

AN6152

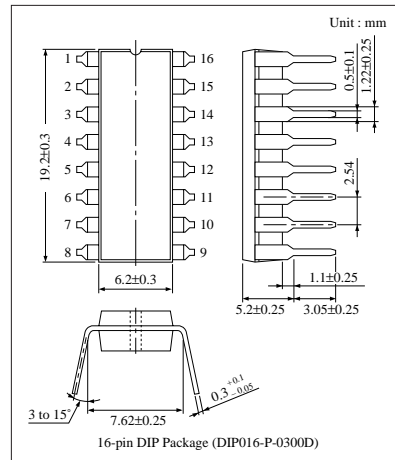
Speech Network Circuit

■ Overview

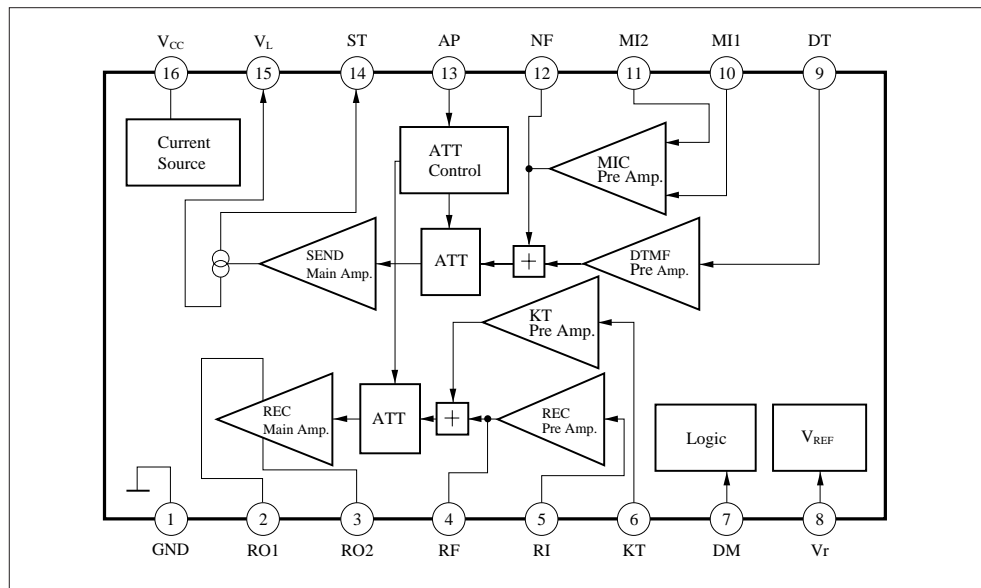
The AN6152 is an integrated circuit designed for telephone speech network. It has the basic function which is necessary to apply a sound signal onto the line and excellent in branch performance.

■ Features

- Wide operating voltage range : 3 to 11.5V
- Built-in amplifiers for "Dial Tone" and "DTMF"
- Amplifier
- Each amplifier gain automatically changeable depending on line current.
- Various types of microphone and receiver are available.



■ Block Diagram



■ Pin Descriptions

| Pin No. | Pin name | Pin No. | Pin name |
|---------|-------------------|---------|-------------------------|
| 1 | GND | 9 | DTMF input |
| 2 | REC output | 10 | MIC input |
| 3 | REC output | 11 | MIC input |
| 4 | REC filter | 12 | SEND NF |
| 5 | REC input | 13 | ATT control |
| 6 | KEY IN TONE input | 14 | SIDE tone |
| 7 | DIAL mute SW | 15 | LINE |
| 8 | V reference | 16 | Internal supply voltage |

■ Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Rating | Unit |
|-------------------------------|-----------|-------------|------|
| Line voltage | V_L | 14.4 | V |
| Line current | I_L | 120 | mA |
| Power dissipation (Ta=60°C) | P_D | 1380 | mW |
| Operating ambient temperature | T_{opr} | -30 to +75 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

