

AN7017S, AN7017SB

FM/TV Front-end ICs for 1.5V Headphone Stereo, Radio Cassette Recorder

■ Overview

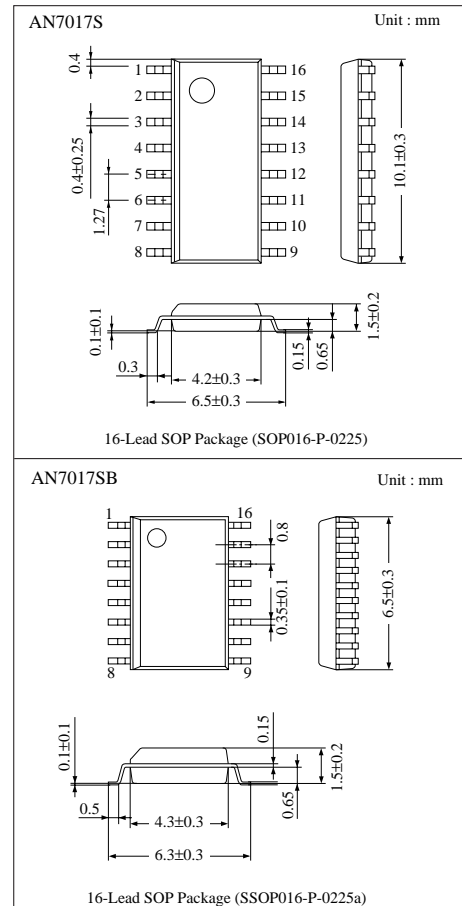
The AN7017S and the AN7017SB are the ICs incorporating FM/TV front-end most suitable for headphone stereo.

Sealed in a 16-pin flat package, the chip operates stably at TV band (170MHz ~ 222MHz) FM band (76MHz ~ 108MHz).

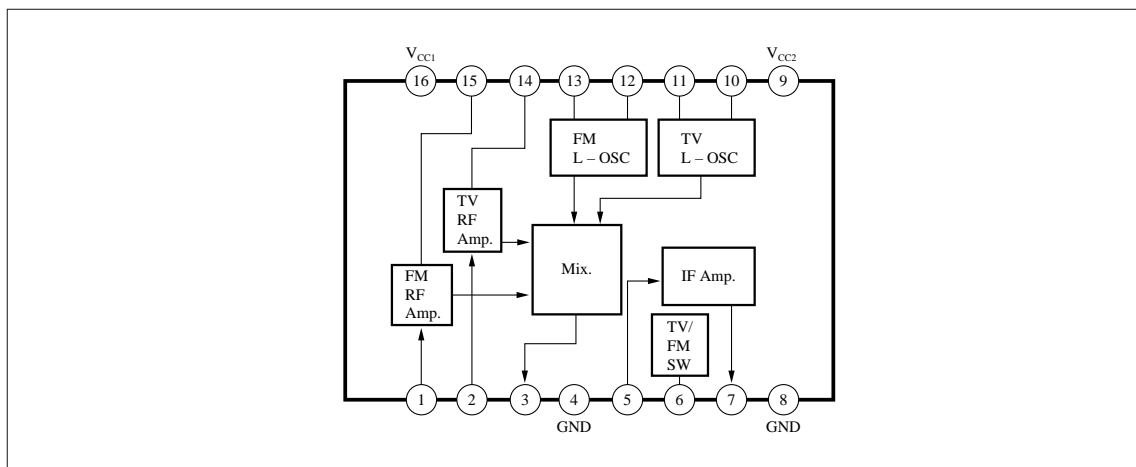
RF amplifiers and oscillations are provided in FM/TV band individually, and are designed most suitably. So both characteristics of FM/TV band are satisfied.

■ Features

- Low current consumption
- Band switching circuit built-in
- A single chip integrating FM/TV band
- IF amp. built-in



■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Rating | Unit |
|-------------------------------|------------------|-------------|------|
| Supply Voltage | V _{CC} | 2.5 | V |
| Supply Current | I _{CC} | 10 | mA |
| Power Dissipation | P _D | 30 | mW |
| Operating Ambient Temperature | T _{opr} | -22 ~ + 75 | °C |
| Storage Temperature | T _{stg} | -55 ~ + 125 | °C |

■ Recommended Operating Range (Ta=25°C)

| Parameter | Symbol | Range |
|--------------------------------|-----------------|---------|
| Operating Supply Voltage Range | V _{CC} | 1V ~ 2V |

