

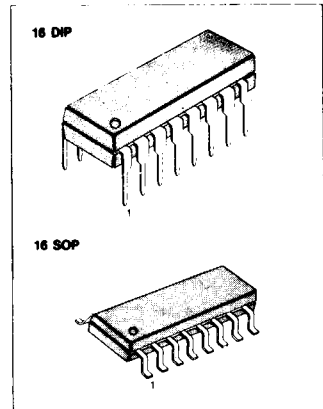


**DOLBY\* B-TYPE NOISE REDUCTION PROCESSOR**

The KA2271 is a monolithic integrated circuit designed for use in Dolby\*B-type noise reduction systems.

**FEATURES**

- Few external components
- Low quiescent circuit current (typ  $I_{CCQ} = 4.3mA$ )
- High crosstalk rejection ratio
- Built in NR-switch, REC/PB-switch
- Recommended supply voltage:  $V_{CC} = 8V \sim 16V$



**BLOCK DIAGRAM**

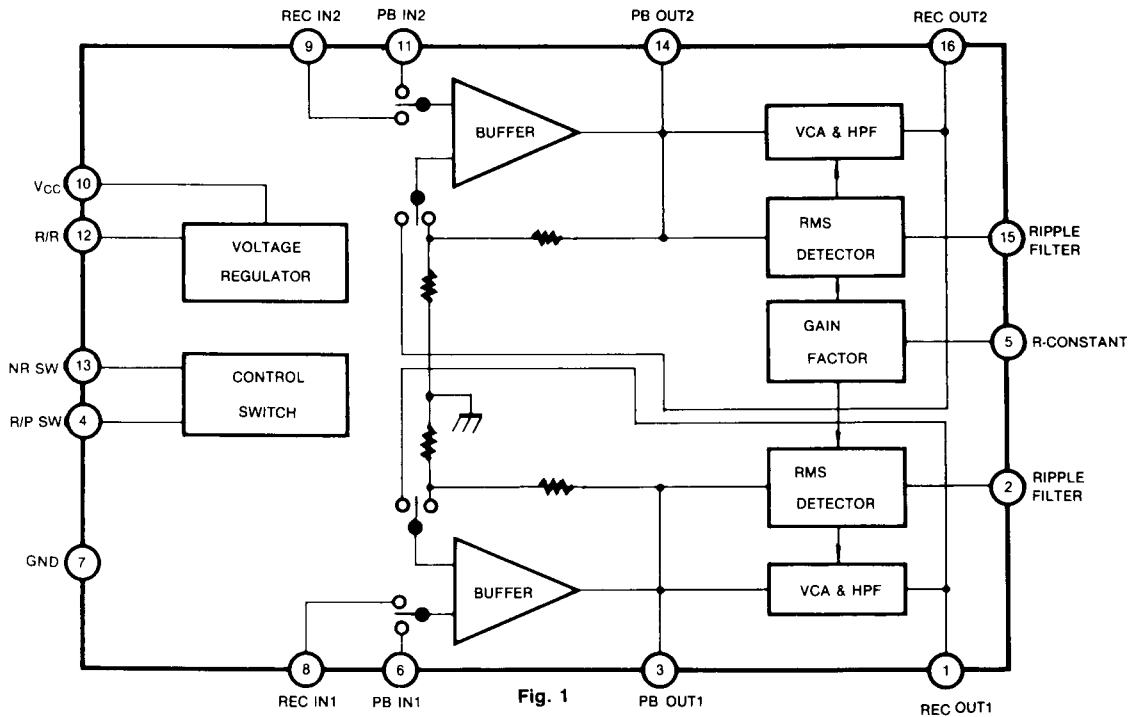


Fig. 1

\* "Dolby" and double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

This I.C. is available only to licensees of Dolby Laboratories Licensing Corporation, San Francisco, from whom licensing and application information must be obtained.

