out} = 0.775V _{rms} (0dBm), f = 3.4kHz	10.0	11.5	14.0	
			V _{out} = 0.775V _{rms} (0dBm), f = 11kHz	10.0	11.5	14.0	
	G _V (CUT)	—	V _{out} = 0.775V _{rms} (0dBm), f = 110Hz	-14.0	-11.5	-10.0	
			V _{out} = 0.775V _{rms} (0dBm), f = 340Hz	-14.0	-11.5	-10.0	
			V _{out} = 0.775V _{rms} (0dBm), f = 1.1kHz	-14.0	-11.5	-10.0	
			V _{out} = 0.775V _{rms} (0dBm), f = 3.4kHz	-14.0	-11.5	-10.0	
V _{out} = 0.775V _{rms} (0dBm), f = 11kHz			-14.0	-11.5	-10.0		
Total Harmonic Distortion	THD (FLT)	—	V _{out} = 0.245V _{rms} (-10dBm)	—	0.007	0.10	%
Output Noise Voltage	V _{no} (FLT)	—	R _g = 620Ω, V _{in} = 0, BW = 20~20kHz	—	3.0	8.0	μV _{rms}

TYP. DC VOLTAGE OF EACH TERMINAL

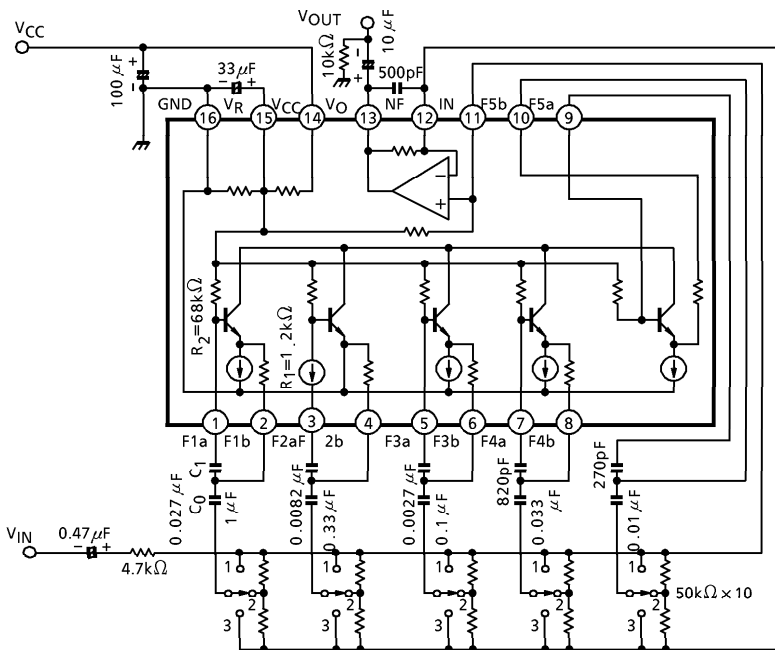
TA7796P (V_{CC} = 8V, Ta = 25°C)

TERMINAL No.	1	2	3	4	5	6	7	8
DC-VOLTAGE (V)	4.70	3.35	4.70	3.35	4.70	3.35	4.70	3.35
TERMINAL No.	9	10	11	12	13	14	15	16
DC-VOLTAGE (V)	4.70	3.35	4.00	4.00	4.00	8.00	4.70	0

TA7796Z (V_{CC} = 8V, Ta = 25°C)

TERMINAL No.	1	2	3	4	5	6	7	8
DC-VOLTAGE (V)	4.70	3.35	4.00	4.00	4.00	8.00	4.70	0
TERMINAL No.	9	10	11	12	13	14	15	16
DC-VOLTAGE (V)	4.70	3.35	4.70	3.35	4.70	3.35	4.70	3.35

