

5 BAND GRAPHIC EQUALIZER

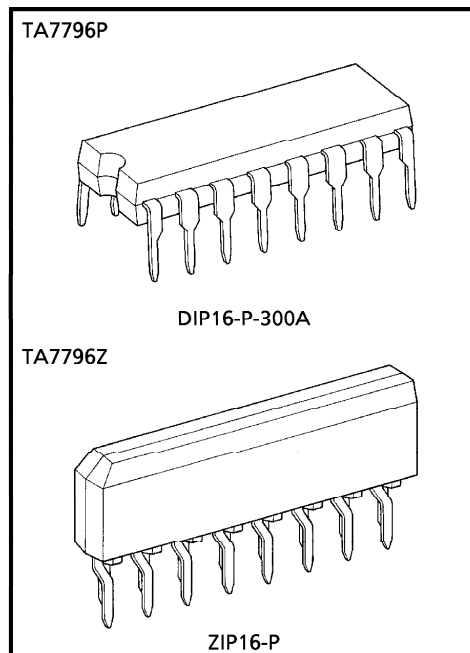
TA7796P, TA7796Z are 5-Band graphic equalizer IC, which have 5 resonance circuit and an output buffer amplifier. 5 band graphic equalizer for one channel can be formed easily by externally connecting capacitors and variable resistors which fix f_0 (resonance frequency).

Dual inline package 16pin TA7796P

Zig-Zag inline package 16pin TA7796Z

FEATURES

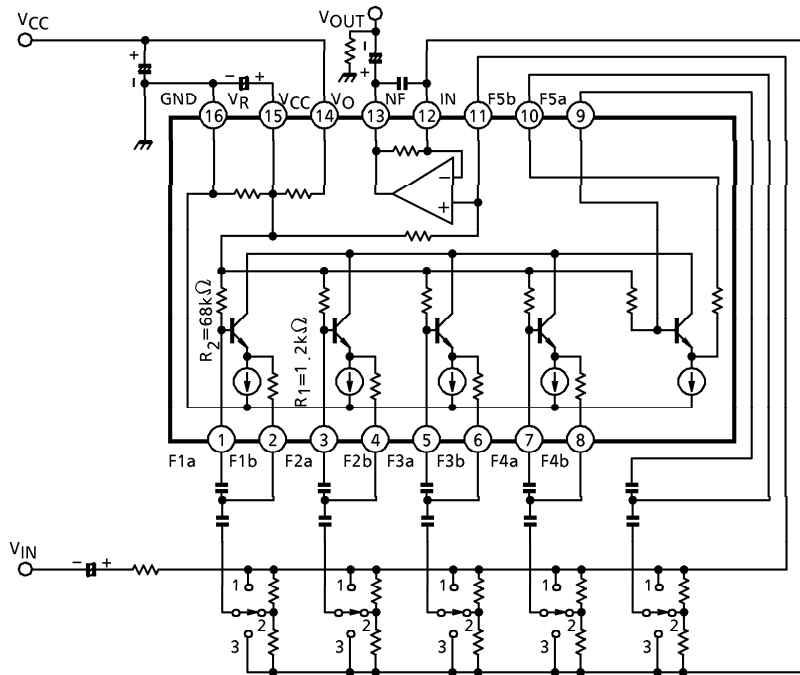
- Few External Parts
- Low Distortion
: THD = 0.007% (Typ.)
($V_O = 0.245V_{rms}$ (- 10dBm), $f = 1.1kHz$ BW = 20~20kHz, FLAT)
- Low Noise
: $V_{no} = 3.0\mu V_{rms}$ (Typ.)
($R_g = 620\Omega$, $V_{in} = 0$, BW = 20~20kHz, FLAT)
- Wide Operating Supply Voltage Range
: $V_{CC} = 4.0\sim 16V$ ($T_a = 25^\circ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



