

**Preliminary**

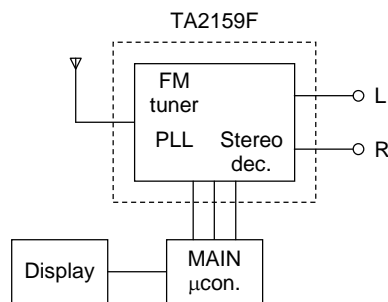
Tentative Data Audio IC Application Circuit

# TAN-325

Example of 3-V FM Radio Circuit

TA2159F

## 1. Outline



This is an application example of an FM radio circuit targeting compact sets.

The TA2159F is a single-chip tuner IC which is integrated an FM front-end, FM IF amp detector, stereo decoder, PLL circuit, and auto-seek circuit.

## 2. Ratings

| Characteristic                  | Rating            | Unit           |
|---------------------------------|-------------------|----------------|
| Supply voltage                  | 3                 | V              |
| Current dissipation (quiescent) | 17                | mA             |
| Signal frequency range          | 87.5-108          | MHz            |
| Intermediate frequency          | 10.7              | MHz            |
| Sensitivity                     | 15.5 (S/N = 30dB) | dB $\mu$ V EMF |

### 3. Usage Precautions

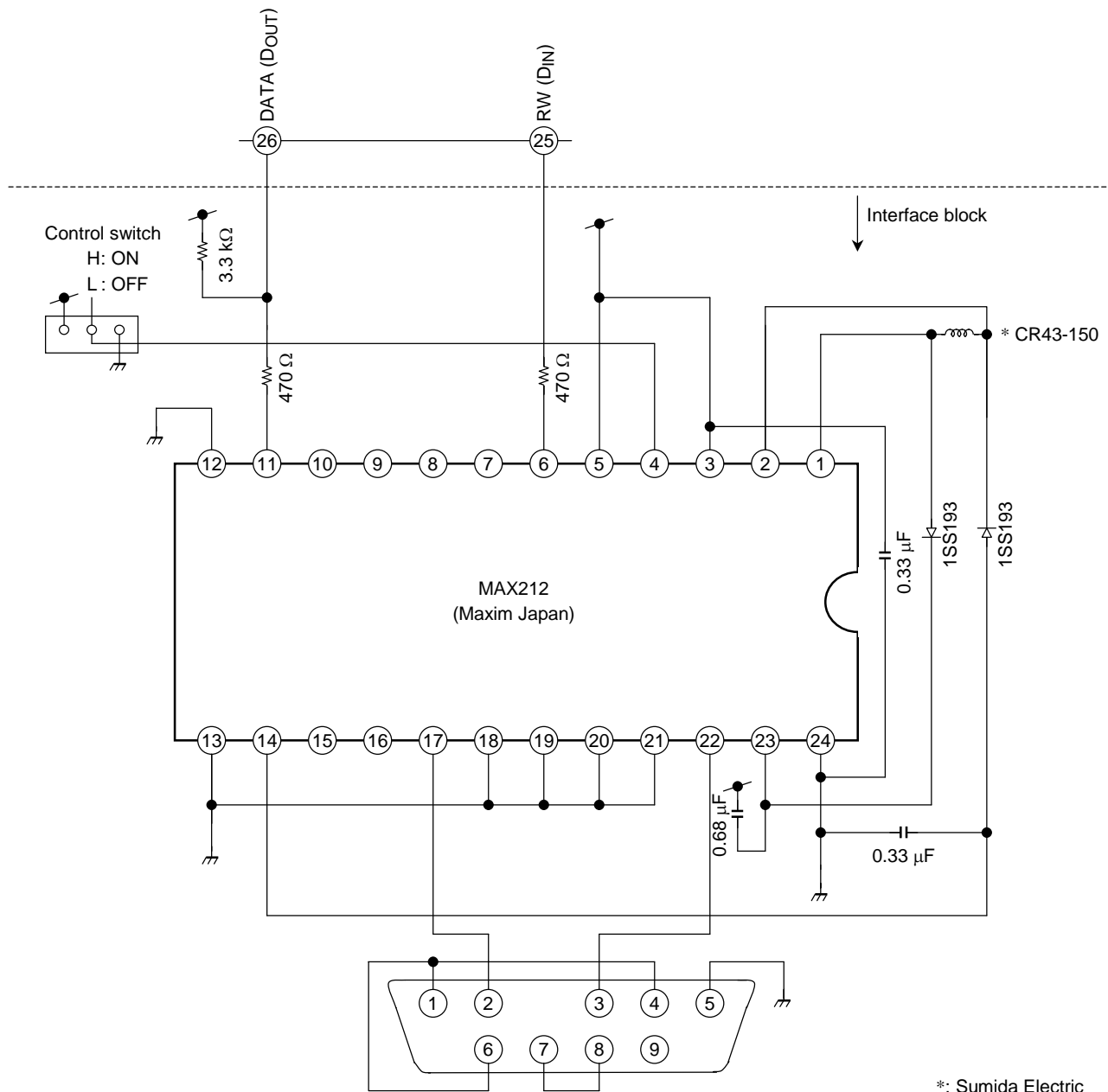
#### TA2159F

- (1) The TA2159F supports two control bus formats: 3-bus and UART. (For details, refer to the TA2159F technical data sheet.)

In the application printed circuit board, in UART format, a block using MAX212 as the PC interface is added.

Tuner control software in UART format is available on CD-ROM.

