

# AN7316

## Dual Recording and Playback Pre-Amplifier IC for Single/Double Cassette

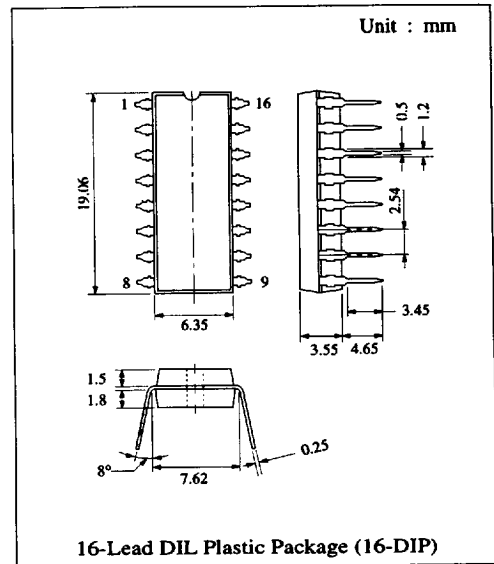
### ■ Description

The AN7316 is a monolithic integrated circuit for radio cassette recorder and built-in only fundamental function of Rec./playback pre-amp. with ALC function in 2-channel 16-lead DIL plastic package.

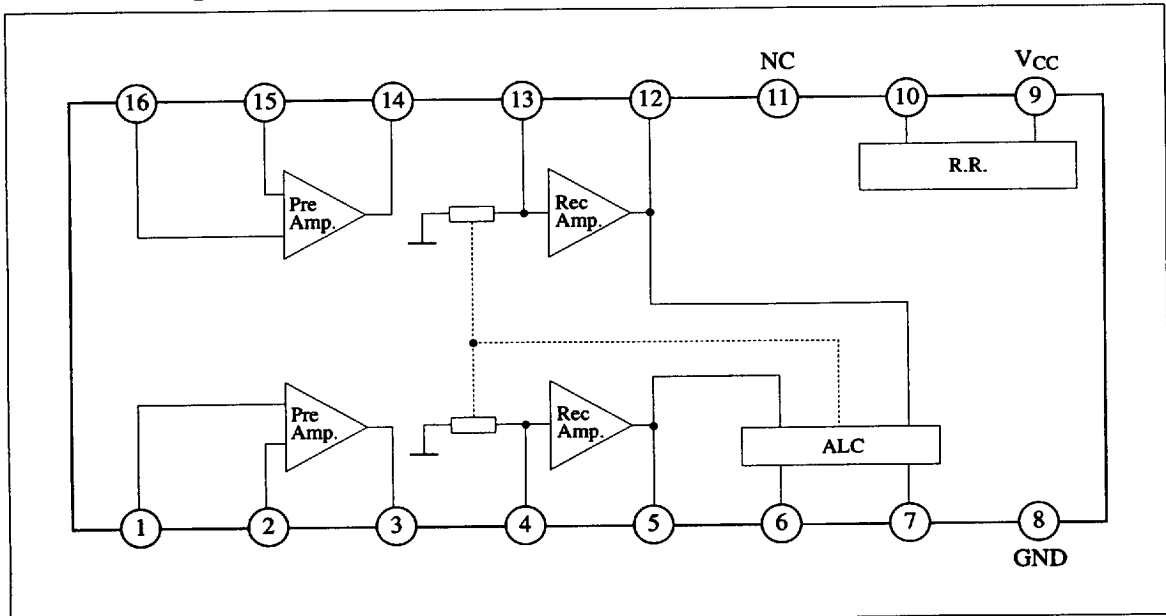
### ■ Features

- Built-in ALC LOW CUT function
- REC Amp. gain fixed and external parts reduced
- Wide operating supply voltage range:

$V_{CC} = 3.5V \sim 12V$



### ■ Block Diagram



■ 6932852 0013946 839 ■

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Panasonic

### ■ Absolute Maximum Ratings (Ta=25°C)

| Item                          | Symbol           | Rating     | Unit |
|-------------------------------|------------------|------------|------|
| Supply Voltage                | V <sub>CC</sub>  | 14         | V    |
| Supply Current                | I <sub>CC</sub>  | 30         | mA   |
| Power Dissipation             | P <sub>D</sub>   | 1,000      | mW   |
| Operating Ambient Temperature | T <sub>opr</sub> | -20 ~ +75  | °C   |
| Storage Temperature           | T <sub>stg</sub> | -55 ~ +150 | °C   |

Operating Supply Voltage Range: V<sub>CC</sub> = 3.5V ~ 12.0V

### ■ Electrical Characteristics (V<sub>CC</sub>=6V, f=1kHz, V<sub>O</sub>=1V, Ta=25°C)

| Item                          | Symbol           | Condition | min. | typ. | max. | Unit |
|-------------------------------|------------------|-----------|------|------|------|------|
| No Signal Current Consumption | I <sub>tot</sub> |           | 8.8  | 11.4 | 15.3 | mA   |

#### Playback Amp

|                                 |                   |                                    |      |       |     |    |
|---------------------------------|-------------------|------------------------------------|------|-------|-----|----|
| Open Circuit Gain               | G <sub>VO-P</sub> | R <sub>NF</sub> short              | 75   | 84    |     | dB |
| Closed Circuit Gain             | G <sub>VC-P</sub> | NAB                                | 40   | 43    | 46  | dB |
| Max. Output Voltage             | V <sub>om-P</sub> | THD = 3%                           | 1.4  | 1.7   |     | V  |
| Total Harmonic Distortion       | THD <sub>P</sub>  | 400Hz ~ 80kHz filter               |      | 0.038 | 0.1 | %  |
| Noise Voltage Referred to Input | V <sub>ni-P</sub> | R <sub>in</sub> = 2.2kΩ, DIN/AUDIO |      | 1.1   | 2   | μV |
| Crosstalk between Channels      | CT <sub>P</sub>   | R <sub>in</sub> = 2.2kΩ, DIN/AUDIO | 64   | 71.5  |     | dB |
| Channel Balance                 | CB <sub>P</sub>   |                                    | -1.5 | 0     | 1.5 | dB |