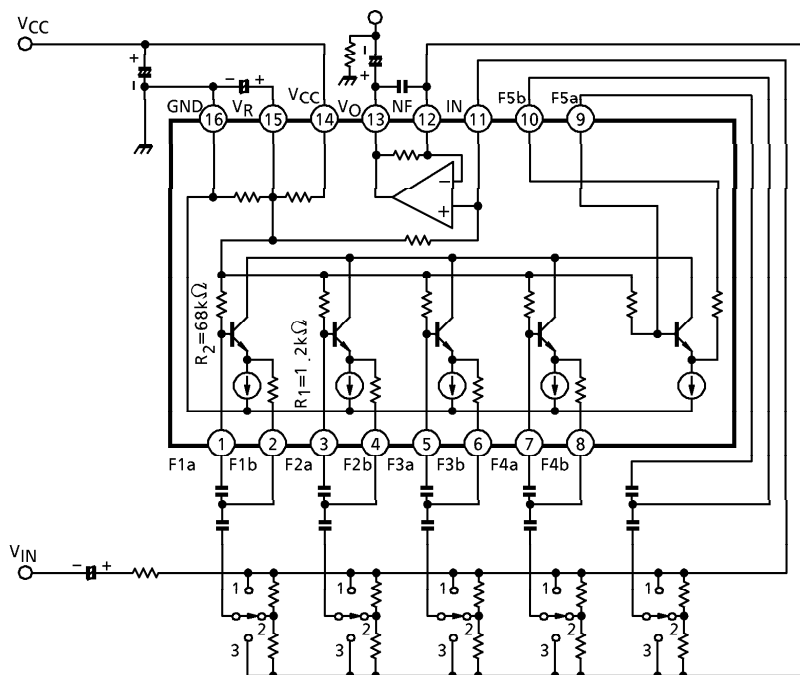
Weight DIP16-P-300A : 1.0g (Typ.)
ZIP16-P : 0.99g (Typ.)

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 | |
| Total Harmonic Distortion | THD (FLT) | — | V _{out} = 0.245V _{rms} (-10dBm) | — | 0.007 | 0.10 | % |
| | | — | V _{out} = 0.245V _{rms} (-10dBm), f = 11kHz | -14.0 | -11.5 | -10.0 | |
| 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

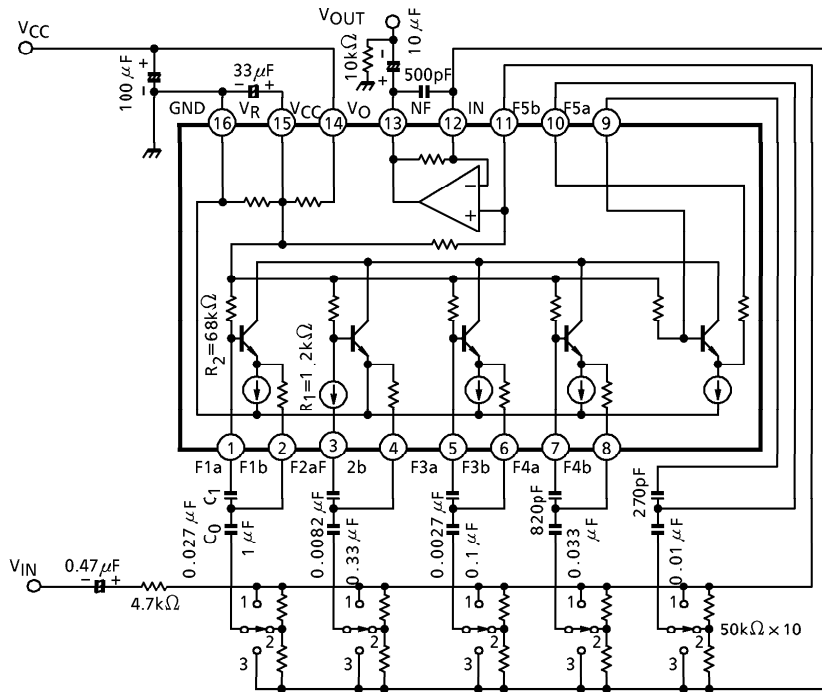
TA7796P (V_{CC} = 8V, Ta = 25°C)

| | | | | | | | | |
|----------------|------|------|------|------|------|------|------|------|
| 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**



