

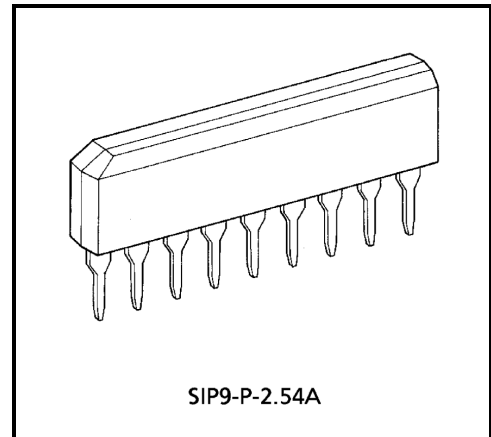
TA7358AP

FM Front-End

The TA7358AP is designed for a FM front-end application, which is suitable to a portable radio or a radio cassette. Comparing with conventional types, supply voltage dependence, overload characteristics and spurious radiation characteristics are improved.

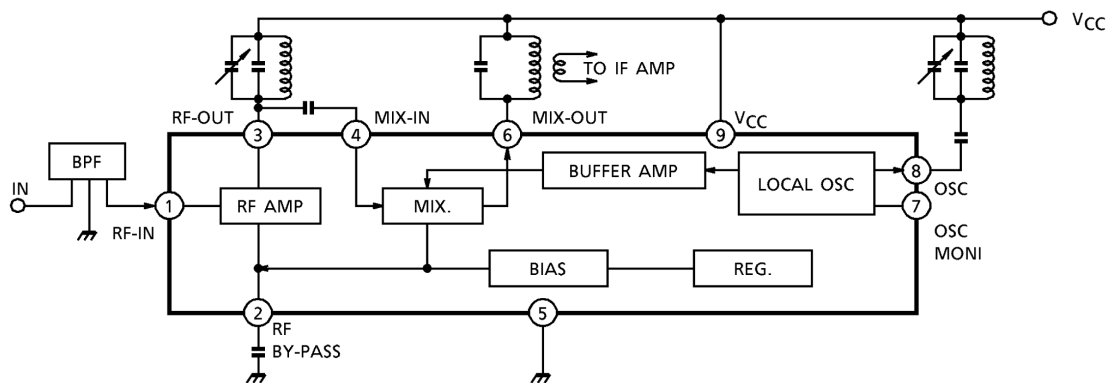
Features

- Wide supply voltage range : $V_{CC} = 1.6\sim 6.0V$
- Excellent supply voltage dependence of local oscillator
: Oscillation stop
 $V_{CC} = 0.9V$ (typ.)
- Improved inter-modulation characteristics by double balanced type mixer circuit.
- Low spurious radiation.
- Built-in clamping diode for the local oscillator output.



Weight: 0.92g (typ.)

Block Diagram



Explanation Of Terminals (terminal voltage is DC voltage at Ta = 25°C, VCC = 5V, and no signal)

| Pin No. | Symbol | Internal | Terminal Voltage (V) |
|---------|-------------|------------|----------------------|
| 1 | FM-RF IN | | 0.8 |
| 2 | BY PASS | | 1.5 |
| 3 | FM-RF OUT | | 5.0 |
| 4 | MIX IN | | 1.5 |
| 5 | GND | — | 0 |
| 6 | MIX OUT | cf. pin(4) | 5.0 |
| 7 | OSC MONITOR | | 4.3 |
| 8 | OSC | | 5.0 |
| 9 | VCC | — | 5.0 |

Maximum Ratings (Ta = 25°C)