**ORDERING INFORMATION**

| Device | Package | Operating Temperature |
|--------|---------|-----------------------|
| KA2271 | 16 DIP  | -30°C ~ +85°C         |

## PIN CONFIGURATION

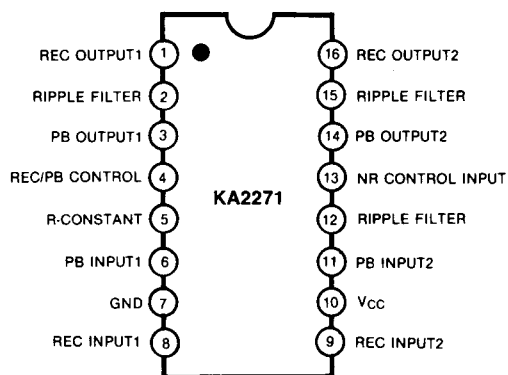


Fig. 2

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

| Characteristic        | Symbol           | Value        | Unit |
|-----------------------|------------------|--------------|------|
| Supply Voltage        | V <sub>CC</sub>  | 16           | V    |
| Power Dissipation     | P <sub>D</sub>   | 750          | mW   |
| Operating Temperature | T <sub>OPR</sub> | - 30 ~ + 85  | °C   |
| Storage Temperature   | T <sub>STG</sub> | - 40 ~ + 125 | °C   |

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

**ELECTRICAL CHARACTERISTICS**(Ta = 25°C, V<sub>cc</sub> = 12V, f = 1KHz, 0dB = 245mV (–10dBm). at REC OUT, unless otherwise specified)

| Characteristic            | Symbol               | Test Conditions   | Min  | Typ  | Max  | Unit |
|---------------------------|----------------------|---|------|------|------|------|
| Quiescent Circuit Current | I <sub>cco</sub>     | REC mode, NR-off, V <sub>i</sub> = 0                      | 3.5  | 4.3  | 6    | mA   |
| Buffer Voltage Gain       | G <sub>v</sub>       | REC mode, PBout = 0dB                                     | 25   | 27   | 29   | dB   |
| NR-REC Boost              | G <sub>v (BST)</sub> | RECout = –25dB, f = 500Hz                                 | 1.4  | 2.5  | 4.4  | dB   |
|                           |                      | RECout = –25dB, f = 2KHz                                  | 5.5  | 7.0  | 8.5  | dB   |
|                           |                      | RECout = –25dB, f = 5KHz                                  | 3.9  | 5.4  | 6.9  | dB   |
|                           |                      | RECout = –40dB, f = 10KHz                                 | 9.7  | 10.4 | 11.9 | dB   |
|                           |                      | RECout = 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. RECout level         | V <sub>O (MAX)</sub> | REC mode, NR-off THD = 1%                                 | 14   | 16   |      | dB   |
| REC Output Voltage        | THD                  | REC mode, NR-off<br>RECout = 10dB                         |      | 0.04 | 0.1  | %    |
|                           |                      | REC mode, NR-on<br>RECout = 10dB                          |      | 0.04 | 0.1  | %    |
| NR-effect S/N             | S/N                  | REC mode, R <sub>G</sub> = 2.2K<br>Filter = CCIR/ARM      | 65   | 69   |      | dB   |
| Crosstalk                 | CT                   | NR-off<br>OUTPUT = 0dB<br>PB to REC                       |      | –70  | –65  | dB   |
|                           |                      | CH to CH, NR-off<br>OUTPUT = 0dB                          |      | –70  | –65  | 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>RECout = 0dB                          | 19.5 | 24.5 | 31.0 | mV   |
|                           | PB V <sub>i</sub>    | PB mode, NR-off<br>RECout = 0dB                           | 19.5 | 24.5 | 31.0 | mV   |
| Output Level              | V <sub>O</sub>       | REC mode, NR-off<br>RECout = 0dB<br>Testpoint = PB output | 489  | 549  | 616  | mV   |

