

INTRODUCTION

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

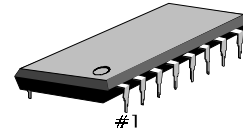
FEATURES

- 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 : $V_{CC} = 5\text{V} \sim 16\text{V}$

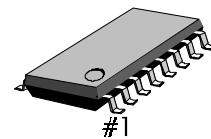
ORDERING INFORMATION

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

16-DIP-300A



16-SOP-225A



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BLOCK DIAGRAM

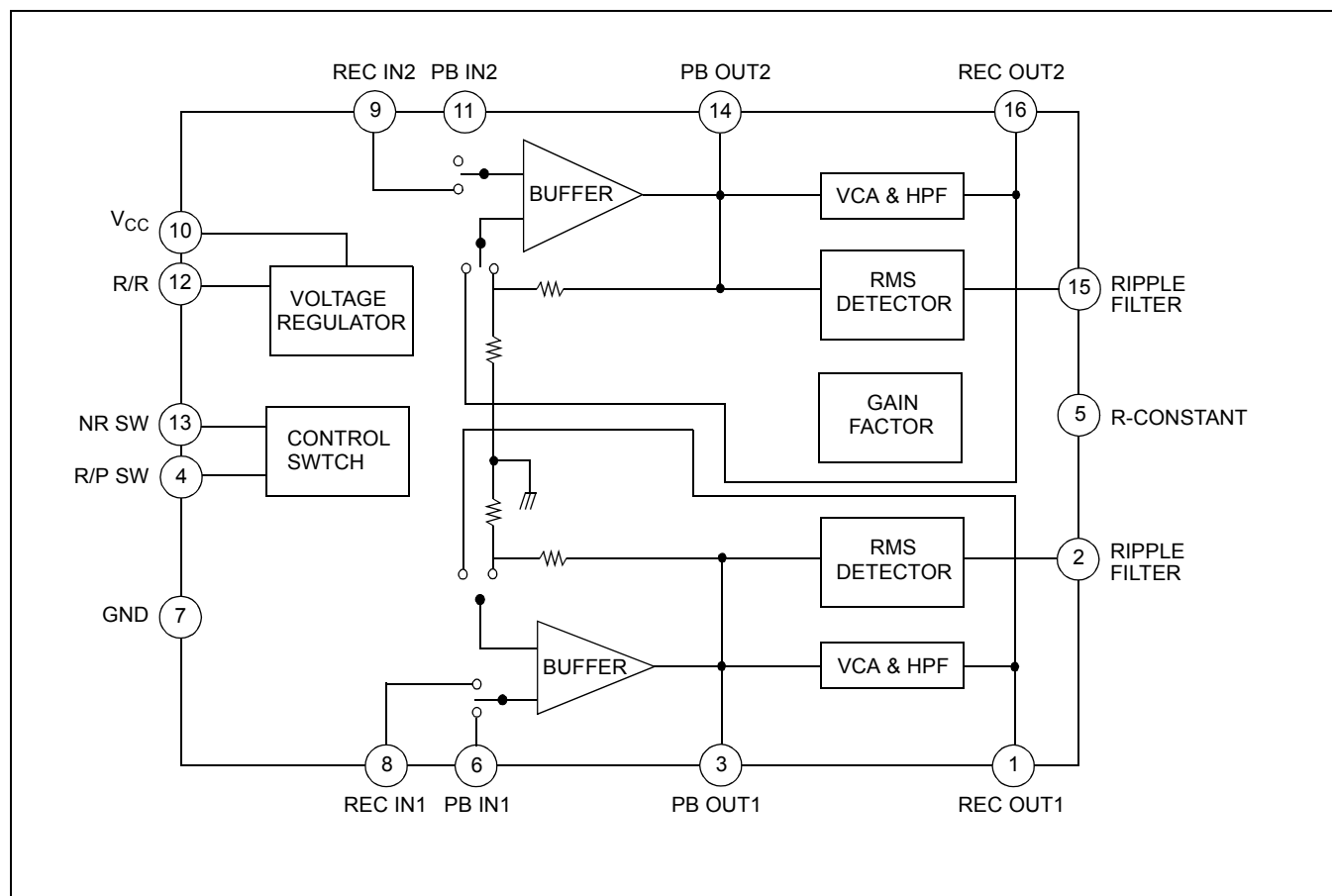


Figure 1.