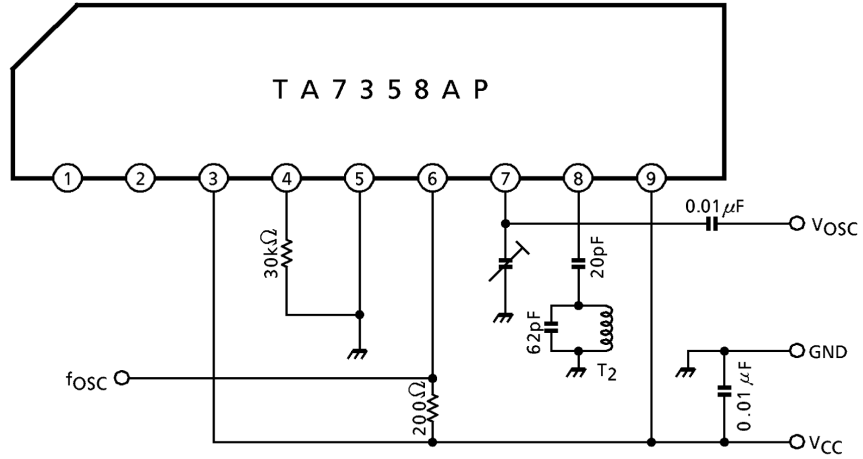
| Characteristic | Symbol | Rating | Unit |
|-----------------------|-----------------------|---------|------|
| Supply voltage | V _{CC} | 8 | V |
| Power dissipation | P _D (Note) | 500 | mW |
| Operating temperature | T _{opr} | -25~75 | °C |
| Storage temperature | T _{stg} | -55~150 | °C |

(Note) Derated above 25°C in the proportion of 4mW / °C.

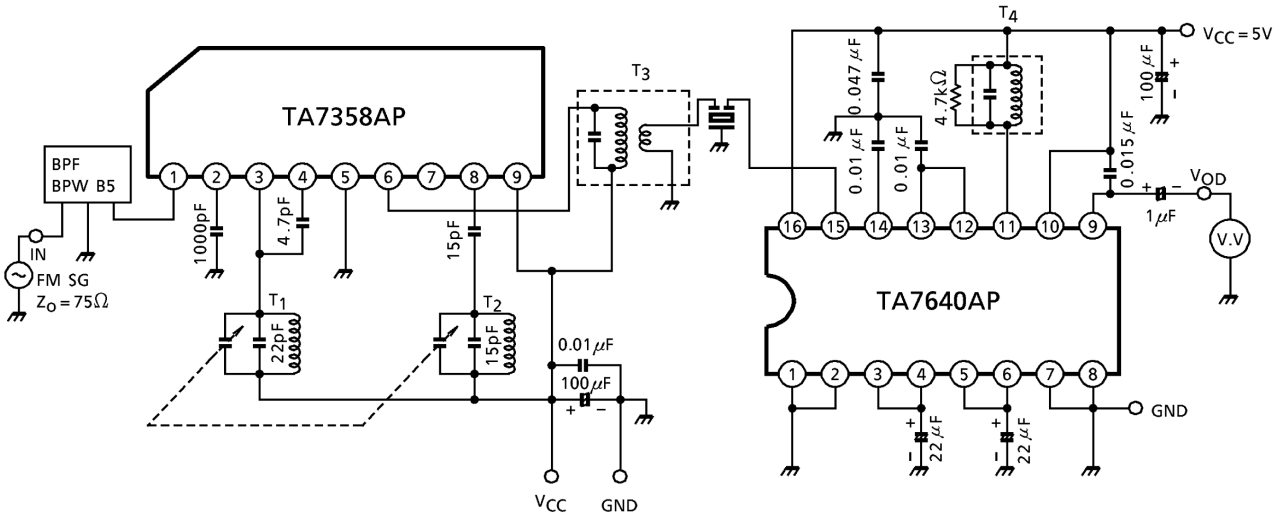
Electrical Characteristics (V_{CC} = 3V, f = 83MHz, f_m = 1kHz, Δf = ±22.5kHz, Ta = 25°C)

| Characteristic | | Symbol | Test Circuit | Test Condition | Min. | Typ. | Max. | Unit |
|---------------------------|-----------------------------|----------------------|--------------|--------------------------|-------------|------|------|-------------------|
| Supply current | | I _{CC} | 2 | V _{in} = 0 | — | 5.2 | 8.0 | mA |
| -3dB limiting sensitivity | | V _{in(lim)} | 2 | — | — | 3.0 | 7.0 | dBμV EMF |
| Quiescent sensitivity | | Q _S | 2 | — | — | 11.0 | — | dBμV EMF |
| Conversion gain | | G _C | — | — | — | 31 | — | dB |
| Local OSC voltage | | V _{OSC} | 1 | f _{OSC} = 60MHz | 90 | 165 | 220 | mV _{rms} |
| Pin (1) impedance | Parallel input resistance | r _{ip1} | 3 | f = 83MHz | — | 57 | — | Ω |
| Pin (3) impedance | Parallel output resistance | r _{op3} | 3 | | — | 25 | — | kΩ |
| | Parallel output capacitance | c _{op3} | | | — | 2.0 | — | pF |
| Pin (4) impedance | Parallel input resistance | r _{ip4} | 3 | | — | 2.7 | — | kΩ |
| | Parallel input capacitance | c _{ip4} | | | — | 3.3 | — | pF |
| Pin (6) impedance | Parallel output resistance | r _{op6} | 3 | | f = 10.7MHz | — | 100 | — |
| | Parallel output capacitance | c _{op6} | | — | | 4.8 | — | pF |
| Local OSC stop voltage | | V _{stop} | 1 | — | — | 0.9 | 1.3 | V |

