

# TA2132BP, TA2132BF

## AM / FM RADIO IC

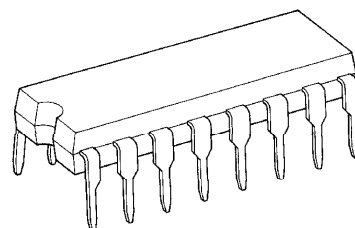
TA2132BP, TA2132BF are AM/FM Radio IC (FM F/E + AM / FM IF) which are designed for AM/FM Radios.

FM Local Oscillation Voltage is set up low relativity, for NEW FCC.

### FEATURES

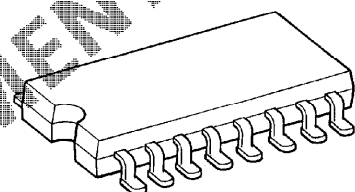
- For NEW FCC
- AM detector coil, FM IFT, IF coupling condenser are not needed.
- For adopting ceramic discriminator, it is not necessary to adjust the FM quad detector circuit.
- Built-in varactor diode for AFC
- Low supply current ( $V_{CC} = 3\text{ V}$ ,  $T_a = 25^\circ\text{C}$ )  
 $I_{CCQ}(\text{FM}) = 7.3\text{ mA (Typ.)}$   
 $I_{CCQ}(\text{AM}) = 3.6\text{ mA (Typ.)}$
- Operating supply voltage range :  $V_{CC} = 1.8 \sim 7\text{ V}$  ( $T_a = 25^\circ\text{C}$ )

TA2132BP



DIP16-P-300-2.54A

TA2132BF



SSOP16-P-225-1.00A

#### Weight

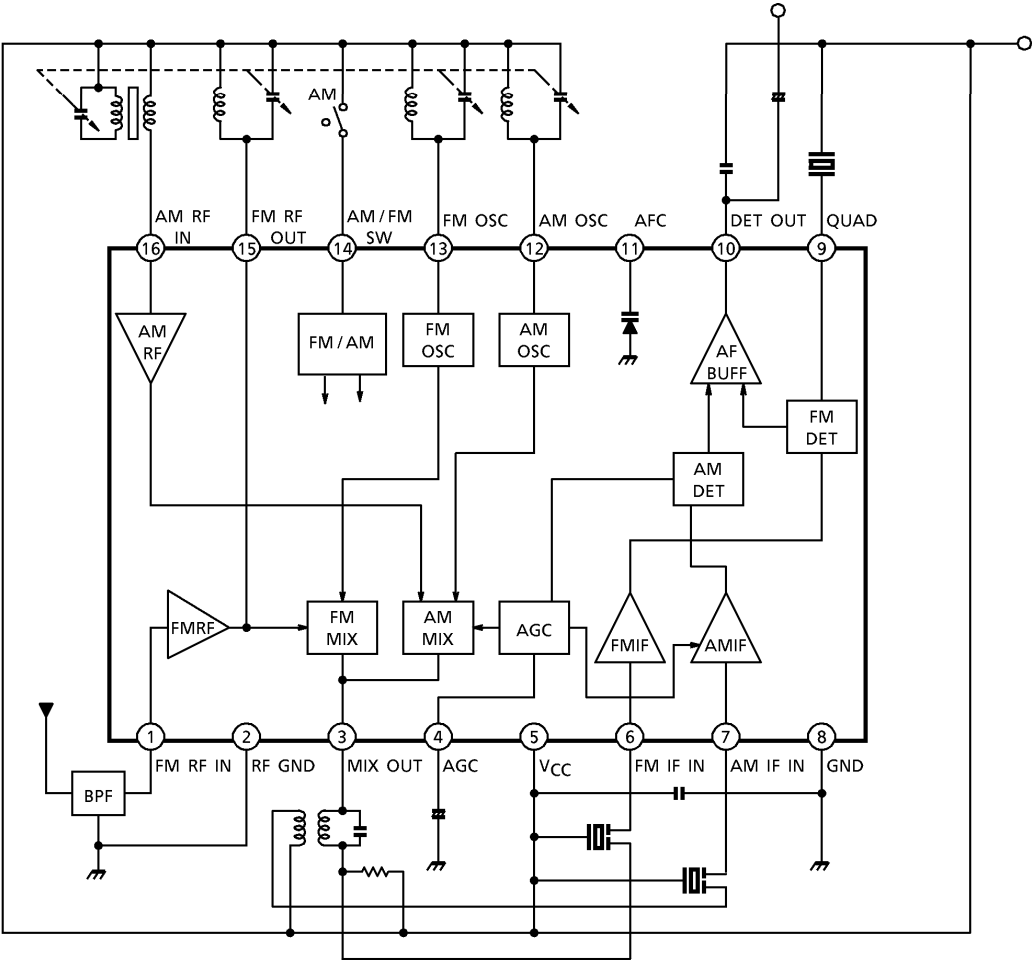
DIP16-P-300-2.54A : 1.00 g (Typ.)  
 SSOP16-P-225-1.00A : 0.14 g (Typ.)

