

## INTRODUCTION

The KA22711B/BD is a monolithic integrated circuit designed for use in Dolby®B-type noise reduction systems.

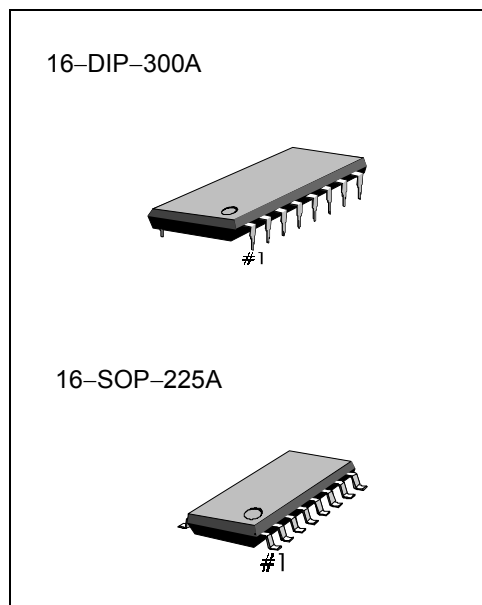
## FEATURES

- Few external components
- Low quiescent circuit current (typ  $I_{CCQ} = 5.3\text{mA}$ )
- High crosstalk rejection ratio
- Builtin NR-switch, REC/PB-switch
- Recommended supply voltage :  $V_{CC} = 5\text{V} \sim 16\text{V}$

## ORDERING INFORMATION

| Device    | Package     | Operating Temperature |
|-----------|-------------|-----------------------|
| KA22711B  | 16-DIP-300A | - 30°C ~ +85°C        |
| KA22711BD | 16-SOP-225A |                       |