### Circuit diagram

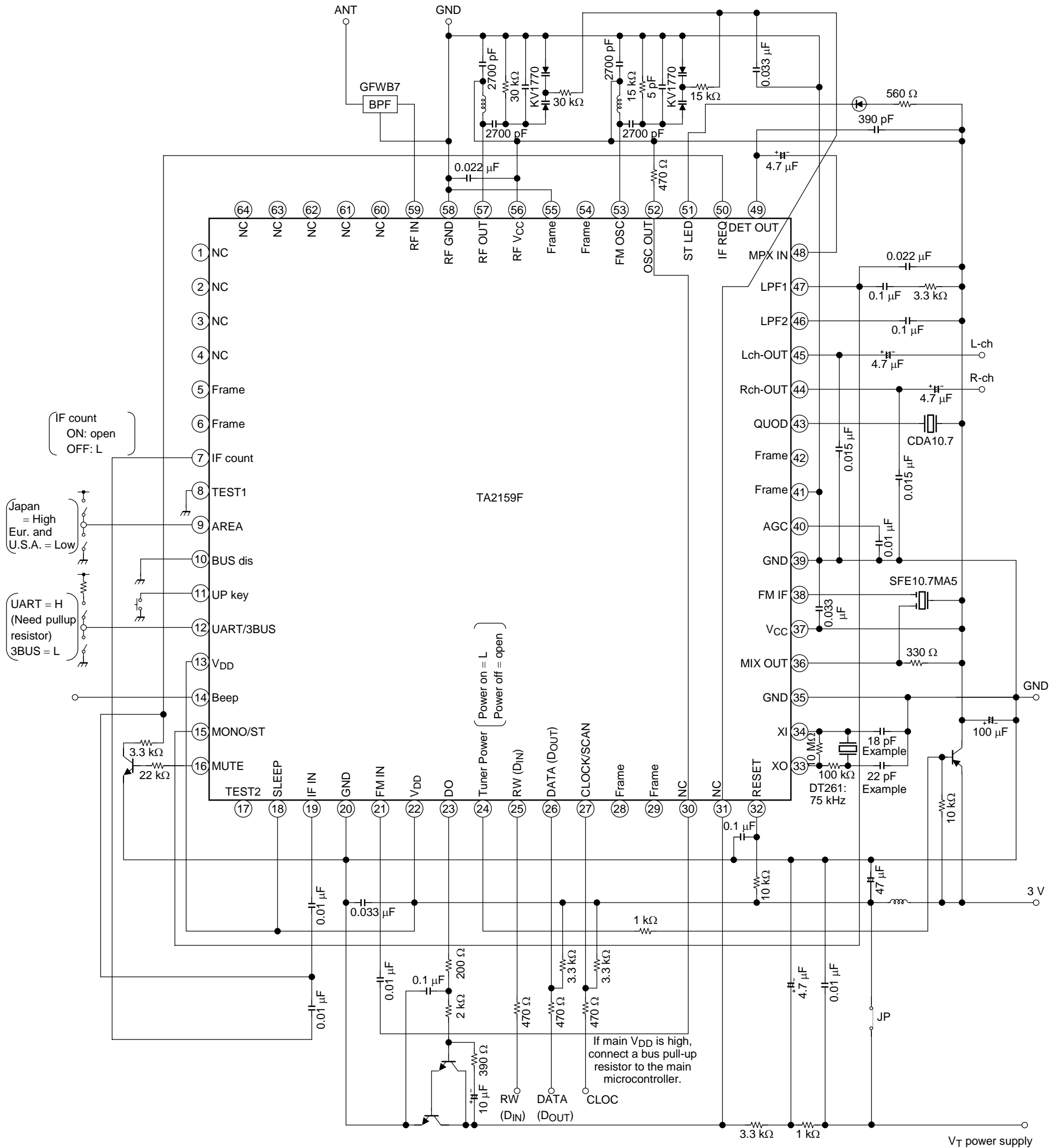


\*: Sumida Electric

\*: Use RS232C straight cable.

