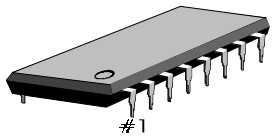
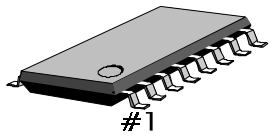
INTRODUCTION

The KA22712B/BD is a monolithic integrated circuit designed for use in Dolby*B-type noise reduction systems.

16–DIP–300A



16–SOP–225A



FEATURES

- Few external components
- Low quiescent circuit current (Typ I_{CCQ} = 5.3mA)
- High cross talk rejection ratio
- Built-in NR-swich, REC/PB-switch
- Recommended supply voltage: V_{CC} = 6.5V ~ 16V

ORDERING INFORMATION

Device	Package	Operating Temperature
KA22712B	16–DIP–300A	– 30°C ~ -85°C
KA22712BD	16–SOP–225A	

* "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
This IC is available only to licensees of Dolby Laboratories Licensing Corporation, San Francisco, from whom licensing and application information must be obtained.

BLOCK DIAGRAM

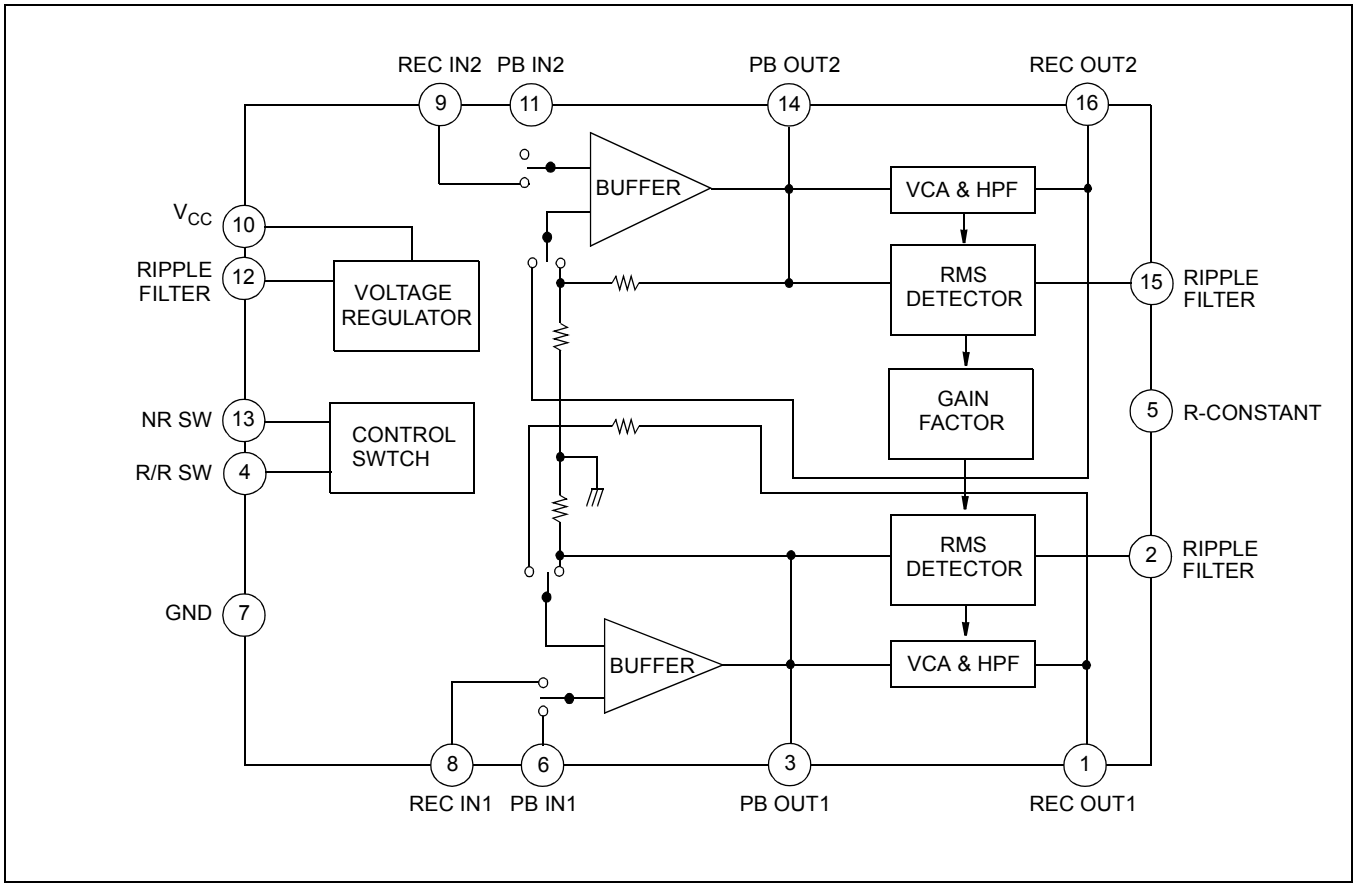


Figure 1.

PIN CONFIGURATION

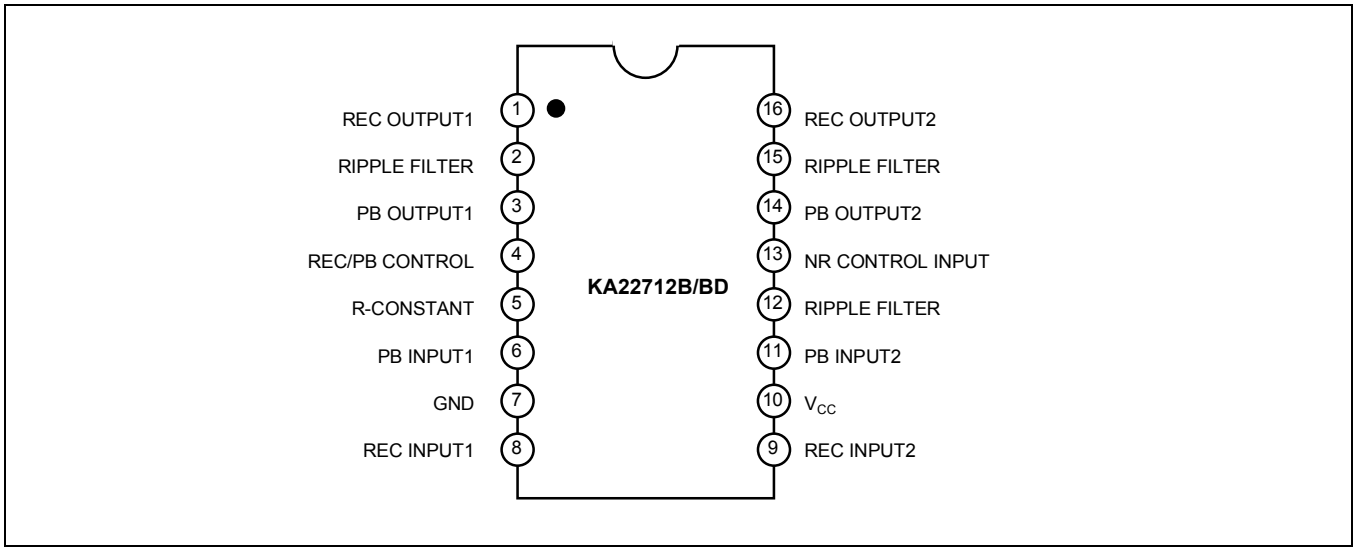


Figure 2.