Test Circuit 1



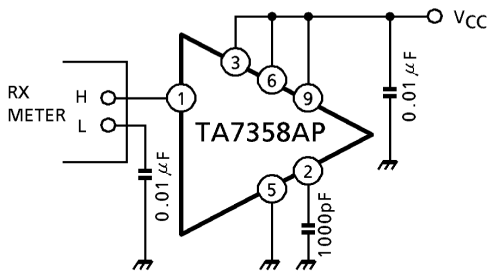
Test Circuit 2



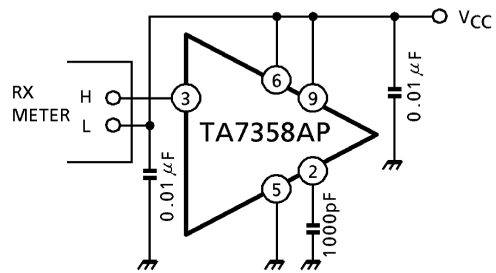
Test Circuit 3

Input output impedance

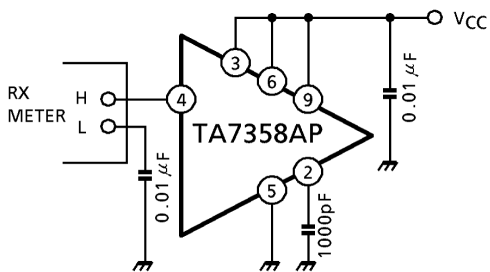
(1) r_{ip1} , c_{ip1}



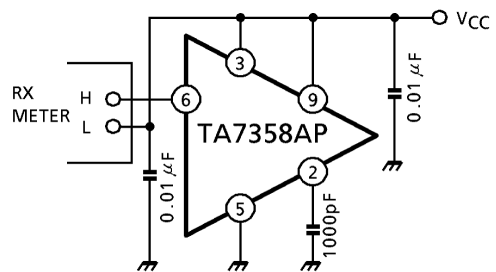
(2) r_{op3} , c_{op3}



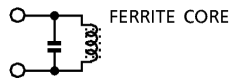
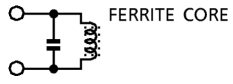
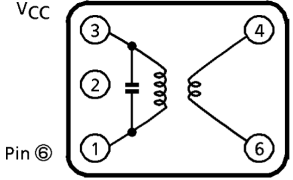
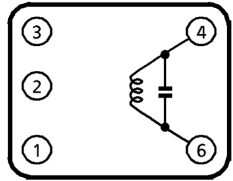
(3) r_{ip4} , c_{ip4}



(4) r_{op6} , c_{op6}



Test Circuit Coil Data (Japan band for 76.0MHz to 108.0MHz)

| Coil | f_0 | Q_0 | Turns | Capacitance | |
|-----------------------------|---------|-------|--|--------------------|--|
| T ₁ RF coil | 100MHz | 100 | 0.5mmφ 2 $\frac{1}{4}$ T Center tap (Japan band) | 15pF (external) |  FERRITE CORE |
| T ₂ OSC coil | 100MHz | 100 | 0.5mmφ 2 $\frac{1}{2}$ T (Japan band) | 15pF (external) |  FERRITE CORE |
| T ₃ IFT coil | 10.7MHz | 115 | (1)-(3) 12T (4)-(6) 1T Wire 0.12mmφ UEW SUMIDA ELECTRIC Co., LTD 5764 or equivalent | 75pF |  (BOTTOM VIEW) |
| T ₄ Quad coil | 10.7MHz | 150 | (4)-(6) 14T Wire 0.12mmφ UEW SUMIDA ELECTRIC Co., LTD 44M-933A or equivalent | 47pF |  (BOTTOM VIEW) |