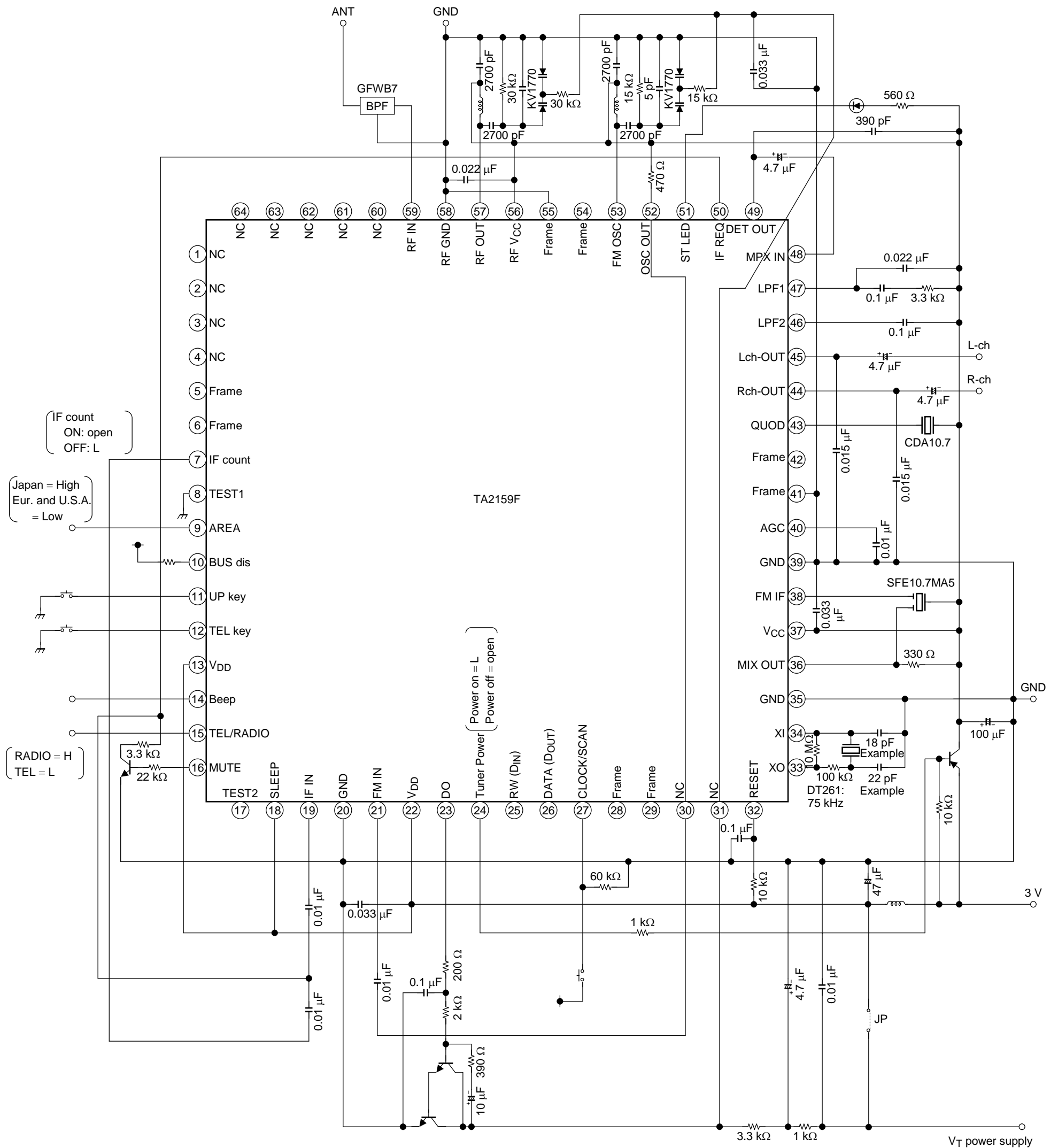
Application Circuit

Transmission mode specifications: BUS dis (pin 10) = Low



Application Circuit

No-Transmission mode specifications: BUS dis (pin 10) = High



## Coil specifications

(1) Wide VT range

| Coil No.              | Test Freq | L (μH) | Co (pF) | Q <sub>0</sub> | Turns |     |                 |     |     | Wire (mmφ) | Reference                      |
|-----------------------|-----------|--------|---------|----------------|-------|-----|-----------------|-----|-----|------------|--------------------------------|
|                       |           |        |         |                | 1-2   | 2-3 | 1-3             | 1-4 | 4-6 |            |                                |
| L <sub>1</sub> FM RF  | 100 MHz   | —      | —       | 79             | —     | —   | 2 $\frac{1}{2}$ | —   | —   | 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 |

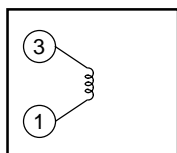
(2) Narrow VT range for Eur. and U.S.A. band.

| Coil No.              | Test Freq | L (μH) | Co (pF) | Q <sub>0</sub> | Turns |     |     |     |     | Wire (mmφ)   | Reference                    |
|-----------------------|-----------|--------|---------|----------------|-------|-----|-----|-----|-----|--------------|------------------------------|