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 = 9V, f = 1kHz, 0dB = 245mW (–10dBm) at REC OUT, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Quiescent Circuit Current	I_{CCQ}	REC mode, NR-off, V_I = 0	4.5	5.3	7	mA
Buffer Voltage Gain	G_V	REC mode, PB out = 0dB	22	24	26	dB
NR-REC Boost	$G_{V(BST)}$	RECout = –25dB, f = 500Hz	1.4	2.9	4.4	dB
		RECout = –25dB, f = 2kHz	5.4	7.0	8.5	dB
		RECout = –25dB, f = 5kHz	3.9	5.4	6.9	dB
		RECout = –40dB, f = 10kHz	9.1	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 ratio	–	0	1	dB
MAX.RECout level	$V_{O\ (MAX)}$	REC mode, NR-off THD = 1%	14	16	–	dB
REC Output Voltage	THD	REC mode, NR-off RECout = 10dB	–	0.04	0.1	%
		REC mode, NR-on RECout = 10dB	–	0.04	0.1	%
NR-effect S/N	S/N	REC mode, R_G = 2.2kΩ Filter = CCIR/ARM	65	69	–	dB
Cross talk	CT	NR-off, OUTPUT = 0dB PB to REC	–	–70	-65	dB
		CH to CH, NR-off OUTPUT = 0dB	–	–70	-65	dB
Input Impedance	Z_I	–	30	47	65	kΩ
Switch Control Voltage	V_{CTL}	High mode	2.4	–	–	V
		Low mode	0	–	0.4	V
Input Level	REC V_I	REC mode, NR-off RECout = 0dB	19.5	24.5	31.0	mv
	PB V_I	PB mode, NR-off RECout = 0dB	19.5	24.5	31.0	mv
Output Level	V_O	REC mode, NR-off RECout = 0dB Testpoint = PB output	–	–	–	–

TEST CIRCUIT

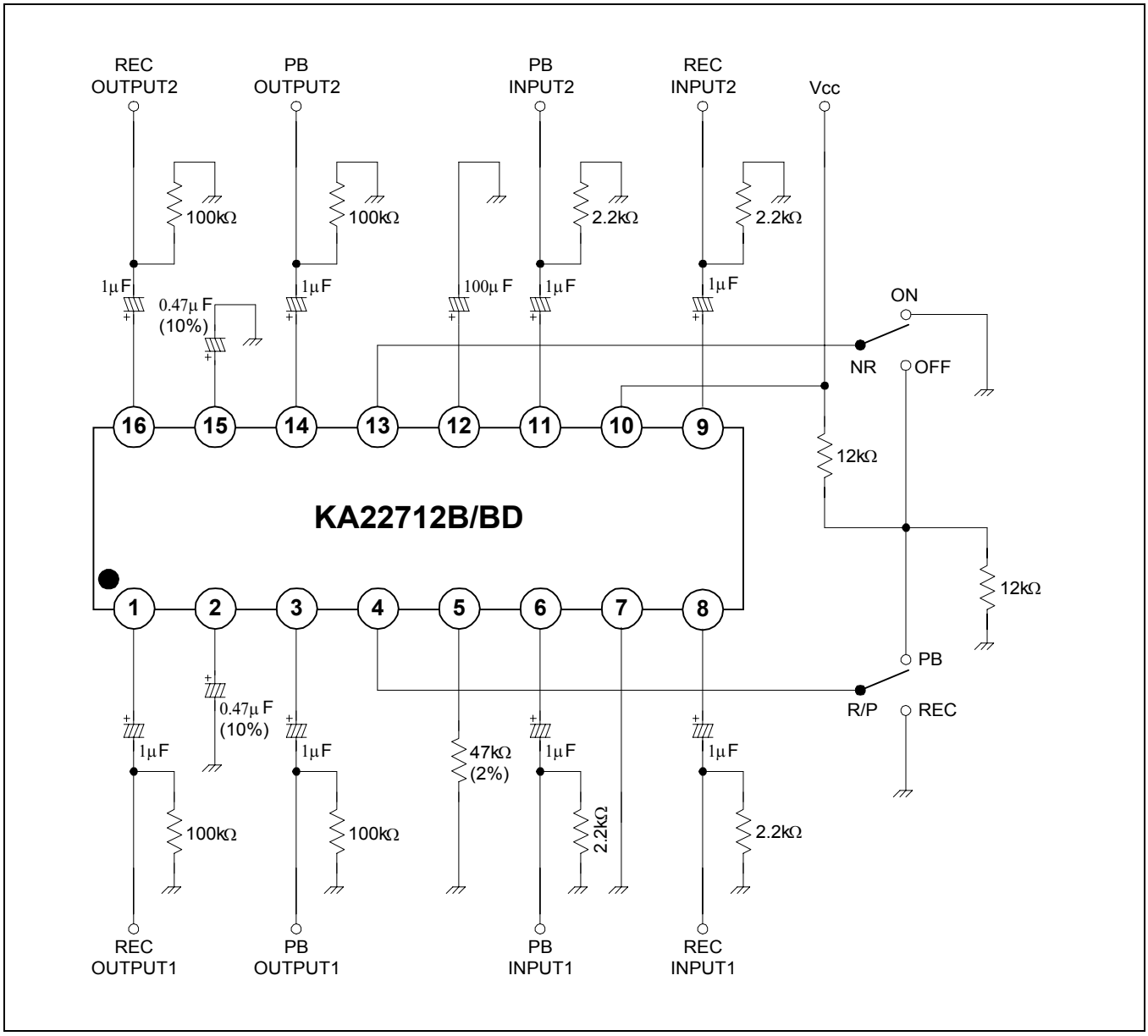
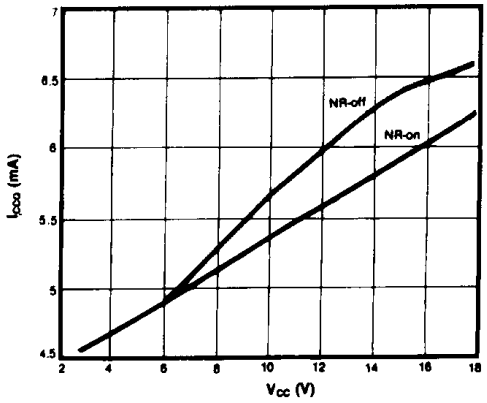
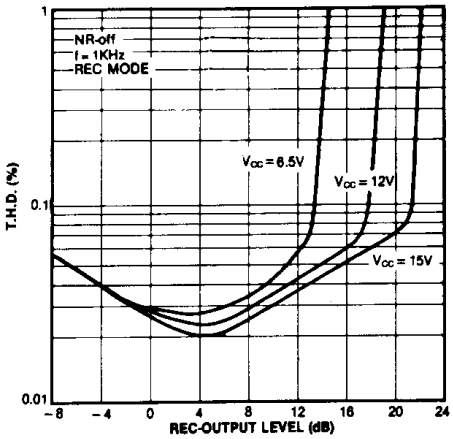