PIN CONFIGURATION

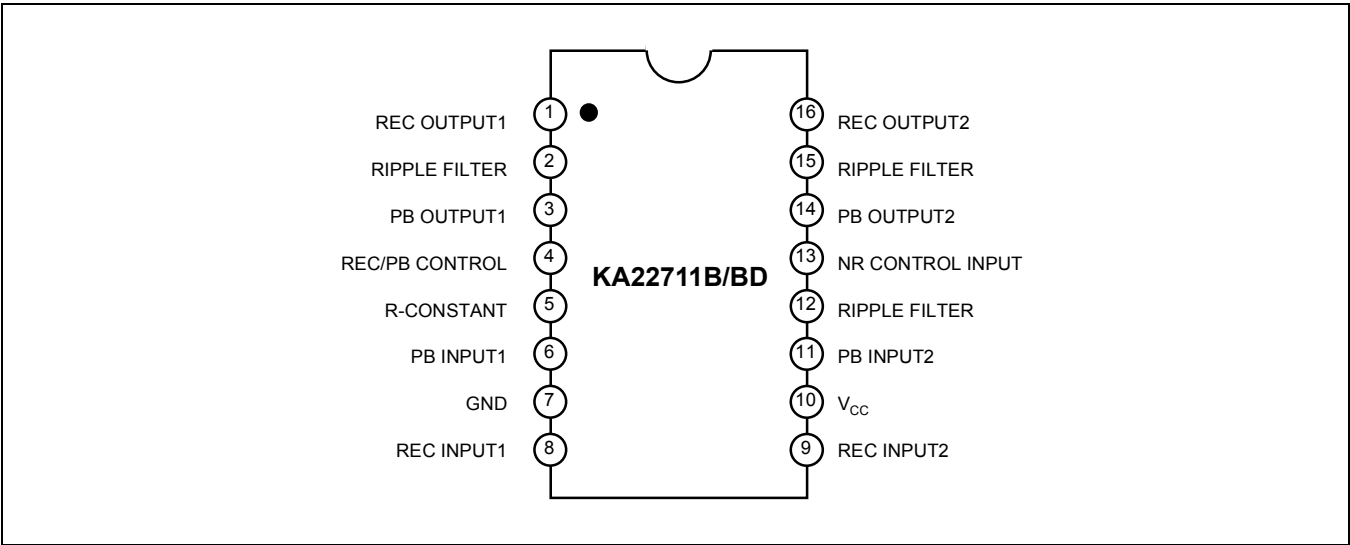


Figure 2.

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 _{CCQ}	REC mode, NR-off, V _I = 0	3.5	5.6	7	mA
Buffer Voltage Gain	G _V	REC mode, PB out = 0dB	19	21	23	dB
NR-REC Boost	G _{V(BST)}	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 _{O (MAX)}	REC mode, NR-off THD = 1%	13	15	v	dB
REC Output Voltage	THD	REC mode, NR-off RECCout = 10dB	−	0.04	0.2	%
		REC mode, NR-on RECCout = 10dB	−	0.04	0.3	%
NR-effect S/N	S/N	REC mode, R _G = 2.2kΩ Filter = CCIR/ARM	65	69	−	dB
Crosstalk	CT	NR-off, OUTPUT = 0dB PB to REC	−	−70	−60	dB
		CH to CH, NR-off OUTPUT = 0dB	−	−70	−60	dB
Input Impedance	Z _I	−	30	47	60	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 RECCout = 0dB	−32	−30	−28	dBm
	PB V _I	PB mode, NR-off RECCout = 0dB	−32	−30	−28	dBm
Output Level	V _O	REC mode, NR-off RECCout = 0dB Testpoint = PB output	13	15	−	dB