|                       |           |        |         |                | 1-2   | 2-3 | 1-3 | 1-4 | 4-6 |              |                              |
| L <sub>1</sub> FM RF  | 100 MHz z | —      | 33.4    | 61             | —     | —   | 3   | —   | —   | 0.09<br>2UEW | TOKO Co., Ltd.<br>657AN-1609 |
| L <sub>2</sub> FM OSC | 100 MHz z | —      | 40.2    | 67             | —     | —   | 3   | —   | —   | 0.08<br>2UEW | TOKO Co., Ltd.<br>657AN-1608 |

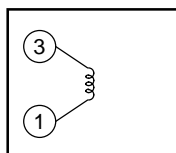
(3) Narrow VT range for Japan band.

| Coil No.              | Test Freq | L (μH) | Co (pF) | Q <sub>0</sub> | Turns |   |   |     |     | Wire (mmφ)   | Reference                    |
|-----------------------|-----------|--------|---------|----------------|-------|---|---|-----|-----|--------------|------------------------------|
|                       |           |        |         |                | 1-2   |   |   | 1-4 | 4-6 |              |                              |
| L <sub>1</sub> FM RF  | 100 MHz z | —      | 24.9    | 66             | —     | — | 4 | —   | —   | 0.09<br>2UEW | TOKO Co., Ltd.<br>657AN-1611 |
| L <sub>2</sub> FM OSC | 100 MHz z | —      | 17.9    | 69             | —     | — | 5 | —   | —   | 0.09<br>2UEW | TOKO Co., Ltd.<br>657AN-1610 |