TEST CIRCUIT

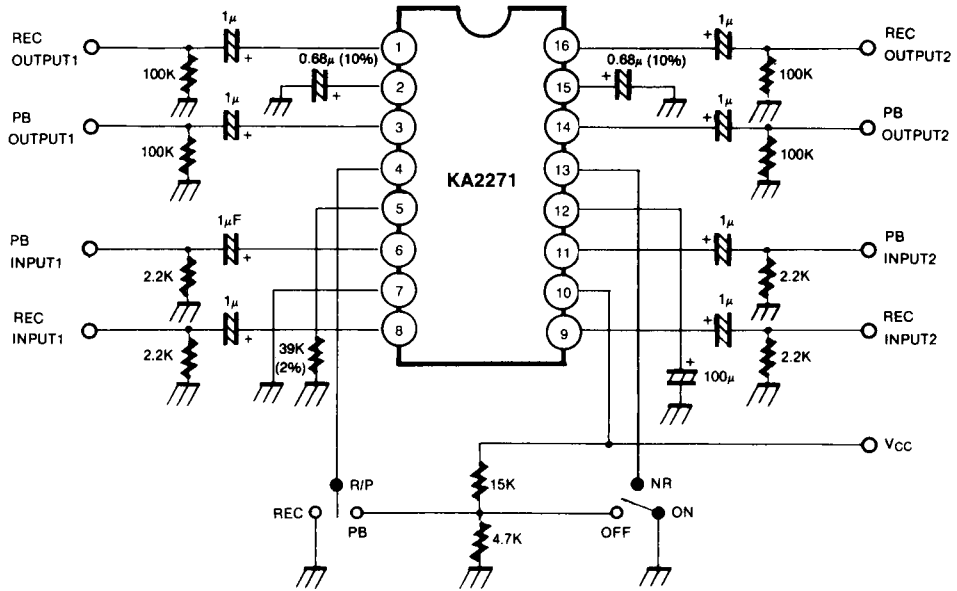
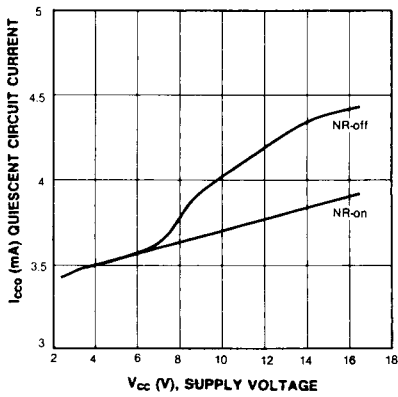


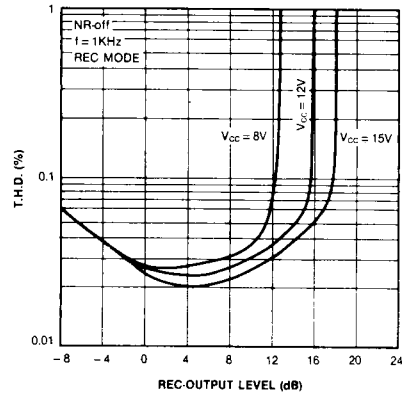
Fig. 3

3

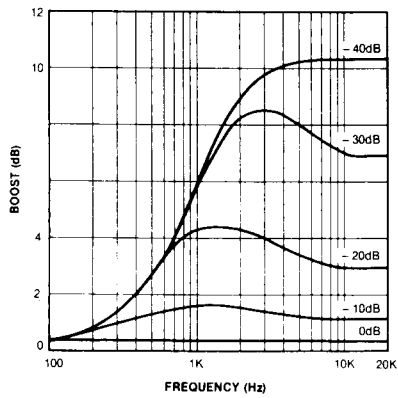
QUIESENTENT CIRCUIT CURRENT-SUPPLY VOLTAGE



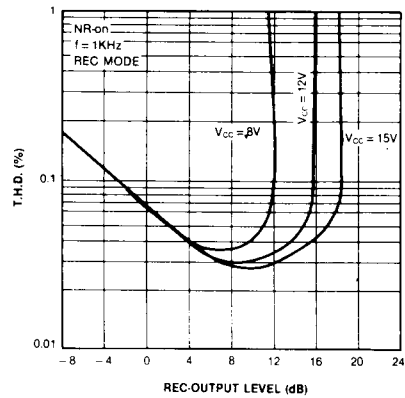
TOTAL HARMONIC DISTORTION (REC)



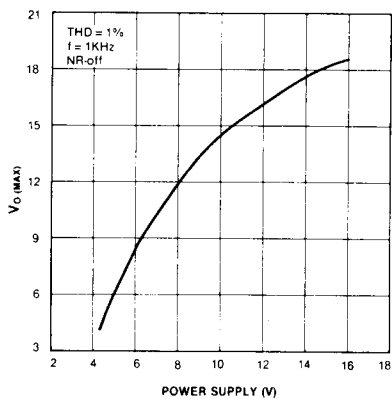
REC (ENCODE) CHARACTERISTIC



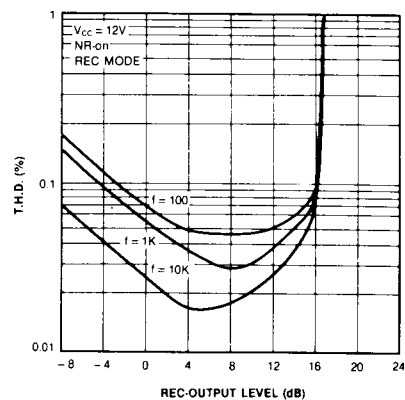
TOTAL HARMONIC DISTORTION (REC)