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BLOCK DIAGRAM

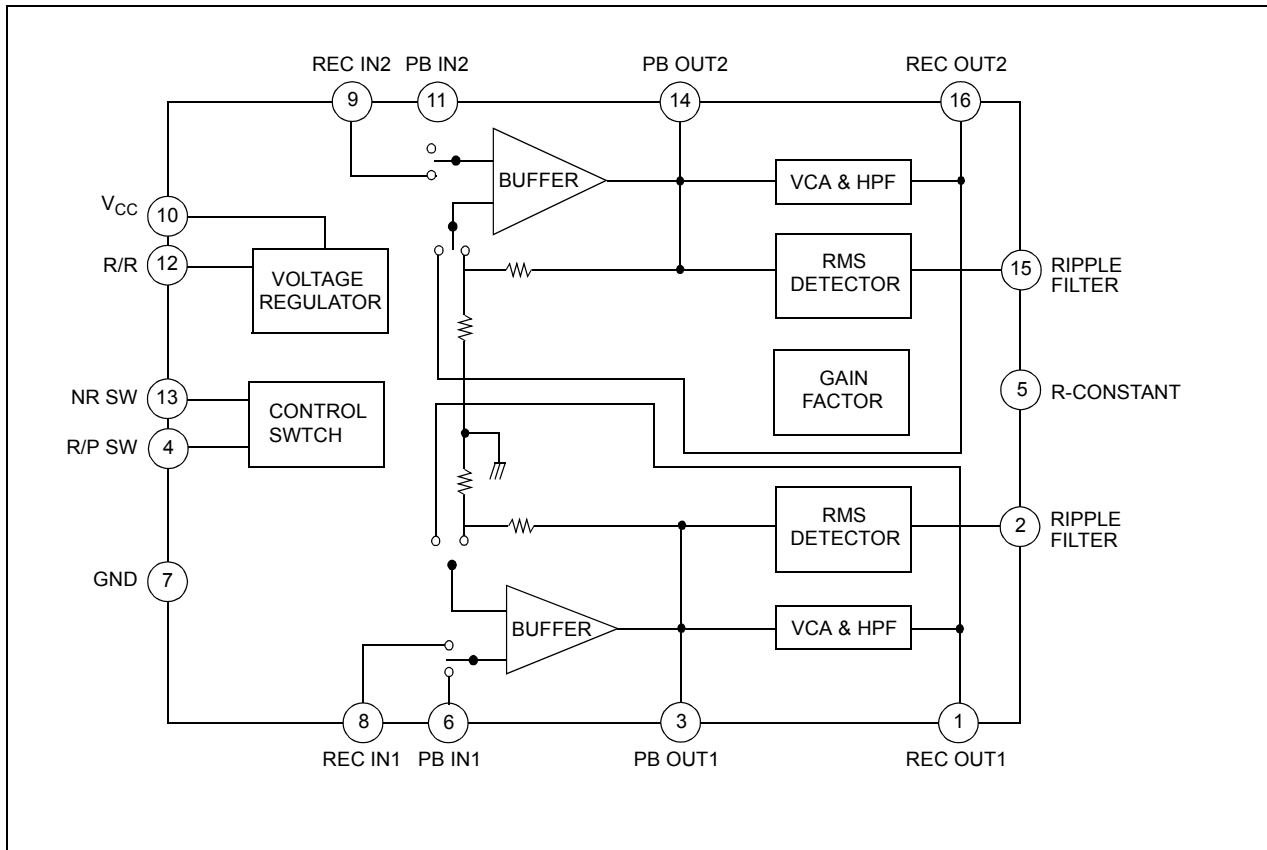


Figure 1.

## PIN CONFIGURATION

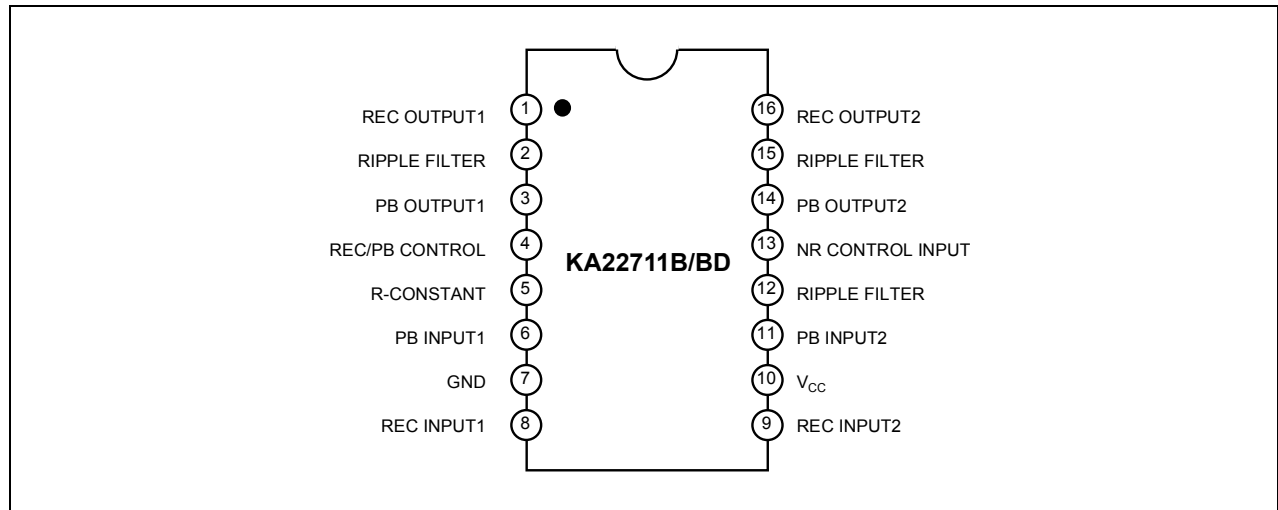


Figure 2.

## ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| Characteristic        | Symbol    | Value        | Unit |
|-----------------------|-----------|--------------|------|
| Supply Voltage        | $V_{CC}$  | 16           | V    |
| Power Dissipation     | $P_D$     | 750          | mW   |
| Operating Temperature | $T_{OPR}$ | - 30 ~ + 85  | °C   |
| Storage Temperature   | $T_{STG}$ | - 40 ~ + 125 | °C   |

**NOTE:** Derated above Ta = 25°C in the proportion of 10mW/°C

## ELECTRICAL CHARACTERISTICS

(Ta = 25°C, Vcc = 6V, f = 1kHz, 0dB = 245mW (-10dBm) at REC OUT, unless otherwise specified)