TEST CIRCUIT
TA7796P



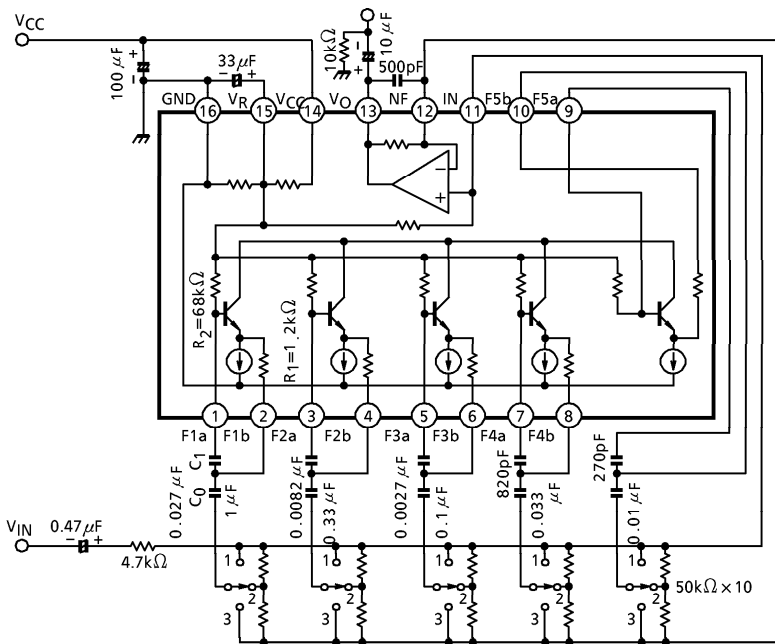
- 1 : CUT 2 : FLAT 3 : BOOST
- f_o (Resonance Frequency)

$$f_o = \frac{1}{2\pi \sqrt{C_0 \cdot C_1 \cdot R_1 \cdot R_2}}$$

($R_1 = 1.2k\Omega$, $R_2 = 68k\Omega$,
on chip resistor)

C_0 (F)	C_1 (F)	f_o (Hz)
1μ	0.0027μ	107
0.33μ	0.0082μ	340
0.1μ	0.0027μ	1.07k
0.033μ	820p	3.40k
0.01μ	270p	10.7k