(\*) : Handle with care to prevent devices from deteriorations by static electricity.

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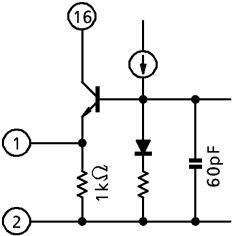
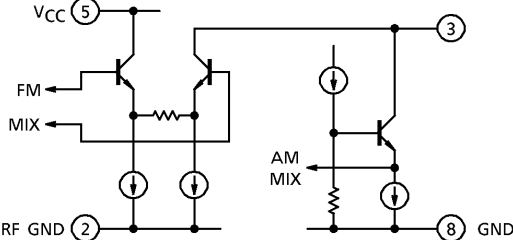
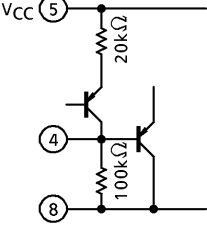
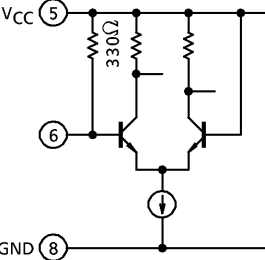
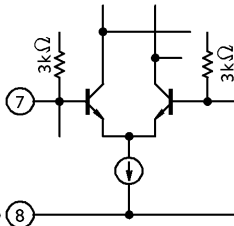
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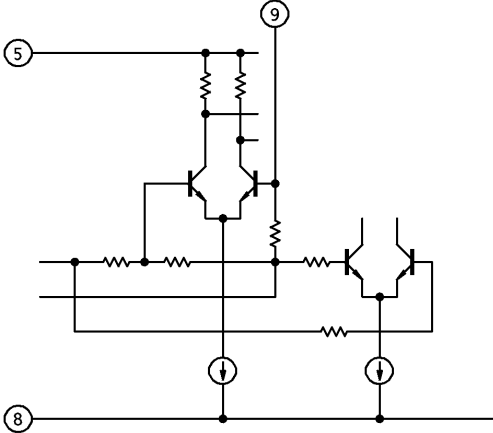
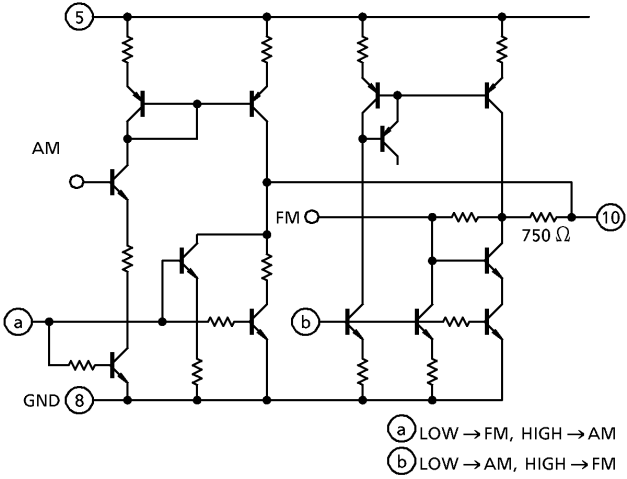
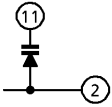
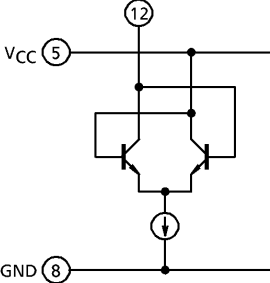
BLOCK DIAGRAM