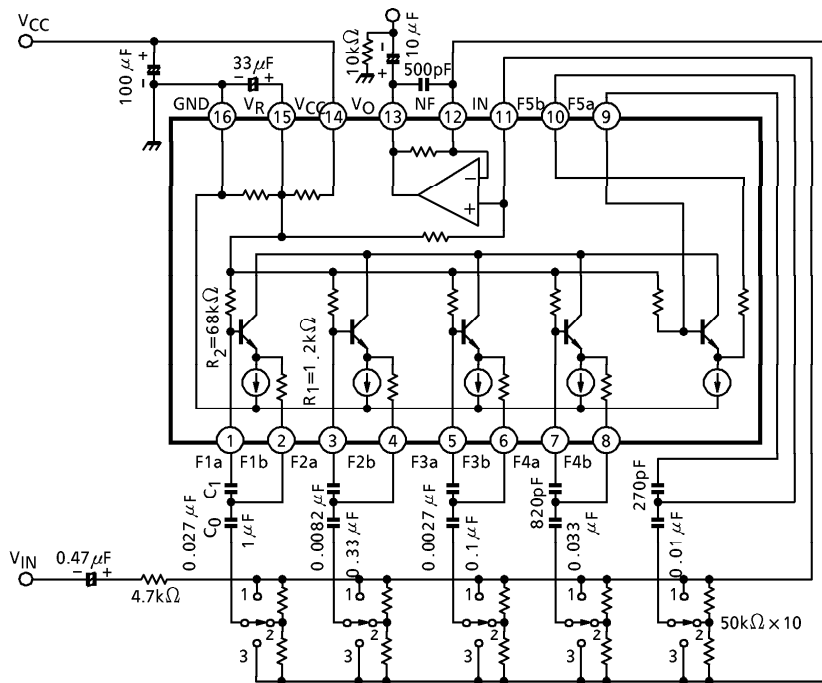
- 1 : CUT 2 : FLAT 3 : BOOST
- f_o (Resonance Frequency)

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

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

| C_0 (F) | C_1 (F) | f_o (Hz) |
|------------|-------------|------------|
| 1μ | 0.027μ | 107 |
| 0.33μ | 0.0082μ | 340 |
| 0.1μ | 0.0027μ | 1.07k |
| 0.033μ | 820p | 3.40k |
| 0.01μ | 270p | 10.7k |

TA7796Z

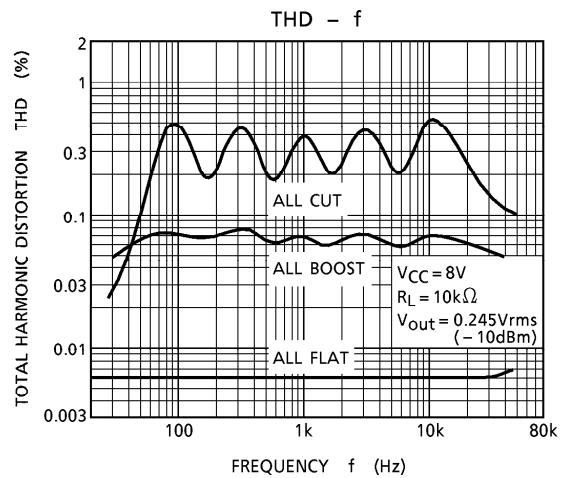
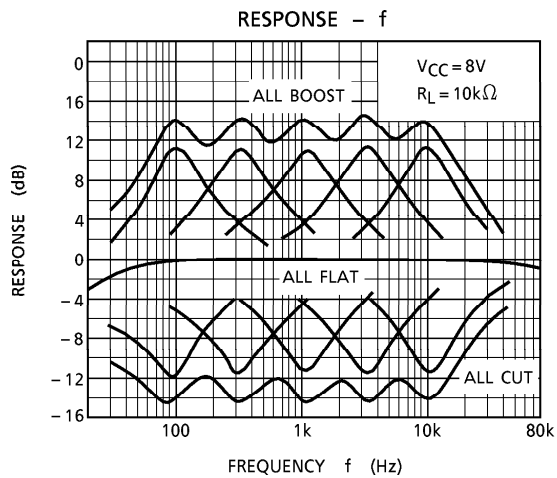
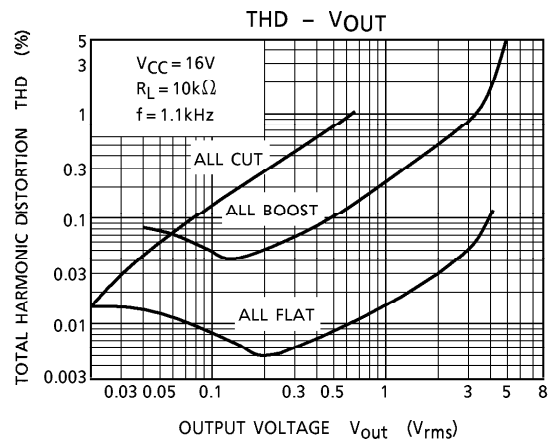
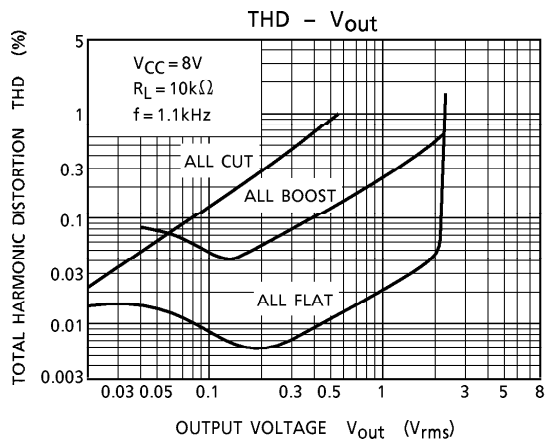
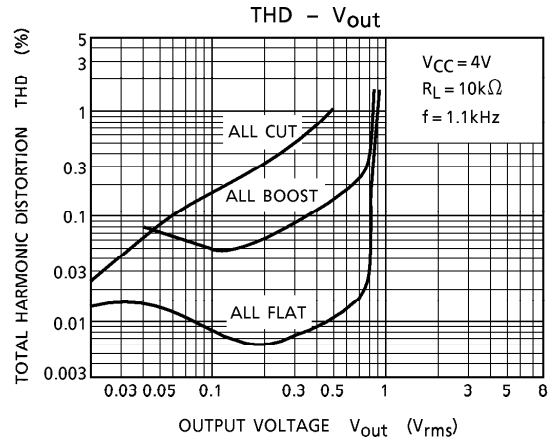
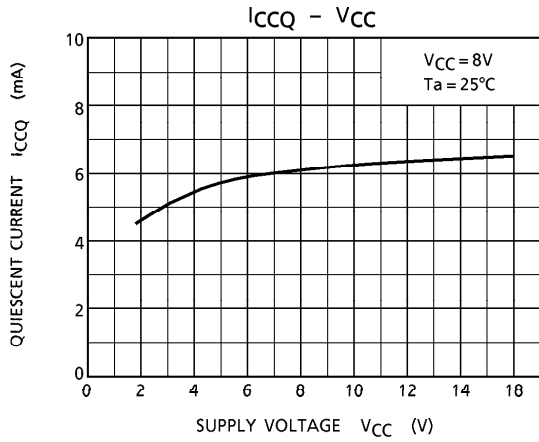