TA7796Z

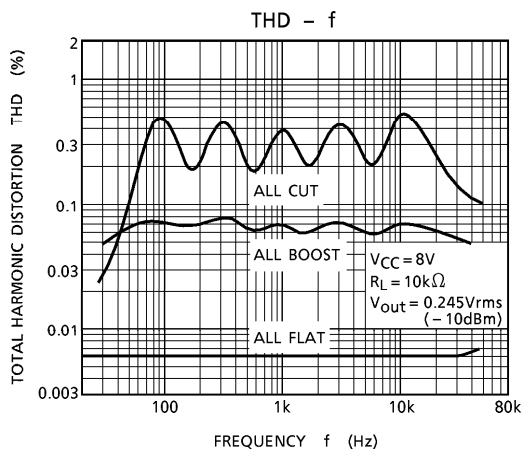
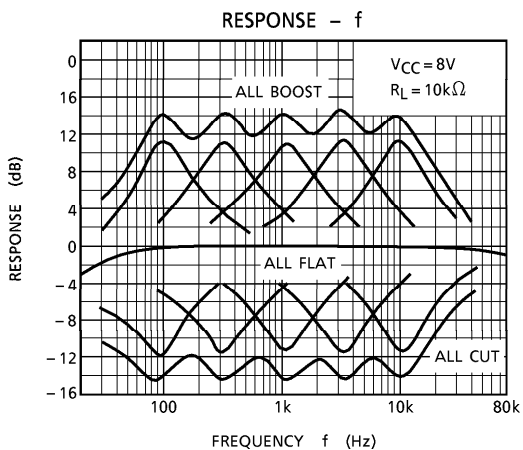
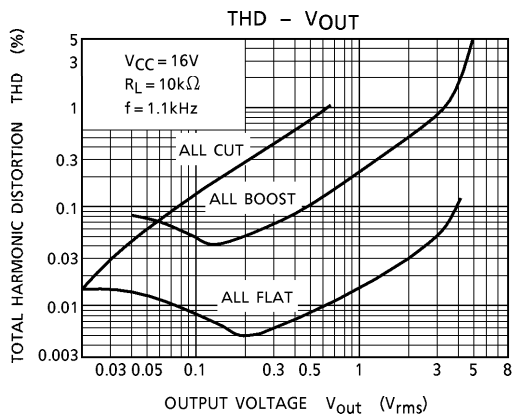
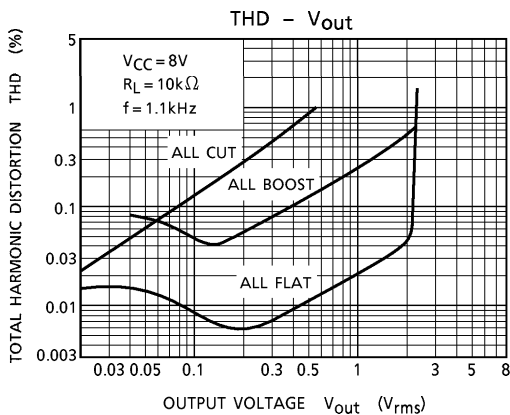
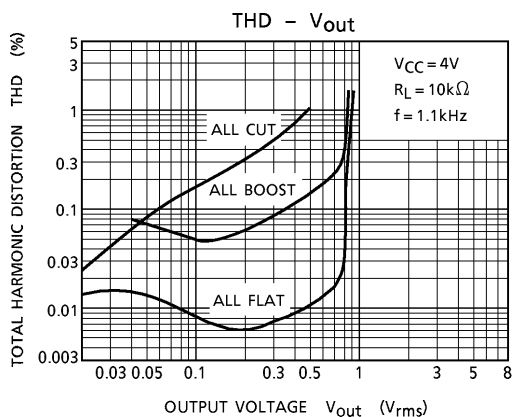
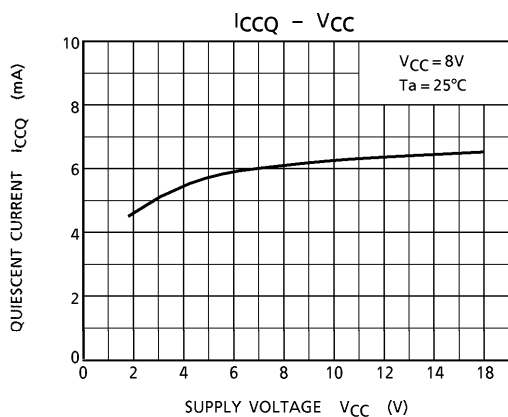


- 1 : CUT 2 : FLAT 3 : BOOST
- f_o (Resonance Frequency)

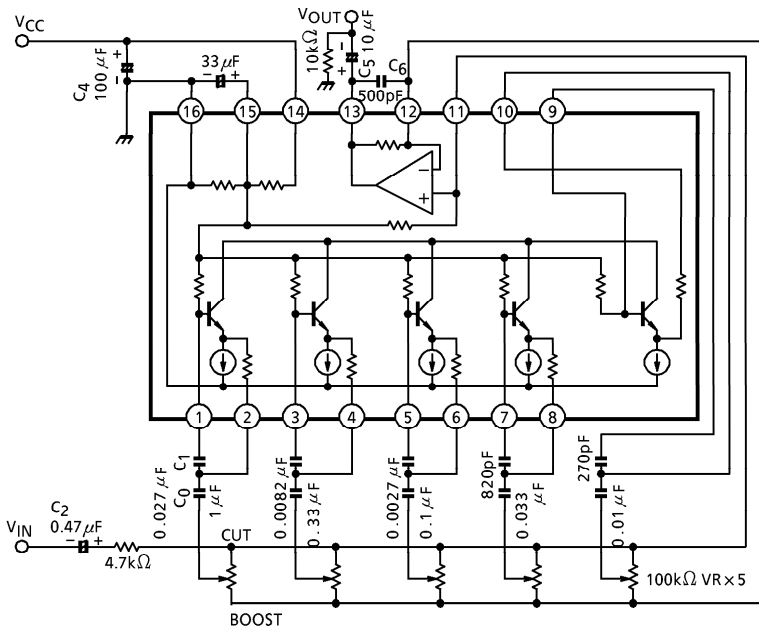
$$f_o = \frac{1}{2\pi \sqrt{C_0 \cdot C_1 \cdot R_1 \cdot R_2}}$$