EXPLANATION OF TERMINAL

TERMINAL VOLTAGE : Typical DC voltage at no signal with test circuit ( $V_{CC} = 3\text{ V}$ ,  $T_a = 25^\circ\text{C}$ )

| PIN No. | ITEM                                     | INTERNAL CIRCUIT                                                                    | DC VOLTAGE (V) |     |
|---------|------------------------------------------|-------------------------------------------------------------------------------------|----------------|-----|
|         |                                          |                                                                                     | AM             | FM  |
| 1       | FM RF IN                                 |    | 0              | 0.8 |
| 2       | RF GND<br>(GND for FM RF, FM OSC Stage)  | —                                                                                   | 0              | 0   |
| 3       | MIX OUT                                  |  | 3.0            | 2.9 |
| 4       | AGC                                      |  | 0              | 0   |
| 5       | $V_{CC}$ ( $V_{CC}$ for AM, FM IF Stage) | —                                                                                   | 3.0            | 3.0 |
| 6       | FM IF IN                                 |  | 3.0            | 3.0 |
| 7       | AM IF IN                                 |  | 2.3            | 2.6 |

| PIN No. | ITEM                    | INTERNAL CIRCUIT                                                                                                                               | DC VOLTAGE (V) |     |
|---------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|
|         |                         |                                                                                                                                                | AM             | FM  |
| 8       | GND (GND for AM, FM IF) | —                                                                                                                                              | 0              | 0   |
| 9       | QUAD                    |                                                              | 2.5            | 2.2 |
| 10      | DET OUT                 |  <p>(a) LOW → FM, HIGH → AM<br/>(b) LOW → AM, HIGH → FM</p> | 1.0            | 0.9 |
| 11      | AFC                     |                                                             | —              | —   |
| 12      | AM OSC                  |                                                             | 3.0            | 3.0 |

| PIN No. | ITEM                                                                                               | INTERNAL CIRCUIT | DC VOLTAGE (V) |     |
|---------|----------------------------------------------------------------------------------------------------|------------------|----------------|-----|
|         |                                                                                                    |                  | AM             | FM  |
| 13      | FM OSC                                                                                             |                  | 3.0            | 3.0 |
| 14      | AM – FM SW<br>• SW Condition<br>V14 = VCC → FM<br>V14 = OPEN → AM<br>• VCC for FM RF, FM OSC Stage |                  | —              | 3.0 |
| 15      | FM RF OUT                                                                                          | Cf·Pin①          | 3.0            | 3.0 |
| 16      | AM RF IN                                                                                           |                  | 3.0            | 3.0 |

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC        |          | SYMBOL | RATING   | UNIT |
|-----------------------|----------|--------|----------|------|
| Supply Voltage        |          | VCC    | 8        | V    |
| Power Dissipation     | TA2132BP | PD     | 750      | mA   |
|                       | TA2132BF | (Note) | 350      | mW   |
| Operating Temperature |          | Topr   | − 25~75  | °C   |
| Storage Temperature   |          | Tstg   | − 55~150 | °C   |

(Note) : Deleted above Ta = 25°C in the proportion of 6 mW/°C for TA2132BP and 2.8 mW/°C for TA2132BF.