Figure 3.

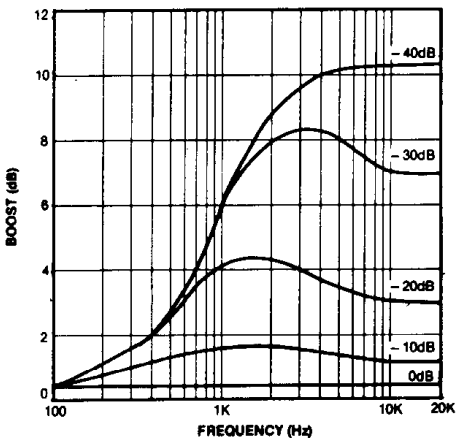
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



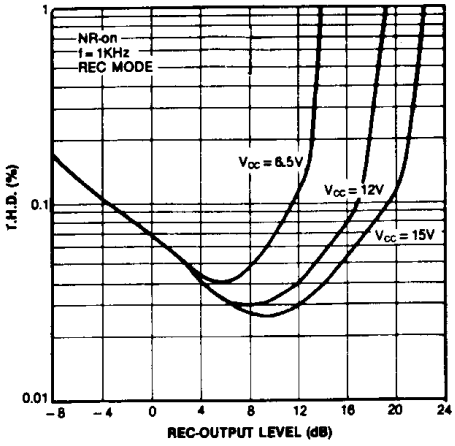
TOTAL HARMONIC DISTORTION (REC)