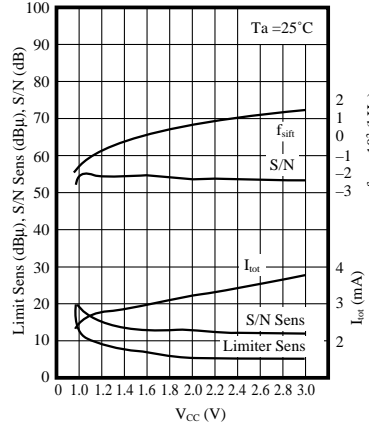
■ Electrical Characteristics (V_{CC}=1.2V, Ta = 25°C)

| Parameter | | Symbol | Condition | min. | typ. | max. | Unit |
|-----------|---------------------|------------------------|---|------|------|------|------|
| FM | No Signal Current | I _{tot} (FM) | Note) V _{CC} =1V V _{in} = 60dBμ | — | 2.5 | — | mA |
| | Conversion Gain | G _{conv} (FM) | | — | 31 | — | dB |
| | Oscillation Voltage | V _{osc} (FM) | | — | 73 | — | mV |
| | S/N | S/N (FM) | | — | 55 | — | dB |
| TV | No Signal Current | I _{tot} (TV) | Note) V _{CC} =1V V _{in} =60dBμ | — | 3.2 | — | mA |
| | Conversion Gain | G _{conv} (TV) | | — | 27 | — | dB |
| | Oscillation Voltage | V _{osc} (TV) | | — | 57 | — | mV |
| | S/N | S/N (TV) | | — | 53 | — | dB |

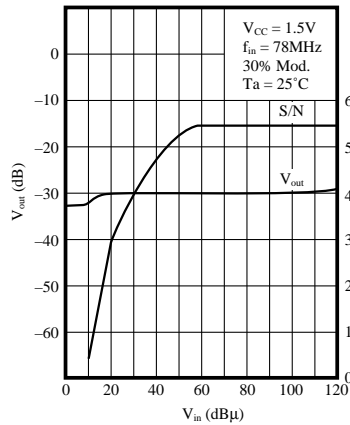
Note) Conversion Gain= 20log (ΔV_(μV) ÷ 100)
ΔV is output difference at 40dBμ and 46dBμ.

■ Characteristics Curve

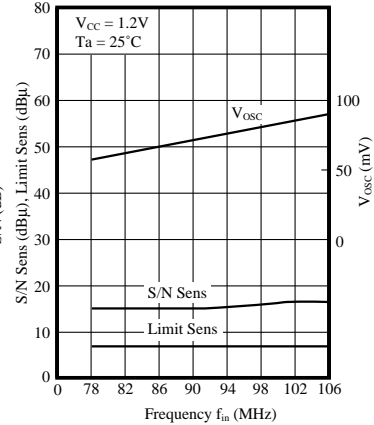
Supply Voltage Characteristics (FM)–
Oscillation Frequency Deviation
S/N, S/N Sensitivity, Limiter Sensitivity, I_{tot}