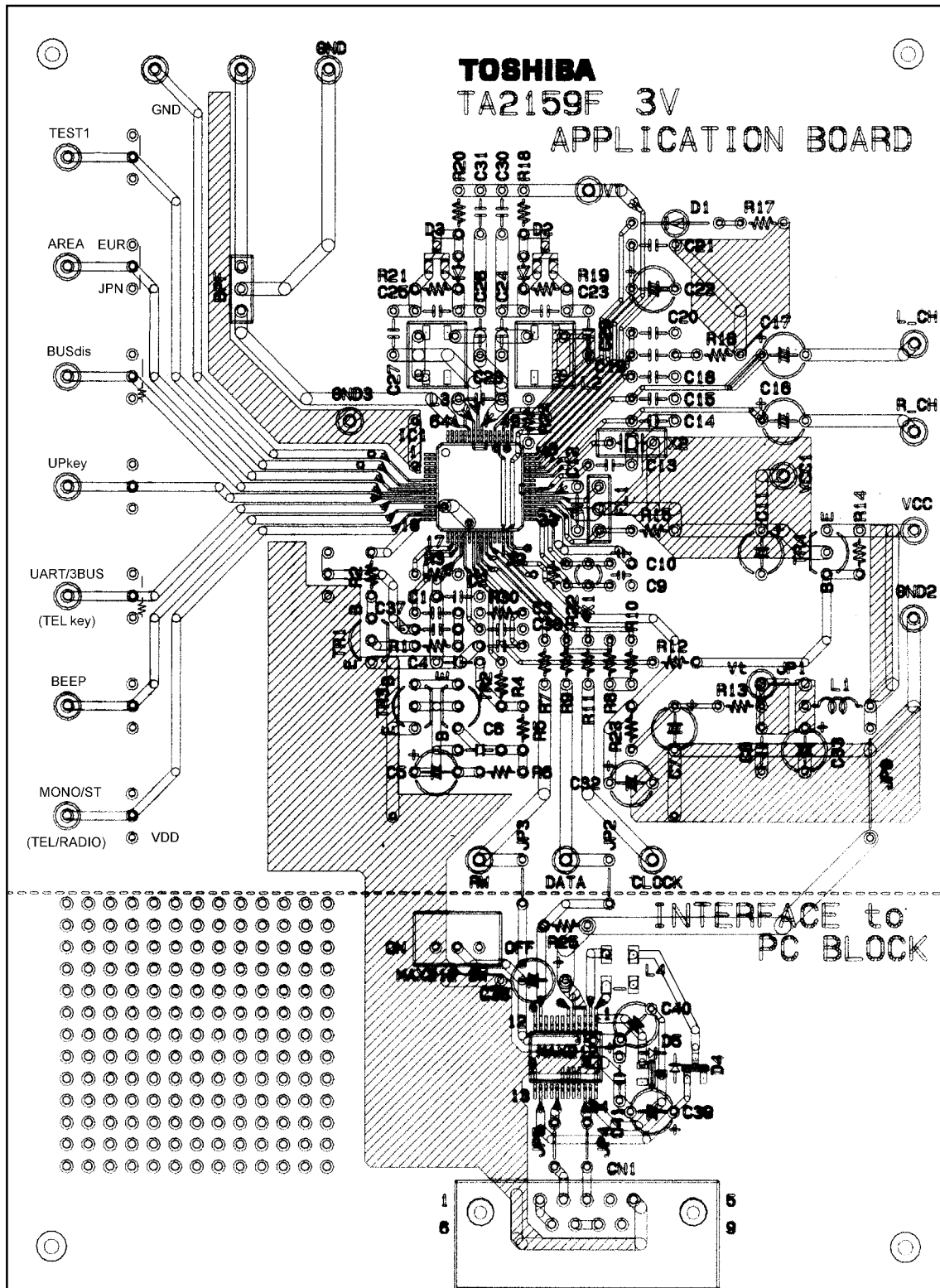
L<sub>1</sub>: FM RF

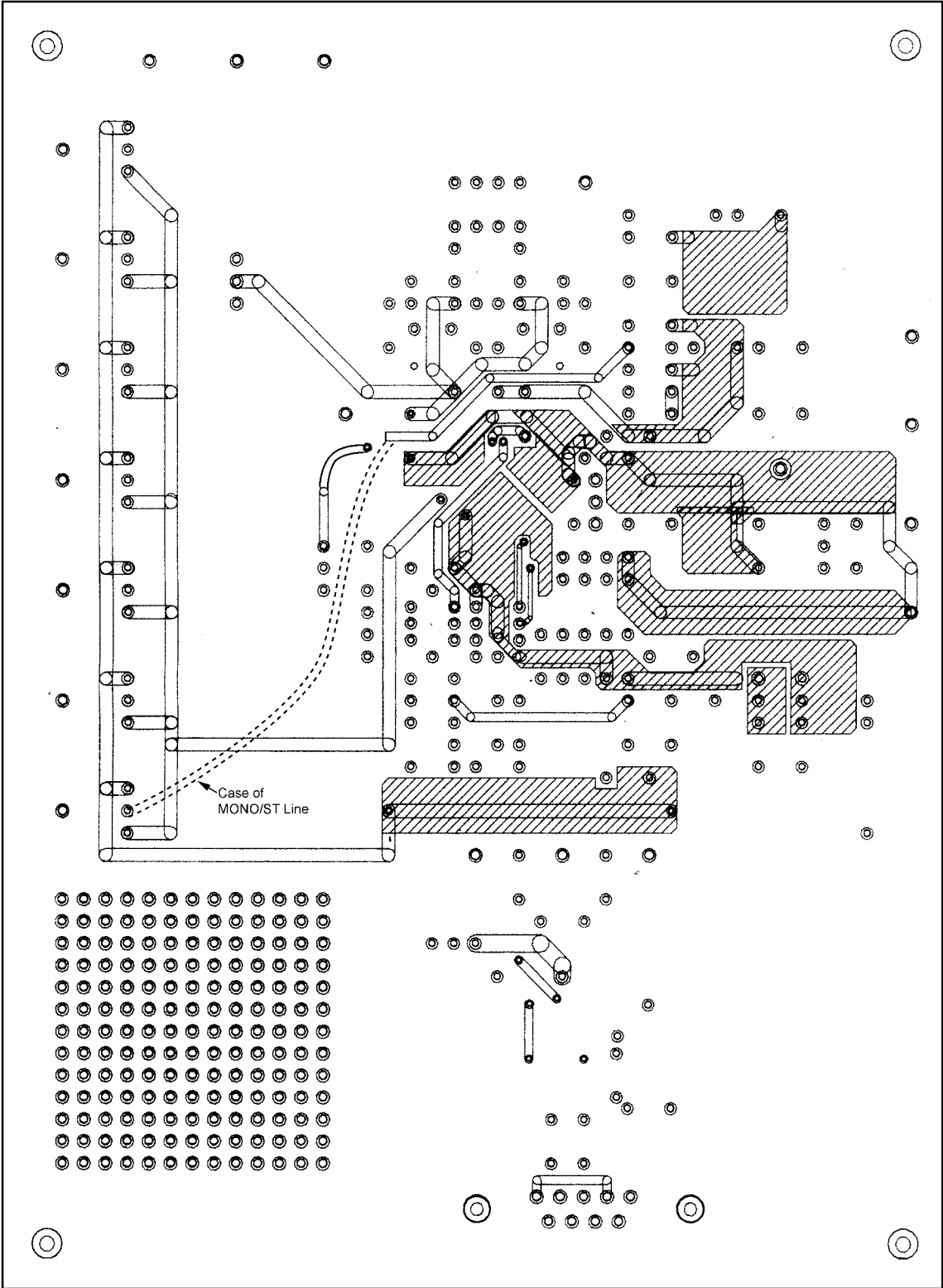


L<sub>2</sub>: FM OSC