- 1 : CUT 2 : FLAT 3 : BOOST
- f_o (Resonance Frequency)

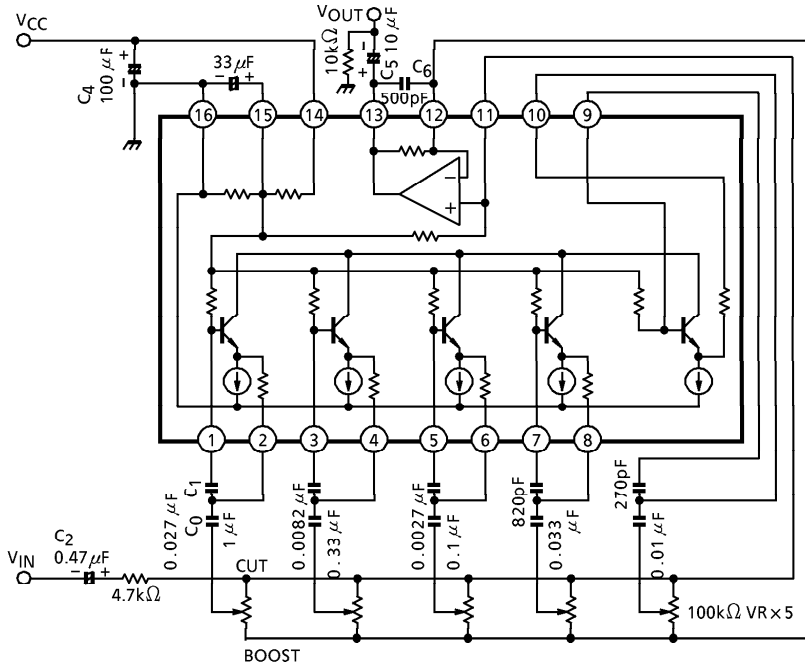
$$f_o = \frac{1}{2\pi \sqrt{C_0 \cdot C_1 \cdot R_1 \cdot R_2}}$$