($R_1 = 1.2k\Omega$, $R_2 = 68k\Omega$,
on chip resistor)

C_0 (F)	C_1 (F)	f_o (Hz)
1μ	0.0027μ	107
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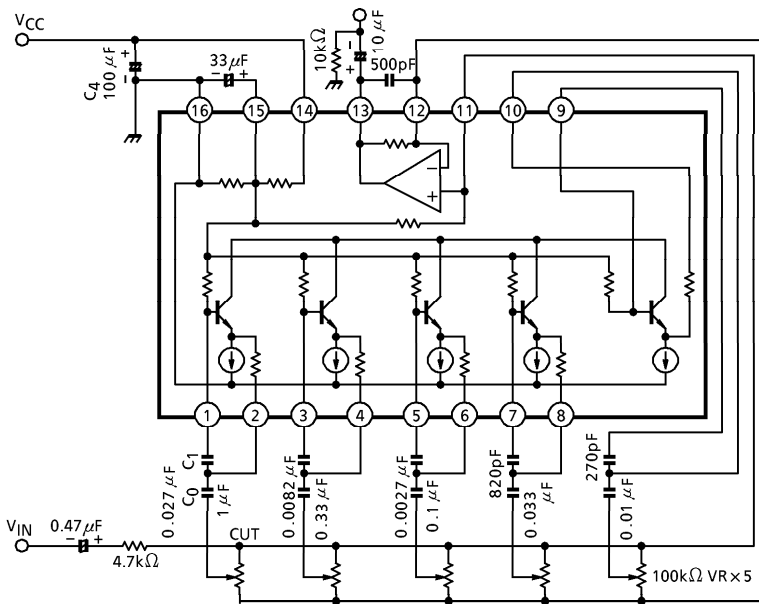


APPLICATION
TA7796P



- Description of external parts.
- C₀, C₁ : Capacitors used to fix f₀ (resonance frequency).
- C₂ : Input capacitor.
- C₃ : Decoupling capacitor.
- C₄ : Power capacitor.
- C₅ : Output capacitor.