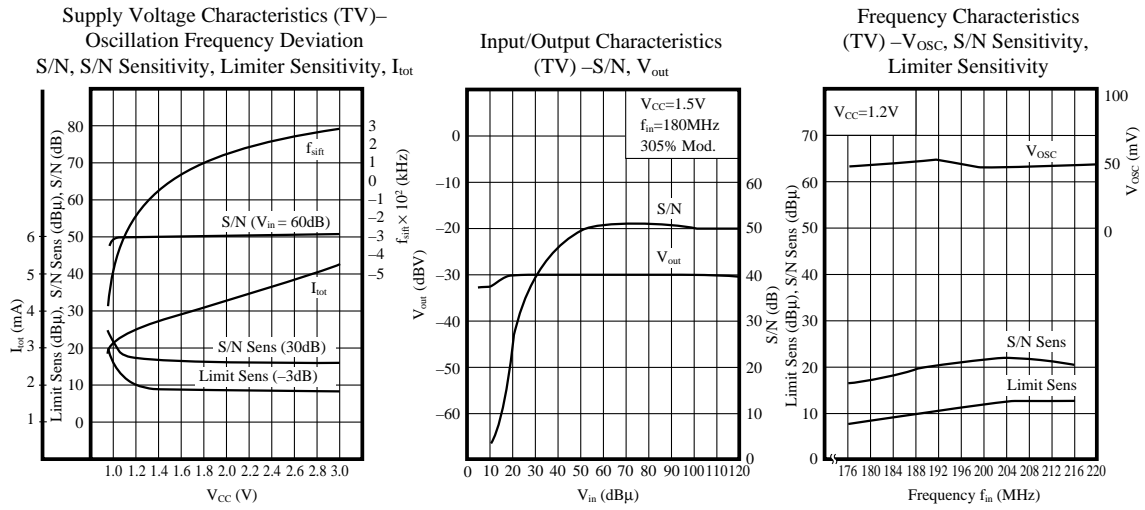


Input/Output Characteristics –
S/N, V_{out}

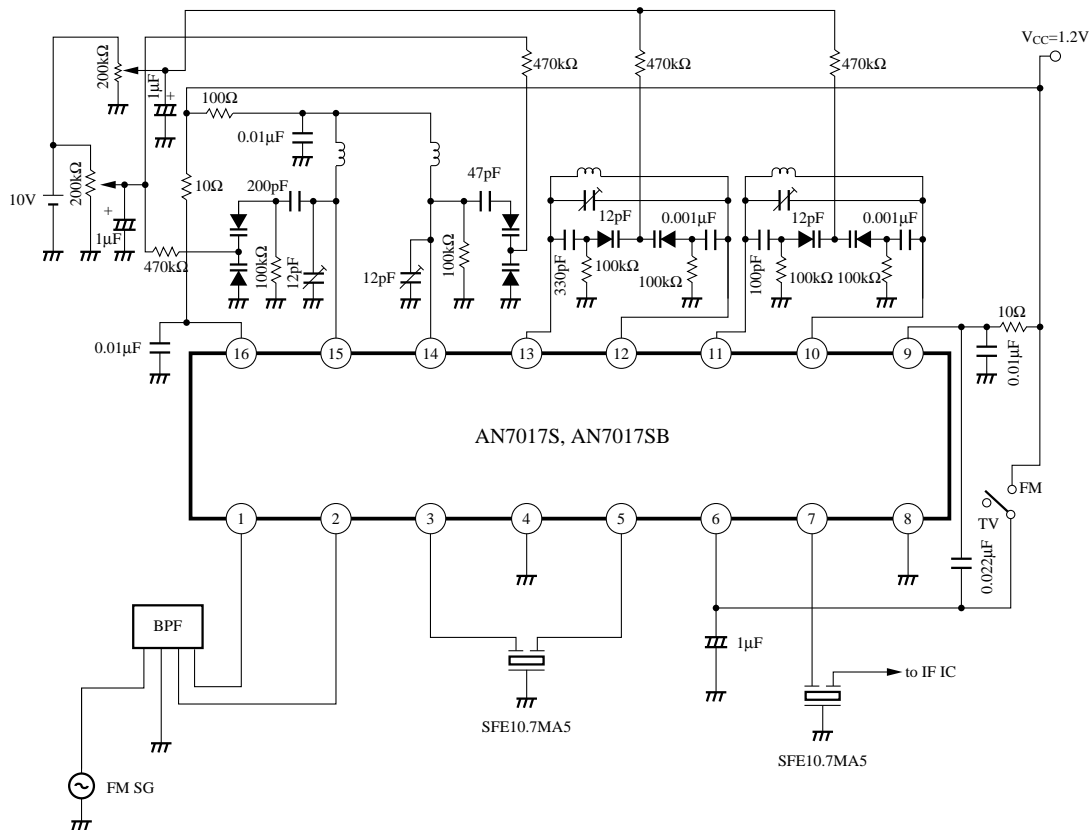


Frequency Characteristics (FM) –V_{osc}, S/N Sensitivity,
Limiter Sensitivity





■ Application Circuit



- FM Antenna Coil : Internal diameter 2.5mm. Lead diameter 0.35mm 11T Variable Capacitance : SVC203CP (SANYO)
- FM Oscillation Coil : Internal diameter 2.5mm. Lead diameter 0.35mm 13T Ceramic Filter : SFE10.7MA5 (MURATA)
- TV Antenna Coil : Internal diameter 2.5mm. Lead diameter 0.35mm 3T Band Pass Filter : TVSB4 (SOUSHIN)
- FM Oscillation Coil : Internal diameter 2.5mm. Lead diameter 0.35mm 4T IF Amp. : AN7236 (Panasonic)

■ Pin Descriptions

| Pin No. | Pin Name | Typ.Waveform | Description | Equivalent Circuit |
|---------|--------------|-------------------|---|--------------------|
| 1 | FM RF Input | FM signal | FM RF input pin | |
| 15 | FM RF Output | FM signal | FM RF output pin | |
| 4 | GND | DC 0V | GND pin Used for RF amp. /Mixer. | — |
| 3 | Mix. Output | 10.7MHz IF signal | Mix. output pin Ceramic Filter connect to output. | |
| 5 | IF Input | 10.7MHz IF signal | IF input pin | |
| 6 | TV/FM switch | — | TV/FM switching At FM, stop the current source of TV circuit by connecting Pin6 to V _{CC} , and at TV, stop the current source of FM circuit by opening this. | |
| 7 | IF Output | 10.7MHz IF signal | IF output pin | |
| 8 | GND | — | GND pin Used for IF amp. /oscillation circuit current source | — |

■ Pin Descriptions (Cont.)

| Pin No. | Pin Name | Typ.Waveform | Description | Equivalent Circuit |
|---------------|------------------|--------------------------------|--|--------------------|
| 9 | V _{CC2} | DC 1.5V | Supply voltage pin Used for IF amp. /oscillation circuit current source | ————— |
| 10 · 11 | TV OSC | 160MHz ~ 216MHz oscillation | TV OSC pin | |
| 12 · 13 | FM OSC | 65MHz ~ 96MHz oscillation | FM OSC pin | |
| 2 | TV RF Input | TV signal | TV RF input pin | |
| 14 | TV RF Output | TV signal | TV RF output pin | |
| 16 | V _{CC1} | DC 1.5V | Supply voltage pin Used for RF amp., mixer | ————— |