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

| C_0 (F) | C_1 (F) | f_o (Hz) |
|------------|-------------|------------|
| 1μ | 0.027μ | 107 |
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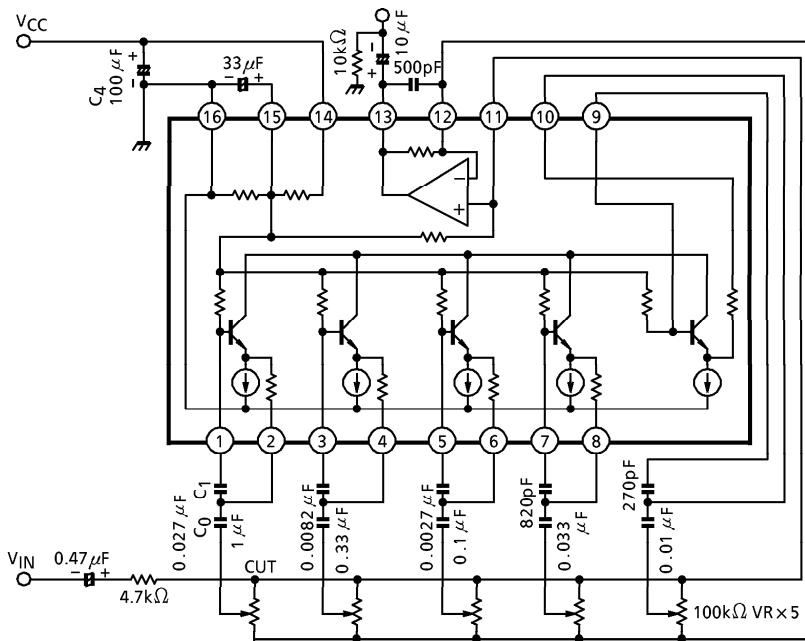