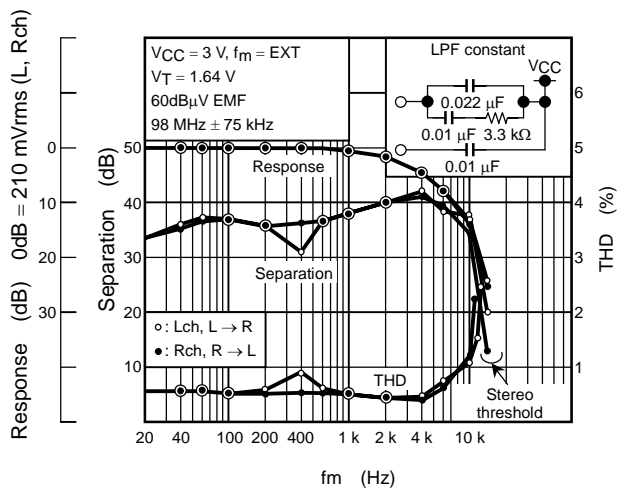
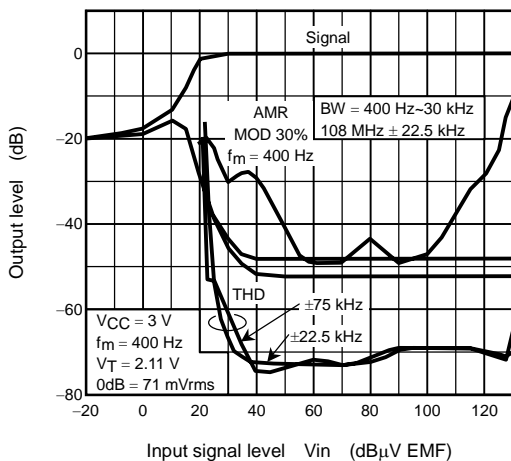
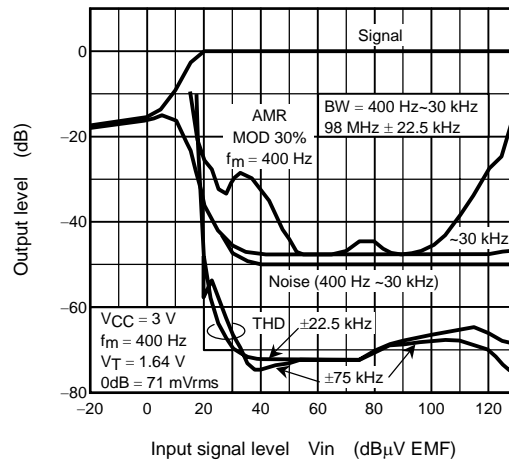
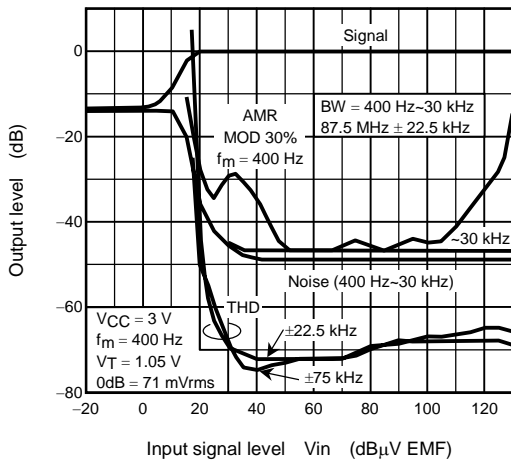