**ELECTRICAL CHARACTERISTICS**

Unless otherwise specified,  $T_a = 15^\circ\text{C}$ ,  $V_{CC} = 3\text{ V}$ , F/E :  $f = 98\text{ MHz}$ ,  $f_m = 1\text{ kHz}$

FM IF :  $f = 10.7\text{ MHz}$ ,  $\Delta f = \pm 75\text{ kHz}$ ,  $f_m = 1\text{ kHz}$

AM :  $f = 1\text{ MHz}$ ,  $\text{MOD} = 30\%$ ,  $f_m = 1\text{ kHz}$

| CHARACTERISTIC |                           | SYMBOL                         | TEST CIR-CUIT | TEST CONDITION                         | MIN. | TYP. | MAX. | UNIT                       |
|----------------|---------------------------|--------------------------------|---------------|----------------------------------------|------|------|------|----------------------------|
| Supply Current |                           | $I_{CC}(\text{FM})$            | 1             | FM mode, $V_{in} = 0$                  | —    | 7.3  | —    | mA                         |
|                |                           | $I_{CC}(\text{AM})$            | 1             | AM mode, $V_{in} = 0$                  | —    | 3.6  | —    |                            |
| F / E          | Input Limiting Voltage    | $V_{in}(\text{lim})$           | 1             | - 3 dB limiting point                  | —    | 10   | —    | $\text{dB}\mu\text{V EMF}$ |
|                | Quiescent Sensitivity     | $Q_S$                          | 1             | $S/N = 40\text{ dB}$                   | —    | 11   | —    | $\text{dB}\mu\text{V EMF}$ |
|                | Local OSC Voltage         | $V_{OSC}$                      | 2             | $f_{OSC} = 108\text{ MHz}$             | —    | 130  | —    | $\text{mV}_{rms}$          |
| FM IF          | Input Limiting Voltage    | $V_{in}(\text{lim})\text{ IF}$ | 1             | - 3 dB limiting point                  | —    | 43   | —    | $\text{dB}\mu\text{V EMF}$ |
|                | Recovered Output Voltage  | $V_{OD}$                       | 1             | $V_{in} = 80\text{ dB}\mu\text{V EMF}$ | —    | 240  | —    | $\text{mV}_{rms}$          |
|                | Signal Noise Ratio        | $S/N$                          | 1             | $V_{in} = 80\text{ dB}\mu\text{V EMF}$ | —    | 75   | —    | dB                         |
|                | Total Harmonic Distortion | THD                            | 1             | $V_{in} = 80\text{ dB}\mu\text{V EMF}$ | —    | 0.5  | —    | %                          |
|                | AM Rejection Ratio        | AMR                            | 1             | $V_{in} = 80\text{ dB}\mu\text{V EMF}$ | —    | 60   | —    | dB                         |
| AM             | Voltage Gain              | $G_V$                          | 1             | $V_{in} = 28\text{ dB}\mu\text{V EMF}$ | —    | 38   | —    | $\text{mV}_{rms}$          |
|                | Recovered Output Voltage  | $V_{OD}$                       | 1             | $V_{in} = 60\text{ dB}\mu\text{V EMF}$ | —    | 80   | —    | $\text{mV}_{rms}$          |
|                | Signal To Noise Ratio     | $S/N$                          | 1             | $V_{in} = 60\text{ dB}\mu\text{V EMF}$ | —    | 41   | —    | dB                         |
|                | Total Harmonic Distortion | THD                            | 1             | $V_{in} = 60\text{ dB}\mu\text{V EMF}$ | —    | 1.0  | —    | %                          |