| Characteristic            | Symbol               | Test Conditions  | Min. | Typ. | Max. | Unit |
|---------------------------|----------------------|--|------|------|------|------|
| Quiescent Circuit Current | I <sub>CCQ</sub>     | REC mode, NR-off, V <sub>I</sub> = 0                       | 3.5  | 5.6  | 7    | mA   |
| Buffer Voltage Gain       | G <sub>V</sub>       | REC mode, PB out = 0dB                                     | 19   | 21   | 23   | dB   |
| NR-REC Boost              | G <sub>V(BST)</sub>  | RECCout = -25dB, f = 500Hz                                 | 1.4  | 2.9  | 4.4  | dB   |
|                           |                      | RECCout = -25dB, f = 2kHz                                  | 5.5  | 7.0  | 8.5  | dB   |
|                           |                      | RECCout = -25dB, f = 5kHz                                  | 3.9  | 5.4  | 6.9  | dB   |
|                           |                      | RECCout = -40dB, f = 10kHz                                 | 9.1  | 10.4 | 11.9 | dB   |
|                           |                      | RECCout = 0dB, f = 10kHz                                   | -1.1 | 0.4  | 1.9  | dB   |
| NR-Boost Balance          | CB                   | NR-REC boost CH to CH ratio                                | -    | 0    | 1    | dB   |
| MAX.RECCout level         | V <sub>O (MAX)</sub> | REC mode, NR-off THD = 1%                                  | 13   | 15   | v    | dB   |
| REC Output Voltage        | THD                  | REC mode, NR-off<br>RECCout = 10dB                         | -    | 0.04 | 0.2  | %    |
|                           |                      | REC mode, NR-on<br>RECCout = 10dB                          | -    | 0.04 | 0.3  | %    |
| NR-effect S/N             | S/N                  | REC mode, R <sub>G</sub> = 2.2kΩ<br>Filter = CCIR/ARM      | 65   | 69   | -    | dB   |
| Crosstalk                 | CT                   | NR-off, OUTPUT = 0dB<br>PB to REC                          | -    | -70  | -60  | dB   |
|                           |                      | CH to CH, NR-off<br>OUTPUT = 0dB                           | -    | -70  | -60  | dB   |
| Input Impedance           | Z <sub>I</sub>       | -  | 30   | 47   | 60   | kΩ   |
| Switch Control Voltage    | V <sub>CTL</sub>     | High mode  | 2.4  | -    | -    | V    |
|                           |                      | Low mode   | 0    | -    | 0.4  | V    |
| Input Level               | REC V <sub>I</sub>   | REC mode, NR-off<br>RECCout = 0dB                          | -32  | -30  | -28  | dBm  |
|                           | PB V <sub>I</sub>    | PB mode, NR-off<br>RECCout = 0dB                           | -32  | -30  | -28  | dBm  |
| Output Level              | V <sub>O</sub>       | REC mode, NR-off<br>RECCout = 0dB<br>Testpoint = PB output | 13   | 15   | -    | dB   |