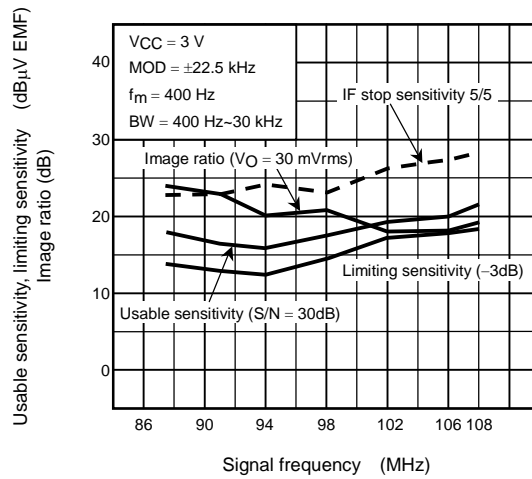
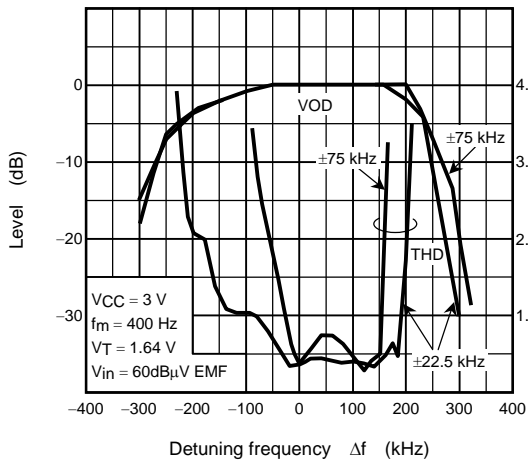


Example of Printed Circuit Board Pattern (bottom view)