#### Record Amp.

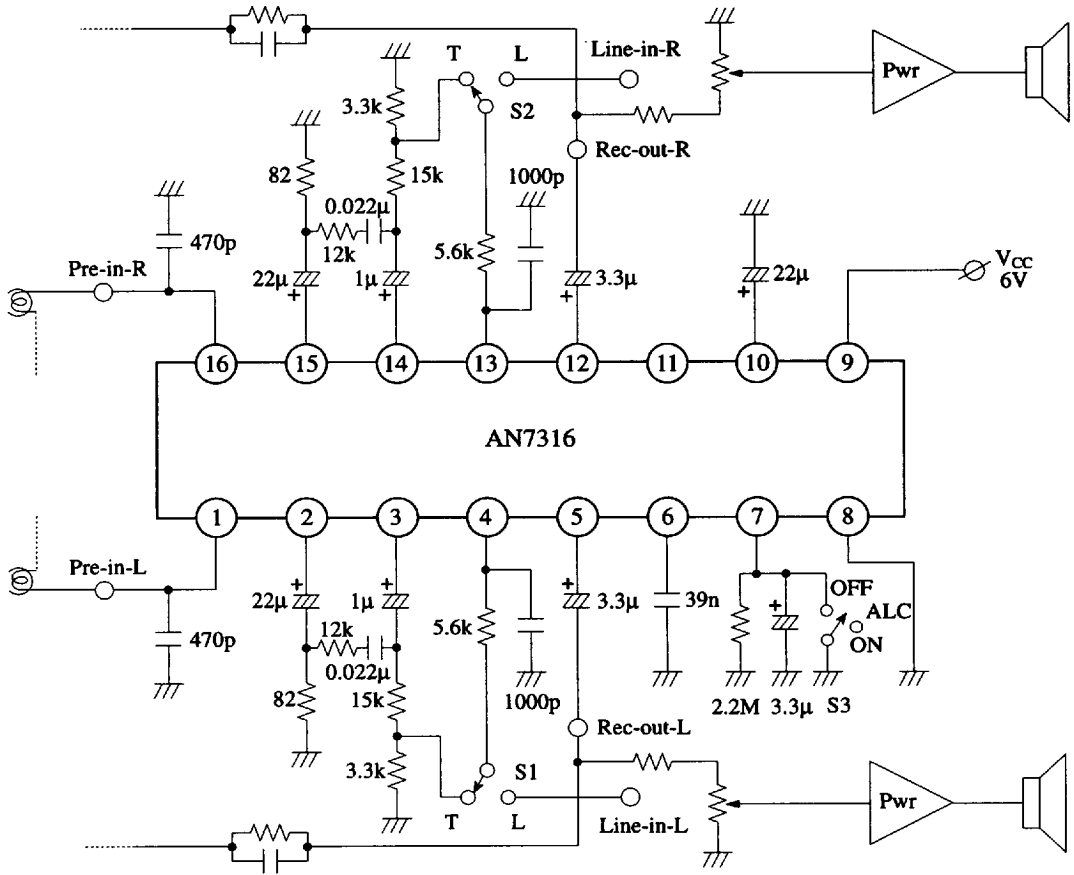
|                            |                   |                                 |      |     |      |    |
|----------------------------|-------------------|---------------------------------|------|-----|------|----|
| Closed Circuit Gain        | G <sub>V-R</sub>  |                                 | 37   | 39  | 42.5 | dB |
| Max. Output Voltage        | V <sub>om-R</sub> | THD = 3%                        | 1    | 1.9 |      | V  |
| Total Harmonic Distortion  | THD <sub>R</sub>  | 400Hz ~ 80kHz filter            |      | 0.1 | 0.17 | %  |
| Output Noise Voltage       | V <sub>no-R</sub> | R <sub>in</sub> = 3Ω, DIN/AUDIO |      | 260 | 550  | μV |
| Crosstalk between Channels | CT <sub>R</sub>   | R <sub>in</sub> = 3Ω, DIN/AUDIO | 50   | 57  |      | dB |
| Channel Balance            | CB <sub>R</sub>   |                                 | -1.5 | 0   | 1.5  | dB |

#### ALC

|                     |                  |   |      |     |      |    |
|---------------------|------------------|---|------|-----|------|----|
| ALC Start Voltage   | V <sub>S</sub>   | R <sub>in</sub> = 5.6kΩ, Dual ch. input | 0.75 | 0.9 | 1.37 | V  |
| ALC Effective Width | W <sub>ALC</sub> | R <sub>in</sub> = 5.6kΩ, Dual ch. input | 35   | 46  |      | dB |
| ALC Channel Balance | CB <sub>a</sub>  | R <sub>in</sub> = 5.6kΩ, Dual ch. input | -2   | 0.1 | 2    | dB |

■ Application note, please refer to AN7317

■ Application Circuit

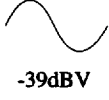
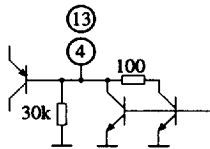
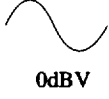
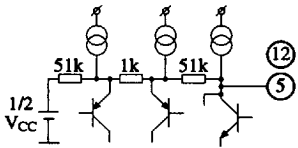
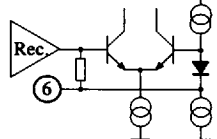
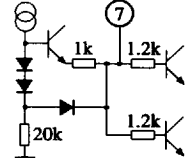
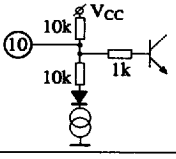