TEST CIRCUIT

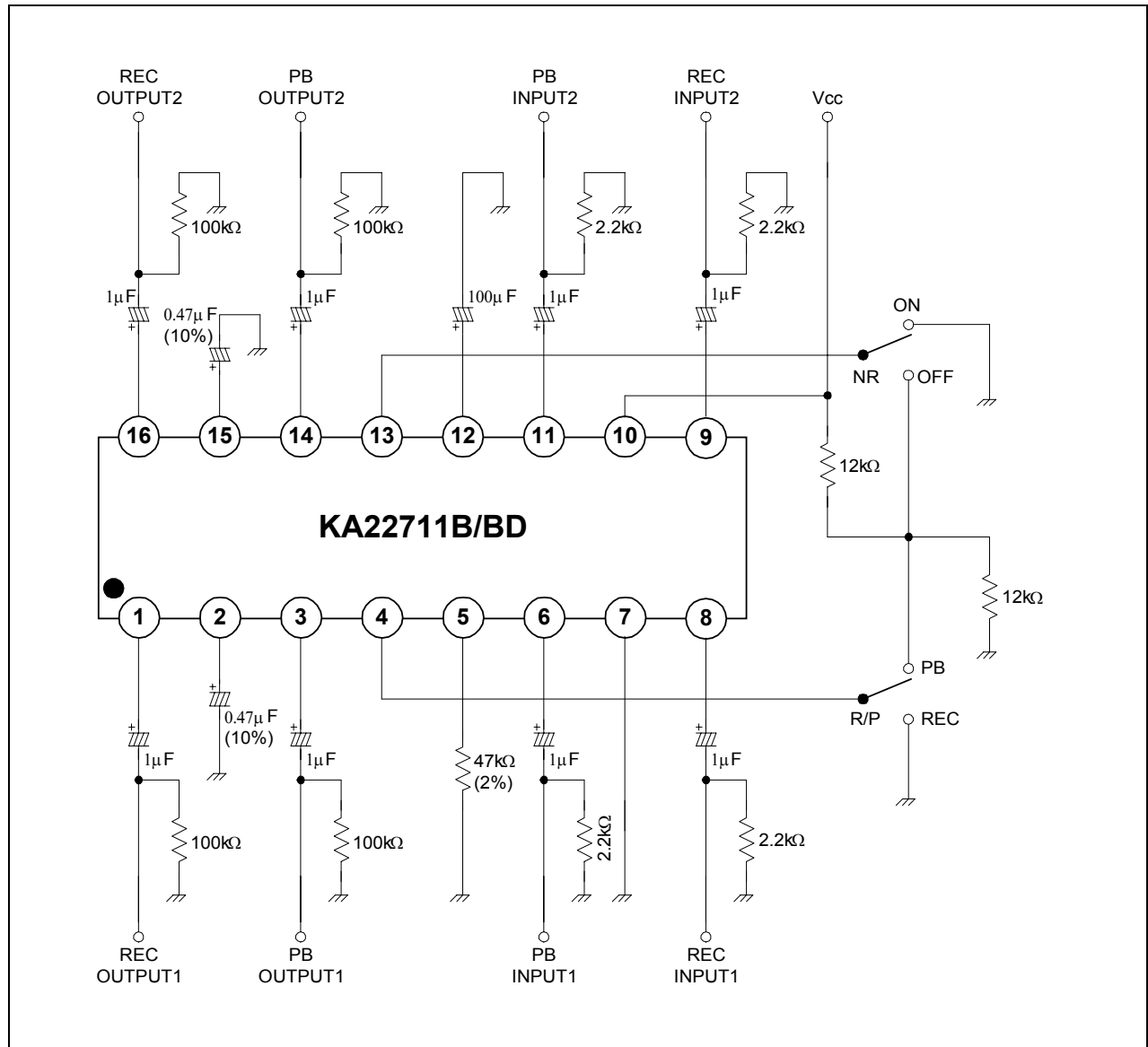
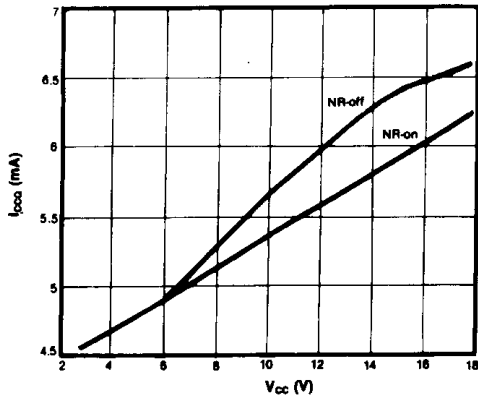
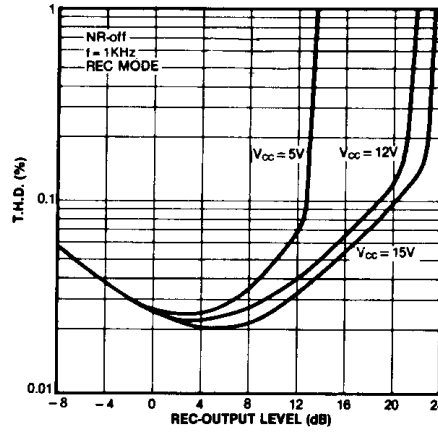


Figure 3.

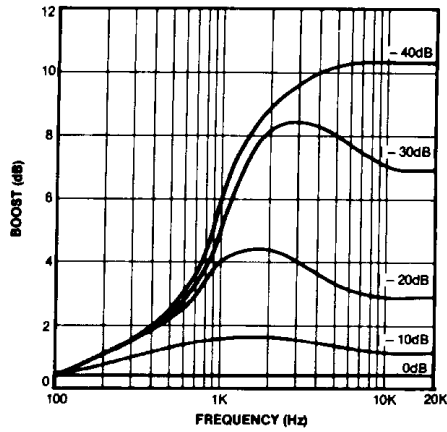
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