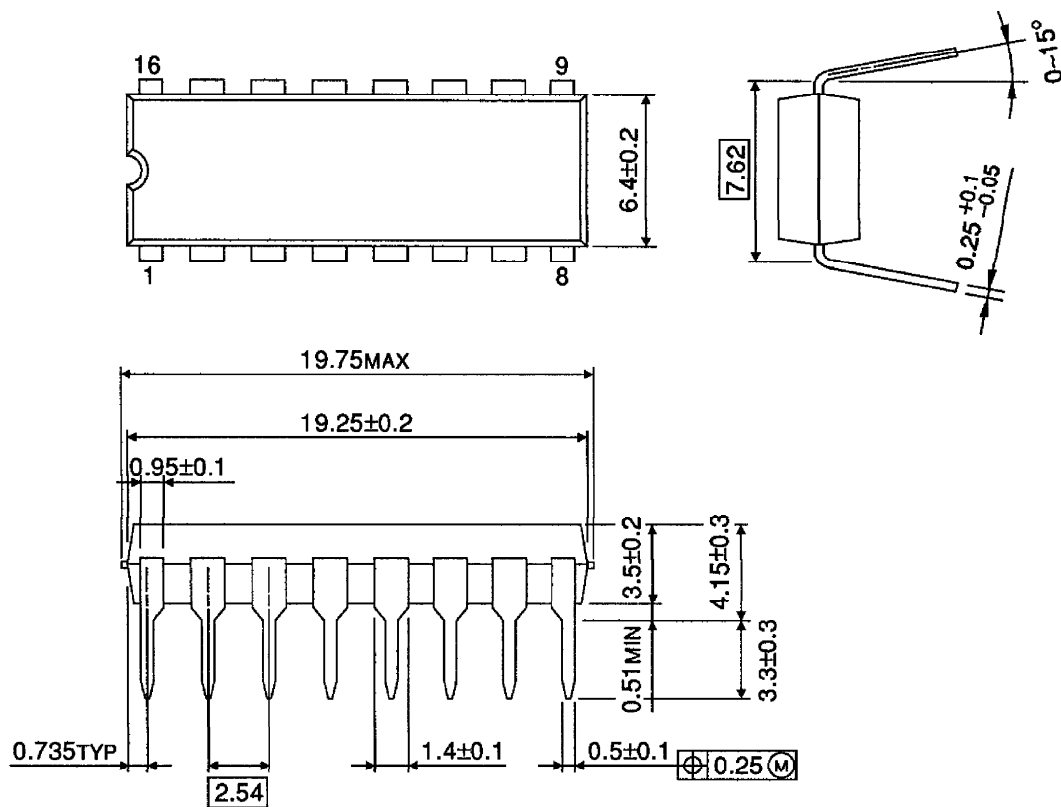
TA7796Z



- Description of external parts.
- C₀, C₁ : Capacitors used to fix f₀ (resonance frequency).
- C₂ : Input capacitor.
- C₃ : Decoupling capacitor.
- C₄ : Power capacitor.
- C₅ : Output capacitor.

OUTLINE DRAWING
DIP16-P-300-2.54A

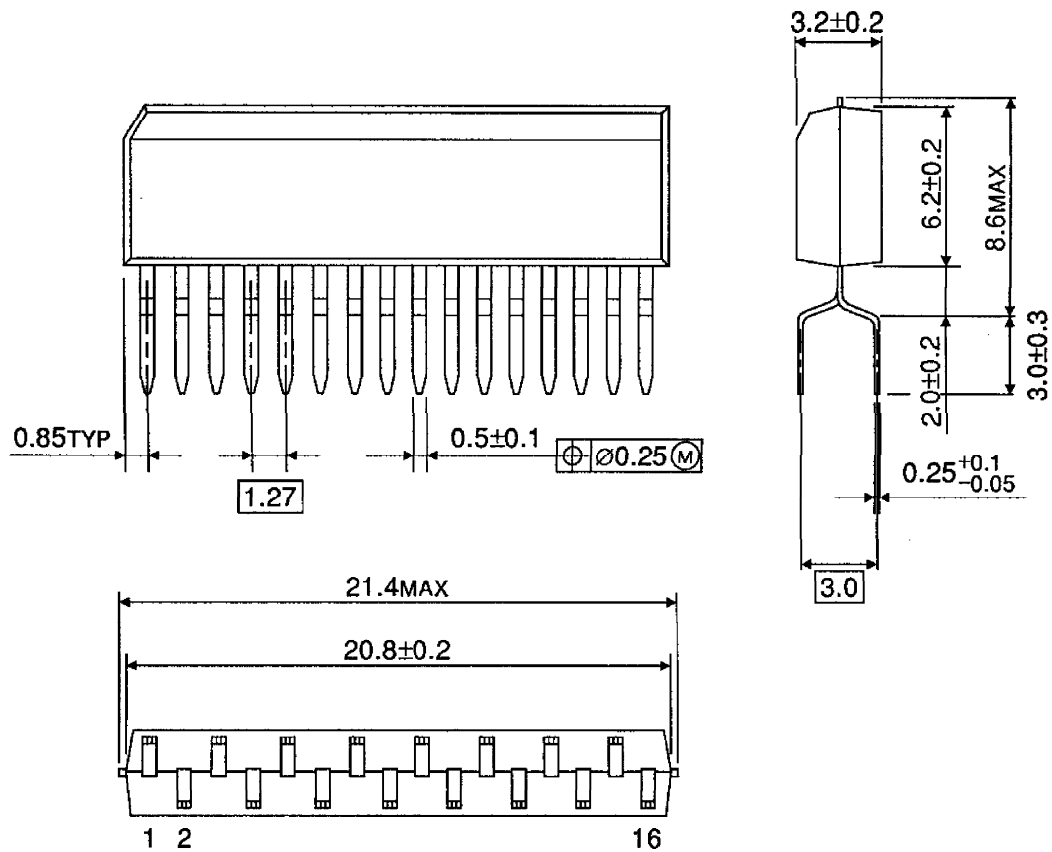
Unit : mm



Weight : 1.0g (Typ.)

OUTLINE DRAWING
ZIP16-P-1.27

Unit : mm



Weight : 0.99g (Typ.)