■ Electrical Characteristics (Ta=25°C)

| Parameter | Symbol | Condition | min | typ | max | Unit |
|-----------------------------|-------------|--|------|------|------|----------|
| Receiver System | | | | | | |
| Receiver gain (1) | G_{V-R1} | $I_L=30\text{mA}$, $V_i=-50\text{dBV}$ | 34.5 | 37.5 | 39.5 | dB |
| Receiver gain (2) | G_{V-R2} | $I_L=80\text{mA}$, $V_i=-50\text{dBV}$ | 31.5 | 34.0 | 36.5 | dB |
| Max. receiver | V_{O-R} | $I_L=30\text{mA}$, THD=5% | 0 | 5 | — | dBV |
| KEY IN TONE gain (1) | G_{V-KT1} | $I_L=30\text{mA}$, $V_i=-50\text{dBV}$ | 28.5 | 31.0 | 33.5 | dB |
| KEY IN TONE gain (2)*1 | G_{V-KT2} | $I_L=80\text{mA}$, $V_i=-50\text{dBV}$ | 25.5 | 28.0 | 30.5 | dB |
| Transmission System | | | | | | |
| Transmission gain (1) | G_{V-T1} | $I_L=30\text{mA}$, $V_i=-50\text{dBV}$ | 33 | 35.5 | 38 | dB |
| Transmission gain (2) | G_{V-T2} | $I_L=80\text{mA}$, $V_i=-50\text{dBV}$ | 29.5 | 32.0 | 34.5 | dB |
| Max. transmission level | V_{O-T} | $I_L=30\text{mA}$, THD=5% | 0 | 5 | — | dBV |
| DTMF gain (1) | G_{V-DT1} | $I_L=30\text{mA}$, $V_i=-50\text{dBV}$ | 28.5 | 30.5 | 32.5 | dB |
| DTMF gain (2) | G_{V-DT2} | $I_L=80\text{mA}$, $V_i=-50\text{dBV}$ | 25.0 | 27.0 | 29.0 | dB |
| DTMF transmission level | V_{O-DT} | $I_L=30\text{mA}$, THD=5% | 0 | 5 | — | dBV |
| Power Supply | | | | | | |
| DC line voltage (1) | V_{L-1} | $I_L=20\text{mA}$ | 2.6 | 3.1 | 3.6 | V |
| DC line voltage (2) | V_{L-2} | $I_L=120\text{mA}$ | 7.5 | 9.0 | 10.5 | V |
| Internal supply voltage (1) | V_{CC-1} | $I_L=20\text{mA}$ | 1.8 | 2.1 | 2.4 | V |
| Internal supply voltage (2) | V_{CC-2} | $I_L=120\text{mA}$ | 5.8 | 6.5 | 7.2 | V |
| AC impedance (1)*1 | Z_{AC-1} | $I_L=30\text{mA}$, $f_{in}=1\text{kHz}$ | 450 | 610 | 750 | Ω |
| AC impedance (2)*1 | Z_{AC-2} | $I_L=90\text{mA}$, $f_{in}=1\text{kHz}$ | 450 | 610 | 750 | Ω |

Note) Operating supply voltage range : $V_{CC(oper)} = 3$ to 11.5V

*1 These values are of reference values but not guaranteed values.

■ Electrical Characteristics (cont.) (Ta=25°C)

| Parameter | Symbol | Condition | min | typ | max | Unit |
|-------------------|-------------------|--|------|------|-----------------|------|
| Dial Mute Input | | | | | | |
| Dial mute OFF | V _{DM-H} | | 0.8 | — | V _{CC} | V |
| Dial mute ON | V _{DM-L} | | — | — | 0.3 | V |
| Input current (1) | I _{DM-H} | V _{DM} =V _{CC} | -2.0 | 0.1 | 2.0 | μA |
| Input current (2) | I _{DM-L} | V _{DM} =0V | -2.0 | -0.2 | -0.02 | μA |
| REC mute *1,2 | M _R | I _L =30mA, V _i =-35dBV, Dial Mute SW- ON | 50 | — | — | dB |
| KT mute *1,2 | M _{KT} | I _L =30mA, V _i =-30dBV, Dial Mute SW- OFF | 50 | — | — | dB |
| MIC mute *1,2 | M _{DT} | I _L =30mA, V _i =-35dBV, Dial Mute SW- ON | 60 | — | — | dB |
| DTMF mute *1,2 | M _{DT} | I _L =30mA, V _i =-30dBV, Dial Mute SW- OFF | 50 | — | — | dB |

Note) Operating supply voltage range : V_{CC (ops)} = 3 to 11.5V

*1 These values are of reference values but not guaranteed values.

*2 Measure the output signal ratio when each amp. system operates or does not operate.