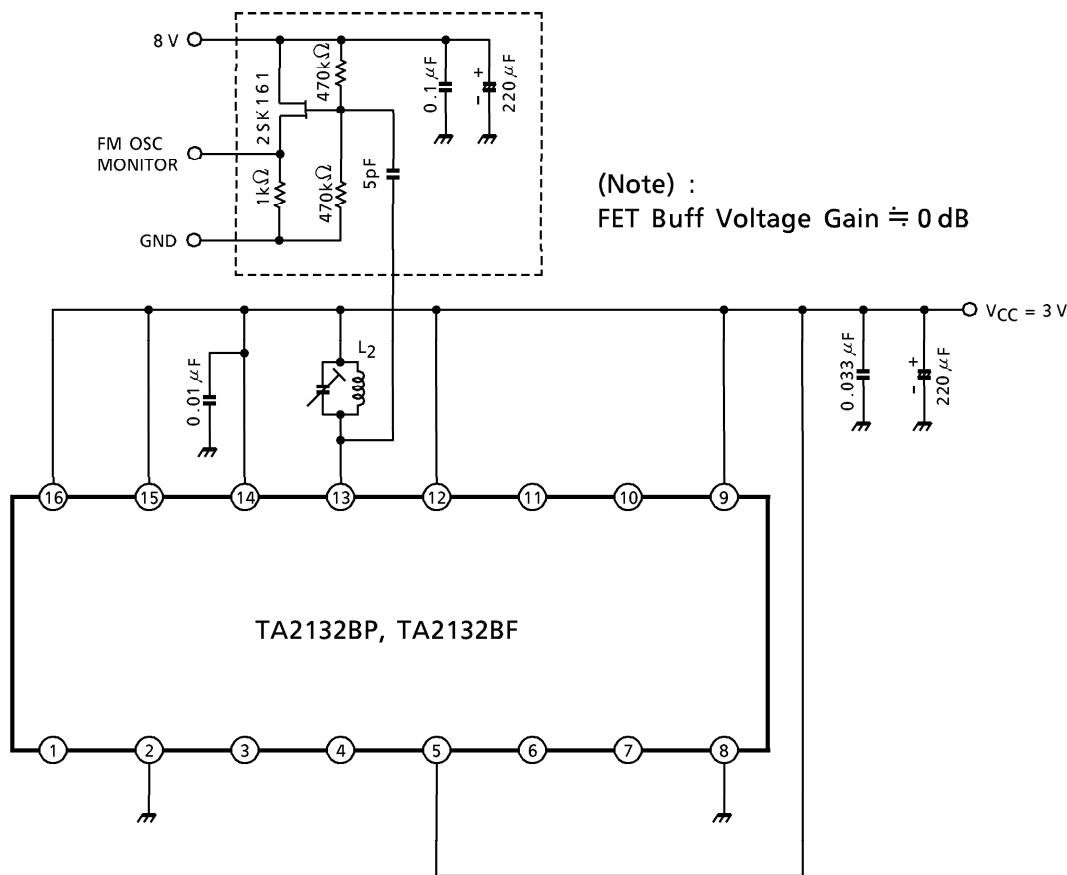
The diagram illustrates a double conversion superheterodyne receiver circuit using the TA2132BP/TA2132BF IC. The IC is shown in a 16-pin package with pins 1-8 on the bottom and 9-16 on the top. The circuit includes the following components and connections:

- RF Input (Pin 16):** AM RF IN, 75Ω, 0.022 μF, 2 kΩ.
- IF Input (Pin 1):** FM RF IN, 75Ω, BPF, 330 Ω.
- IF-IF Input (Pin 11):** FM-IF IN, 50Ω, 270 Ω.
- Internal Components:** L1, L2, T1, T2, CR, CF1, CF2, 0.033 μF, 0.01 μF, 4.7 μF, 330 pF, 2.2 μF, 22 kΩ, 4700 pF, 0.033 μF, 220 μF.
- Power Supply:** VCC = 3 V, 220 μF, 0.033 μF, 0.033 μF, 4700 pF, 2.2 μF, 22 kΩ.
- Output:** DET OUT, 2.2 μF, 22 kΩ.