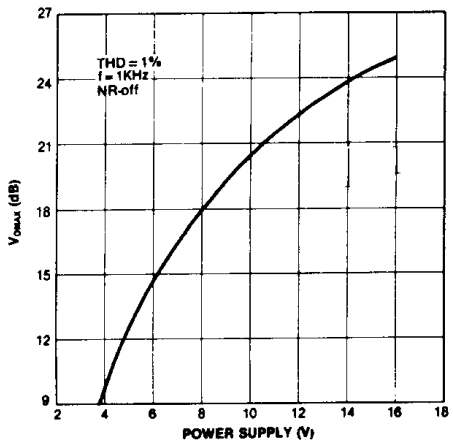
REC (ENCODE) CHARACTERISTIC



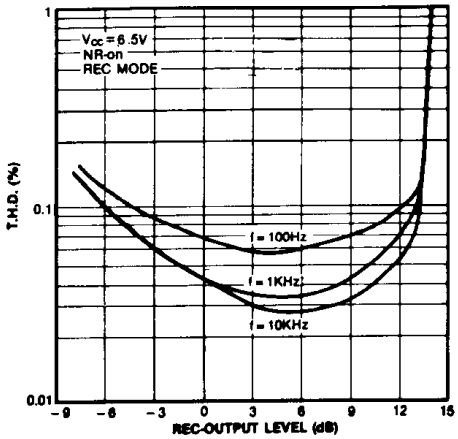
TOTAL HARMONIC DISTORTION (REC)



MAX REC-OUTPUT LEVEL

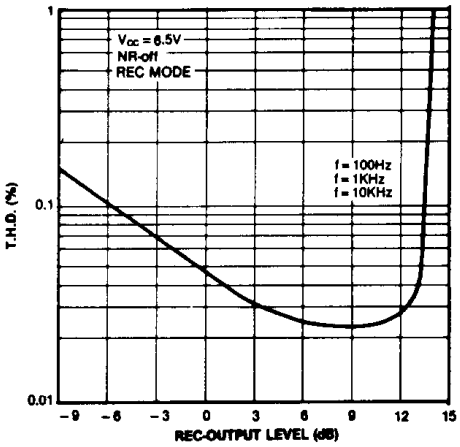


TOTAL HARMONIC DISTORTION (REC)

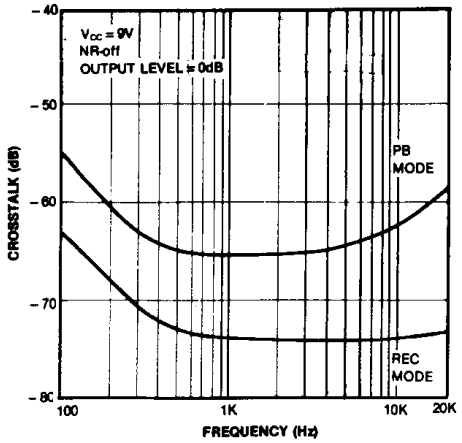


SAMSUNG ELECTRONICS

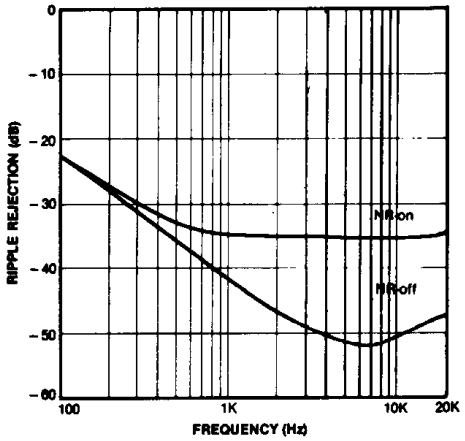
TOTAL HARMONIC DISTORTION (REC)



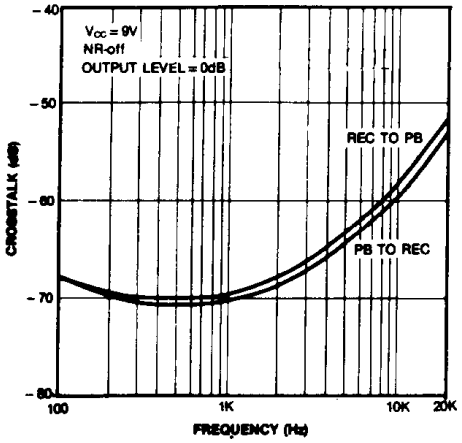
CROSSTALK (CH TO CH)