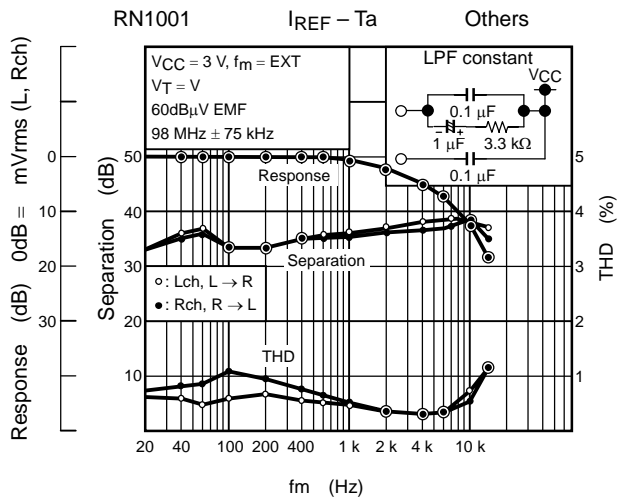
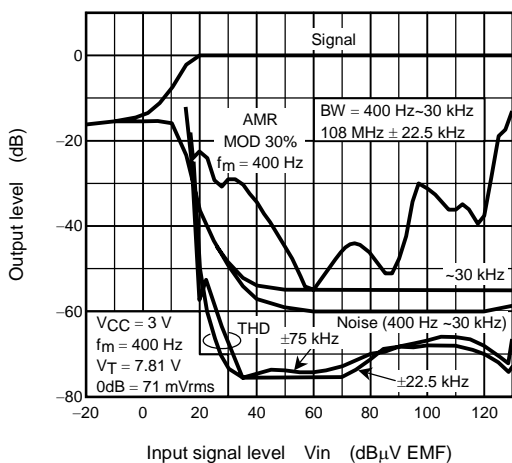
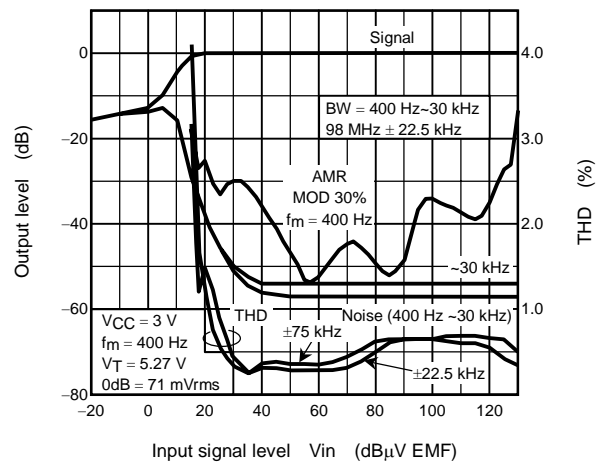
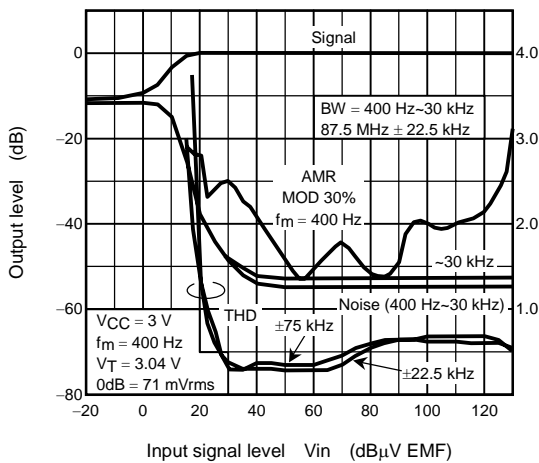
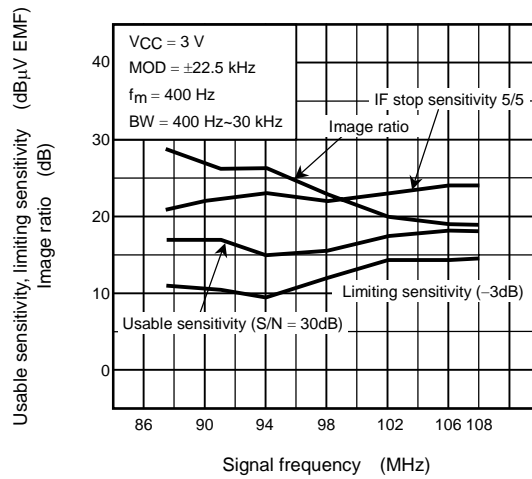
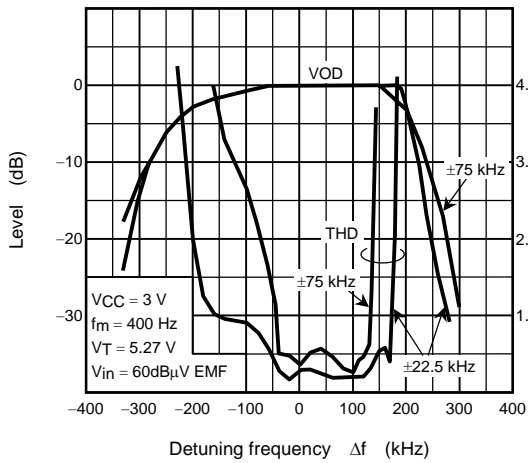


1. Narrow  $V_T$  range ( $V_T = 1.05\sim 2.11$  V)





## 2. Wide $V_T$ range ( $V_T = 3.04 \sim 7.81$ V)



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