**Legend:**

- BPF : GFWB7 (SOSHIN ELECTRIC Co., Ltd)
- CF1 : SFE10.7MA5 (MURATA Co., Ltd)
- CF2 : SFU455B (MURATA Co., Ltd)
- CR : CDA10.7MG\*\*\* (MURATA Co., Ltd)

TEST CIRCUIT 2

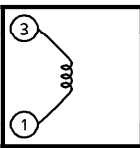


(Note) :  
FET Buff Voltage Gain  $\cong$  0 dB

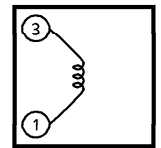
COIL DATA

| COIL No.              | TEST FREQ | L ( $\mu$ H) | Co (pF) | Qo | TURNS |     |     |     |     | WIRE (mm $\phi$ ) | REFERENCE                      |
|-----------------------|-----------|--------------|---------|----|-------|-----|-----|-----|-----|-------------------|--------------------------------|
|                       |           |              |         |    | 1-2   | 2-3 | 1-3 | 1-4 | 4-6 |                   |                                |
| L <sub>1</sub> FM RF  | 100 MHz   | —            | —       | 79 | —     | —   | —   | 2   | —   | 0.16UEW           | TOKO Co., Ltd.<br>666SNF-305NK |
| L <sub>2</sub> FM OSC | 100 MHz   | —            | —       | 76 | —     | —   | —   | 2   | —   | 0.16UEW           | TOKO Co., Ltd.<br>666SNF-306NK |
| T <sub>1</sub> AM OSC | 796 kHz   | 268          | —       | 65 | 19    | 95  | —   | —   | —   | 0.05UEW           | TOKO Co., Ltd.<br>5PNR-5146Y   |
| T <sub>2</sub> AM IFT | 455 kHz   | —            | 470     | 60 | —     | —   | 109 | —   | 7   | 0.05UEW           | TOKO Co., Ltd.<br>5PLG-5147X   |