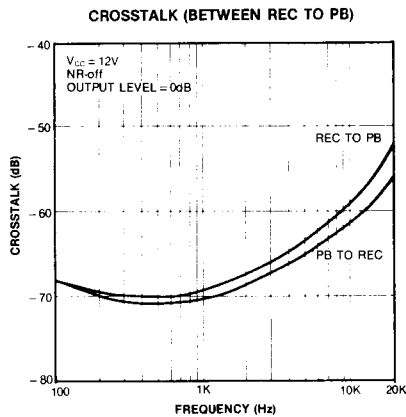
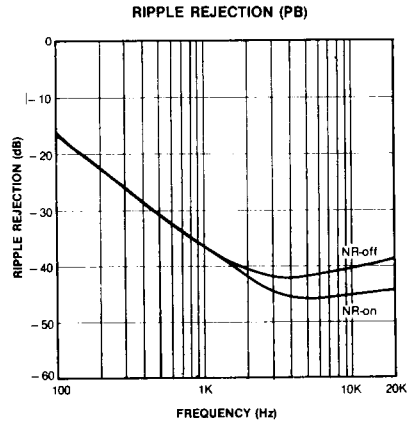
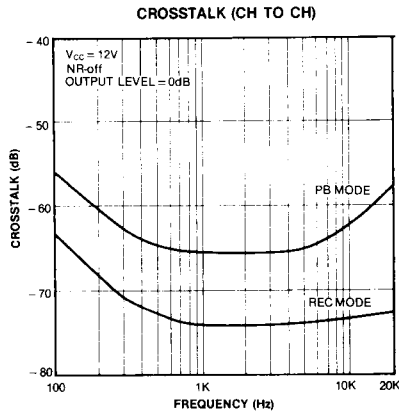
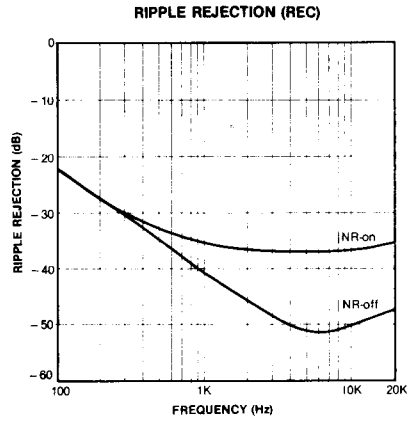
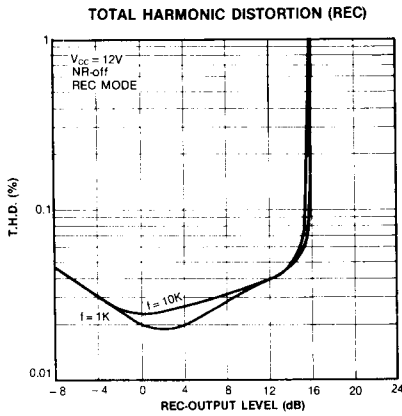


MAX REC-OUTPUT LEVEL



TOTAL HARMONIC DISTORTION (REC)

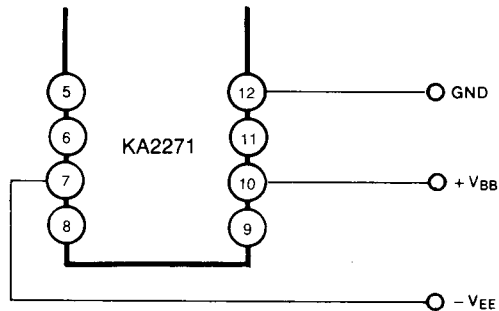




## APPLICATION INFORMATION

### 1) POWER SUPPLY

The KA2271 can be operated at 8V – 16V in case of single and  $\pm 4V - \pm 8V$  in dual power supply.



Dual power connection

Fig. 4

### 2) SWITCH CONTROL VOLTAGE

All function of KA2271 are controlled by internal electronic switches. The function switch is operated by 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 Power    | Dual Power               |
|-----------------|--------------------------|
| $2.4V \leq V_H$ | $V_H \geq V_{EE} + 2.4V$ |
| $0.4V \geq V_L$ | $V_{EE} + 0.4V \geq V_L$ |

### 3) REFERENCE LEVEL

The reference output level of Dolby noise reduction system is defined as Dolby level. The Dolby level of KA2271 is 245mV (– 10dBm) at  $f = 400\text{Hz}$ .