APPLICATION
TA7796P



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

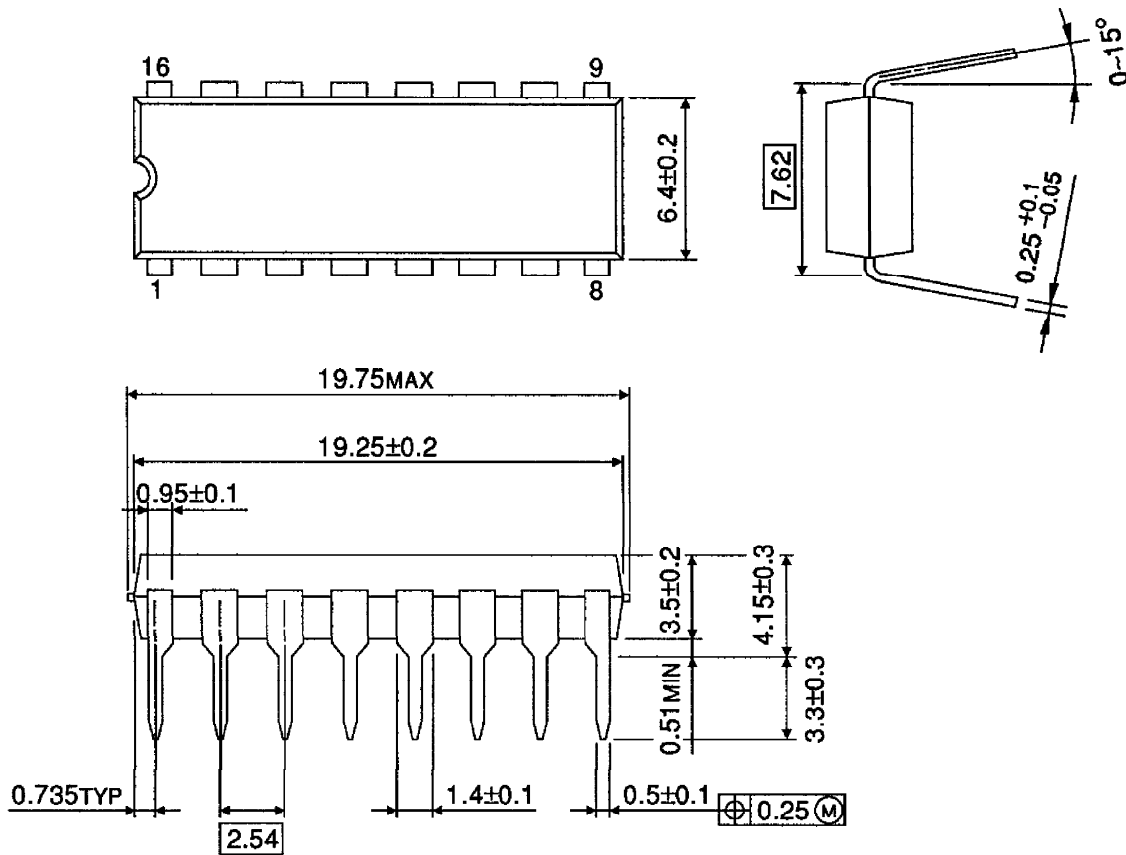
TA7796Z



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

OUTLINE DRAWING
DIP16-P-300A

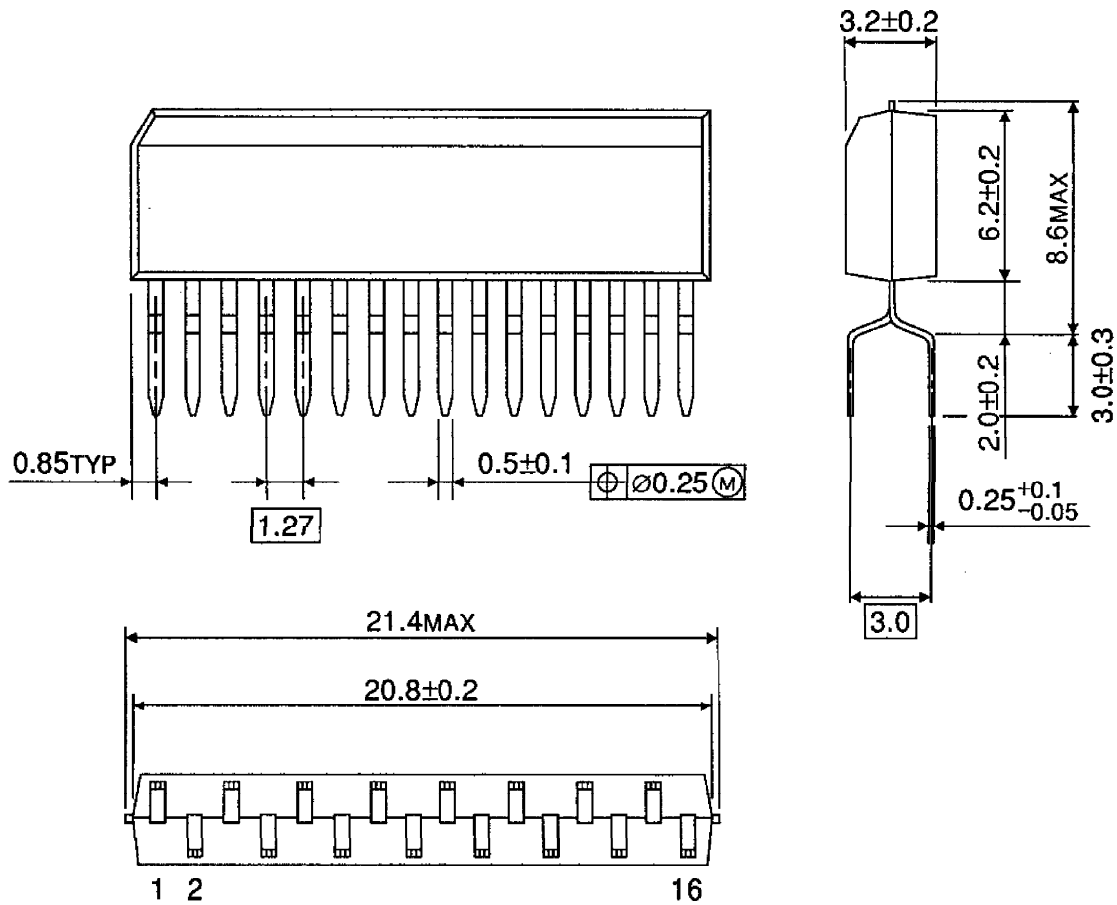
Unit : mm



Weight : 1.0g (Typ.)

OUTLINE DRAWING
ZIP16-P

Unit : mm



Weight : 0.99g (Typ.)