■ Pin Descriptions

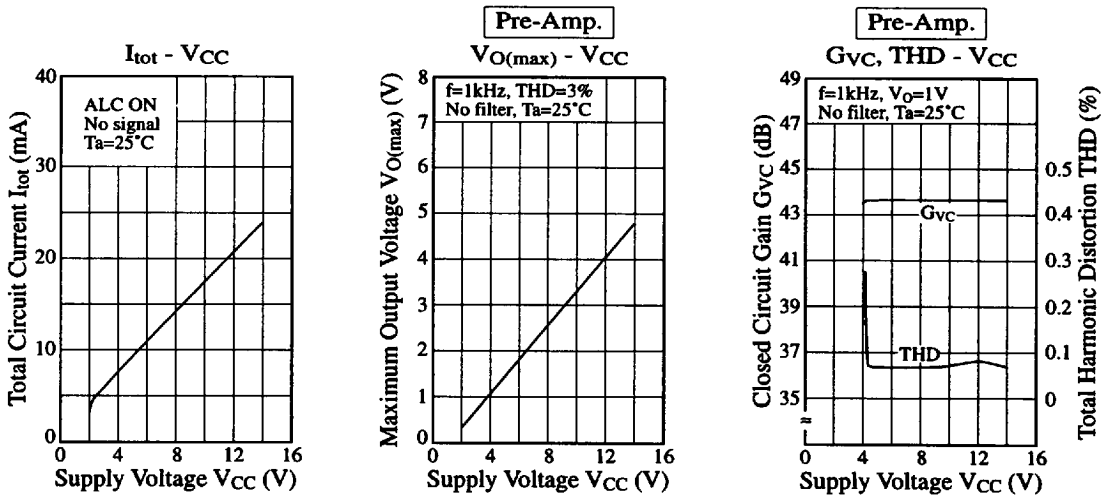
| Pin No | Pin Name                            | Typ. Waveform | Equivalent Circuit | Description             |
|--------|-------------------------------------|---------------|--------------------|-------------------------|
| 1      | CH1 Playback Amp. Input             | <br>-43.6dBV  |                    | Playback amp. input.    |
| 16     | CH2 Playback Amp. Input             |               |                    | Playback amp. feedback. |
| 2      | CH1 Playback Amp. Negative Feedback | <br>DC 0.7V   |                    | Playback amp. feedback. |
| 15     | CH2 Playback Amp. Negative Feedback |               |                    | Playback amp. output.   |
| 3      | CH1 Playback Amp. Output            | <br>0dBV      |                    | Playback amp. output.   |
| 14     | CH2 Playback Amp. Output            |               |                    |                         |

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■ Pin Descriptions (Continue)

| Pin No | Pin Name             | Typ. Waveform   | Equivalent Circuit   | Description                               |
|--------|----------------------|---|--|---|
| 4      | CH1 Rec. Amp. Input  | <br>-39dBV |   | Rec. amp. input.                          |
| 13     | CH2 Rec. Amp. Input  |   |  |   |
| 5      | CH1 Rec. Amp. Output | <br>0dBV   |   | Rec. amp. output.                         |
| 12     | CH2 Rec. Amp. Output |   |  |   |
| 6      | Low CUT              | DC ≈ 2.5V   |   | AGC comparator circuit reference voltage. |
| 7      | ALC Time Constant    | Follow input signal   |   | Low-pass filter pin.                      |
| 8      | GND                  |   |  | Main circuit GND.                         |
| 9      | Vcc                  | DC 6V   |  | Main circuit +Vcc.                        |
| 10     | VREF                 | DC 3.7V   |  |   |
| 11     | NC                   |   |  |   |

■ Characteristics Curve



■ Characteristics Curve (Continue)