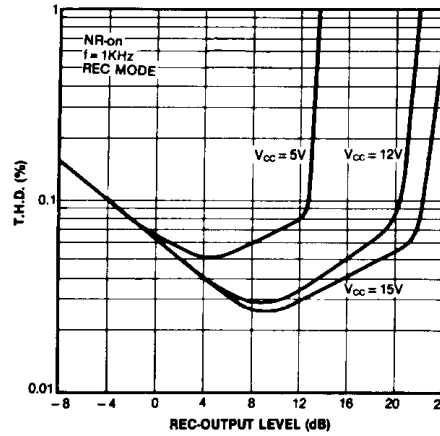
TOTAL HARMONIC DISTORTION (REC)



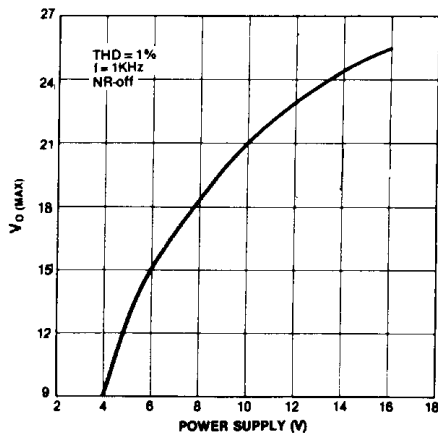
REC (ENCODE) CHARACTERISTIC



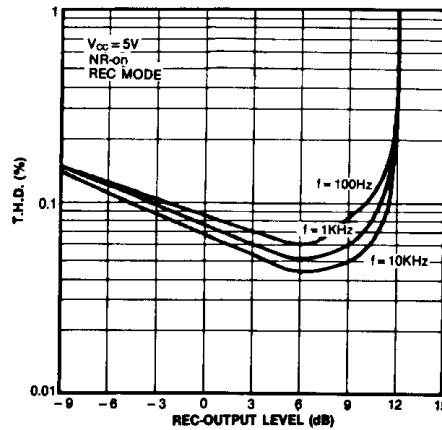
TOTAL HARMONIC DISTORTION (REC)

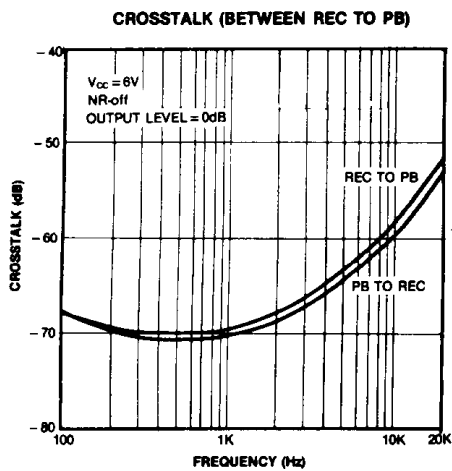
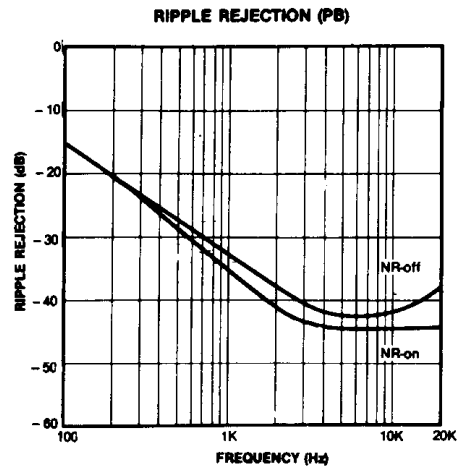
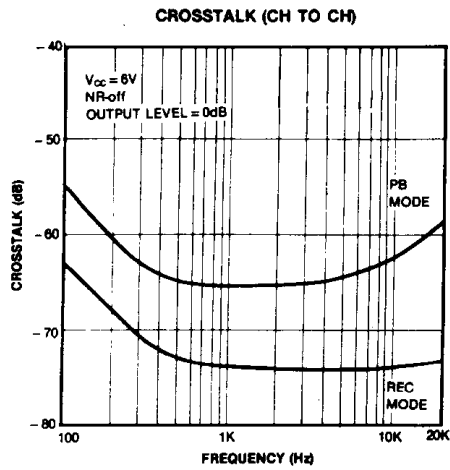
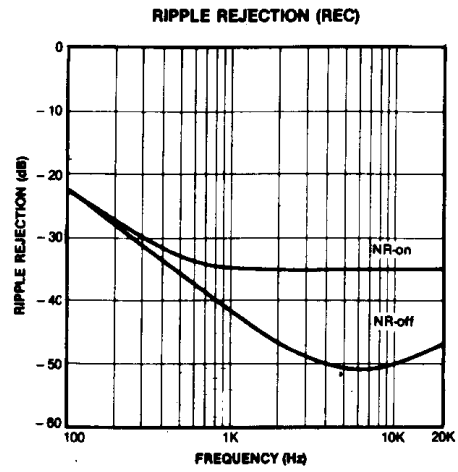
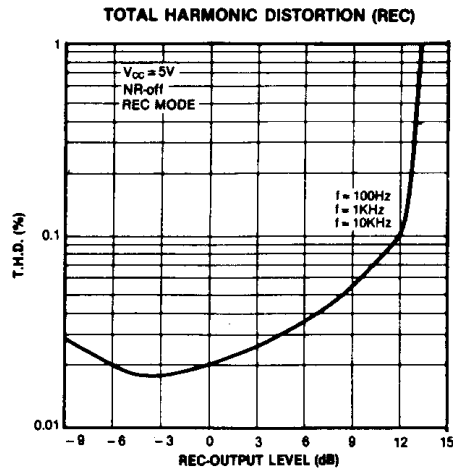