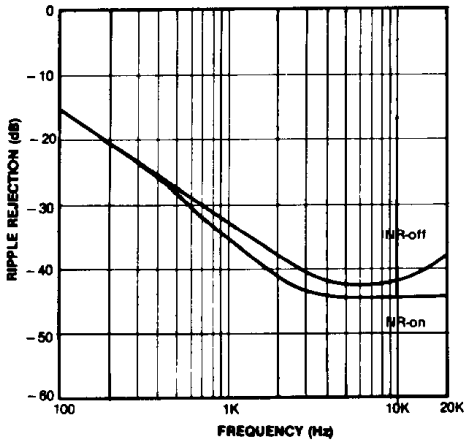
RIPPLE REJECTION (REC)



CROSSTALK (BETWEEN REC TO PB)



RIPPLE REJECTION (PB)



APPLICATION INFORMATION

Power Supply

The KA22712B/BD can be operated at 6.5V ~ 16V with a single power supply, and 3.25V - 8V with a dual power supply.

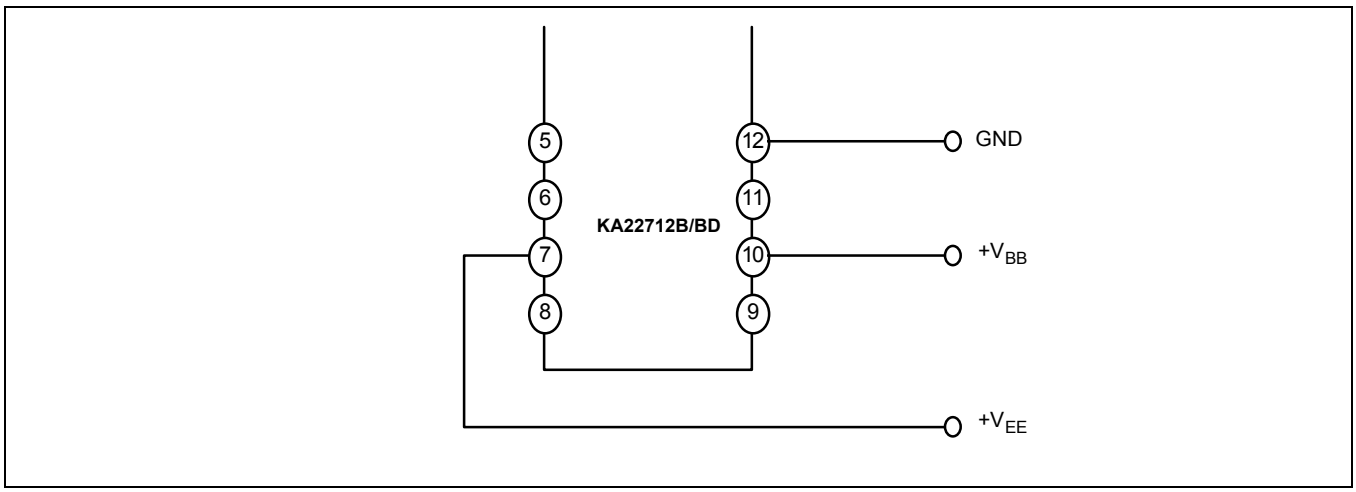


Figure 4.

Switch Control Voltage

All functions of KA22712B/BD are controlled by internal electronic switches. The function switch is operated by the DC 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
$V_H \geq 2.4V$ $V_L \leq 0.4V$	$V_H \geq V_{EE} + 2.4V$ $V_L \leq V_{EE} + 0.4V$

Reference Level

The reference output level of Dolby noise reduction system is defined as the Dolby level. The Dolby level of KA22712B/BD is 245mV (−10dBm) at f = 400Hz.100