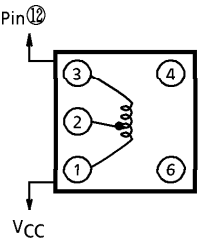
L<sub>1</sub> : FM RF



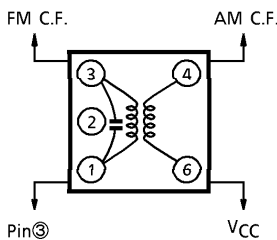
L<sub>2</sub> : FM OSC



T<sub>1</sub> : AM OSC



T<sub>2</sub> : AM IFT

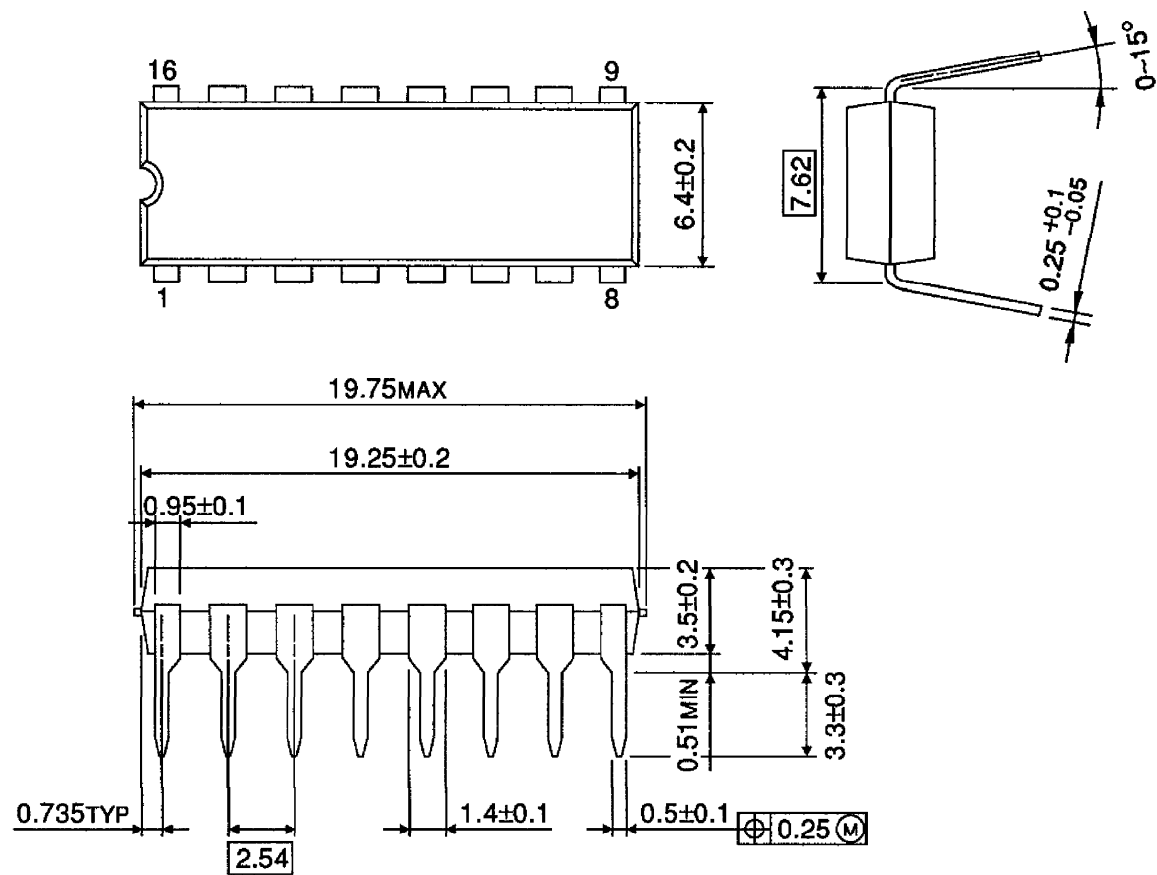


(BOTTOM VIEW)



PACKAGE DIMENSIONS  
DIP16-P-300-2.54A

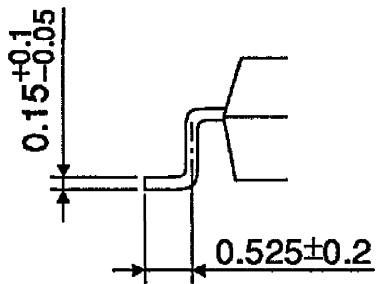
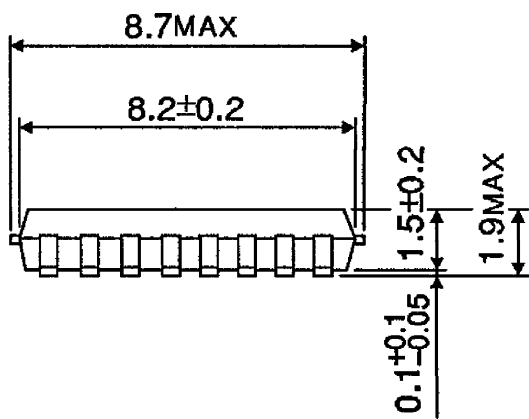
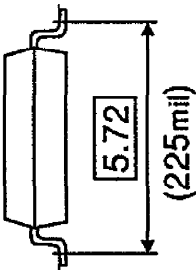
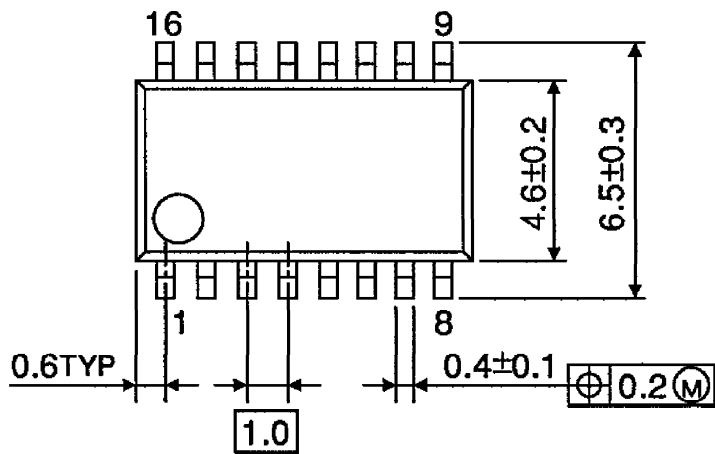
Unit : mm



Weight : 1.00 g (Typ.)

PACKAGE DIMENSIONS  
SSOP16-P-225-1.00A

Unit : mm



Weight : 0.14 g (Typ.)