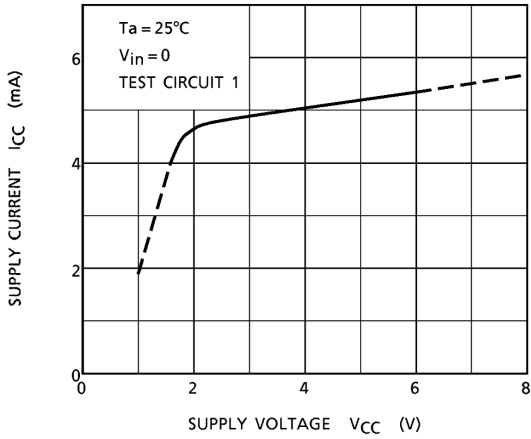
Band pass filter (BPF)

SOSHIN ELECTRIC Co., LTD. BPWB5

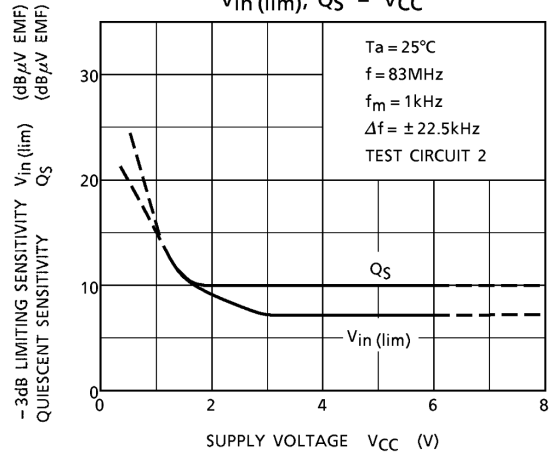
Tuning capacitor

ALPS ELECTRIC Co., LTD. CB41EL933

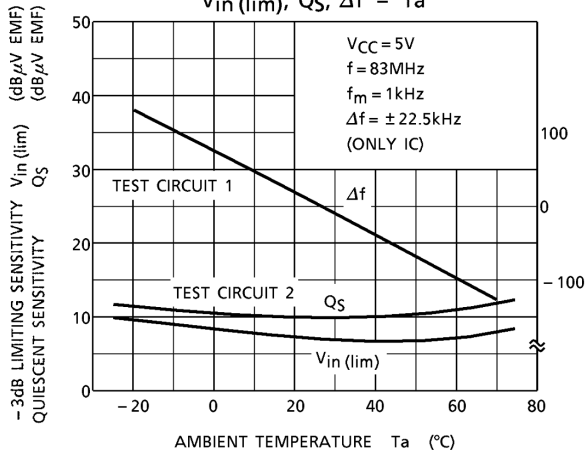
$I_{CC} - V_{CC}$



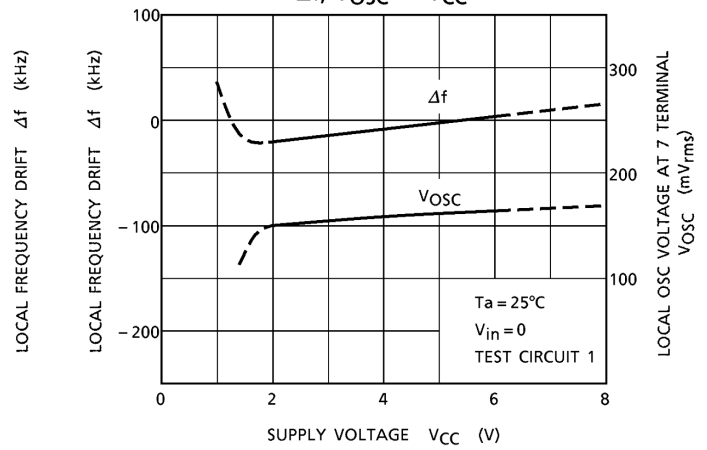