MAX REC-OUTPUT LEVEL



TOTAL HARMONIC DISTORTION (REC)





## APPLICATION INFORMATION

### Power Supply

The KA22711B/BD can be operated at 8V ~ 16V with a single power supply and 4V - 8V with a dual power supply.

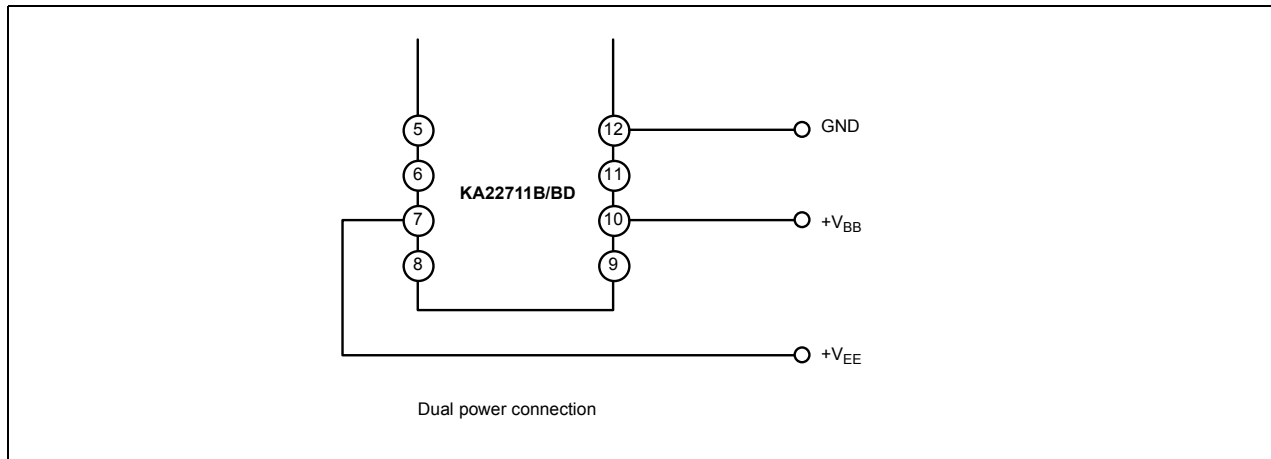


Figure 4.

### Switch Control Voltage

All functions of KA22711B/BD are controlled by internal electronic switches. The function switch is operated by the D.C. voltage of NR and R/P control pins.

| NR, R/P   | $V_H$  | $V_L$ |
|-----------|--------|-------|
| Condition | PB     | REC   |
|           | NR-off | NR-on |

| Single          | Dual Power               |
|-----------------|--------------------------|
| $V_H \geq 2.4V$ | $V_H \geq V_{EE} + 2.4V$ |
| $V_L \leq 0.4V$ | $V_L \leq V_{EE} + 0.4V$ |

### Reference Level

The reference output level of the Dolby noise reduction system is defined as the Dolby level. The Dolby level of KA22711B/BD is 245mV (-10dBm) at  $f = 400\text{Hz}$ .100