$V_{in(lim)}, Q_S - V_{CC}$



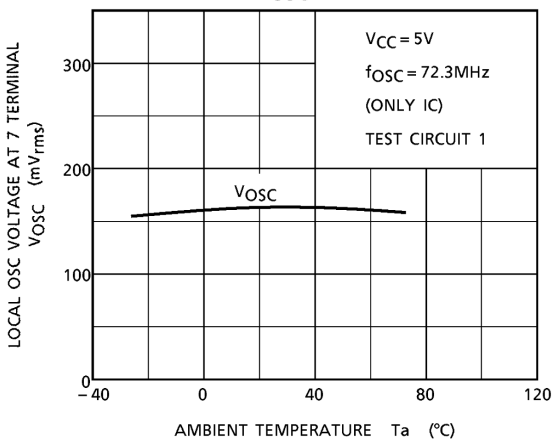
$V_{in(lim)}, Q_S, \Delta f - T_a$



$\Delta f, V_{OSC} - V_{CC}$



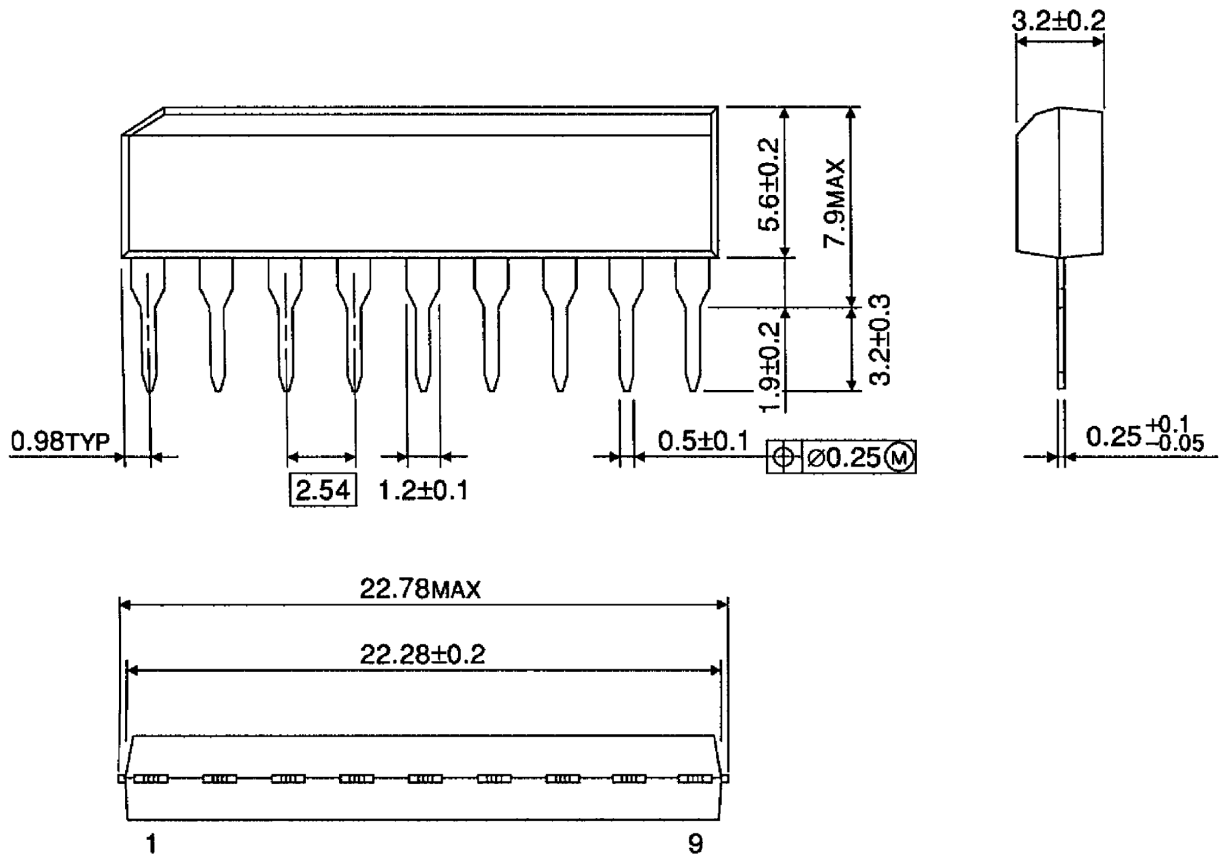
$V_{OSC} - T_a$



Package Dimensions

SIP9-P-2.54A

Unit : mm



Weight : 0.92g (typ.)

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