TEST CIRCUIT

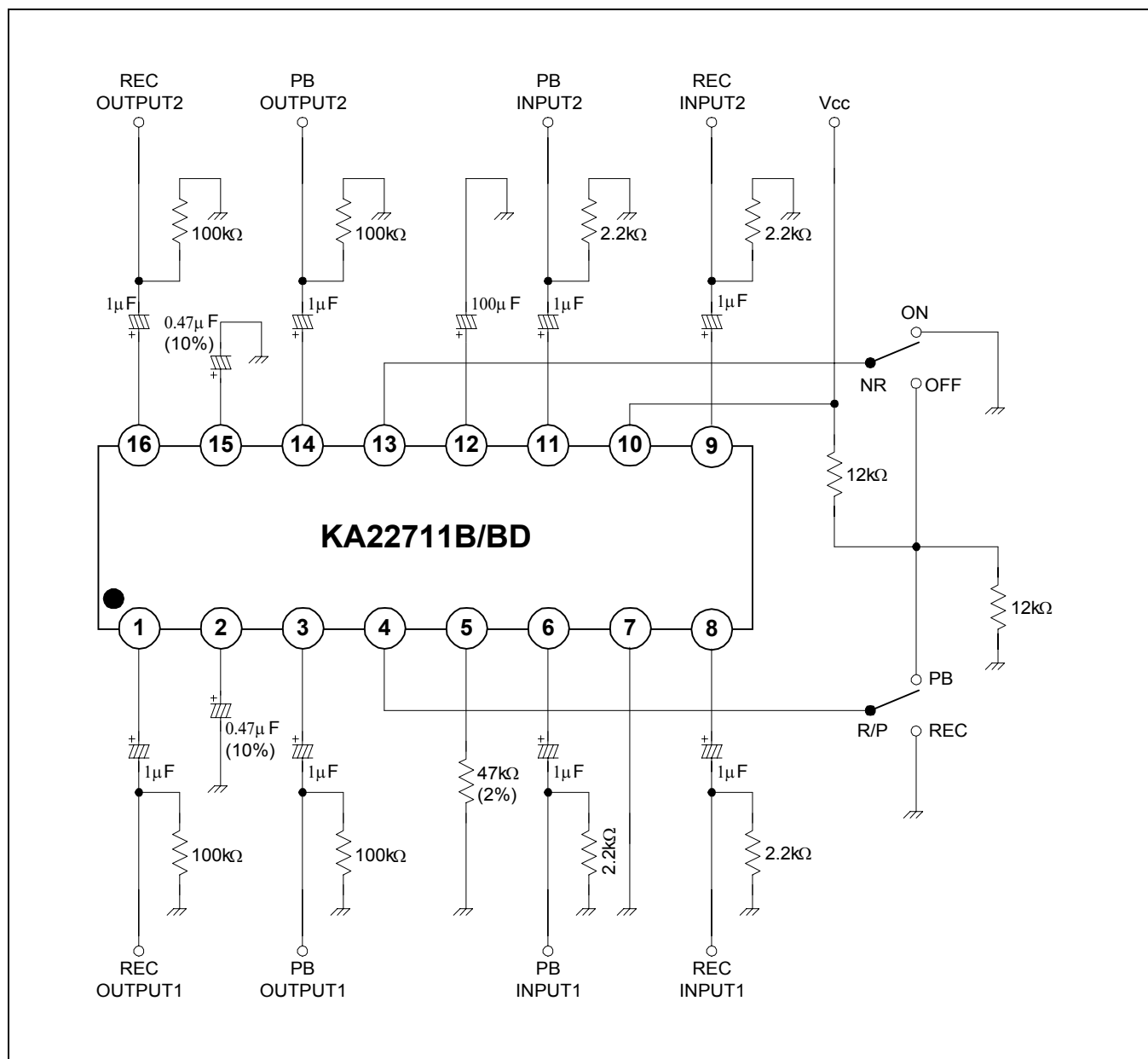
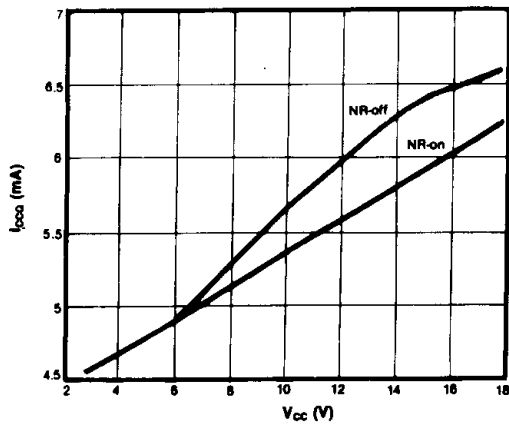
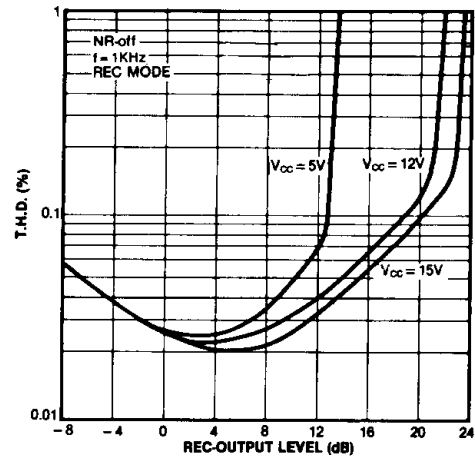


Figure 3.

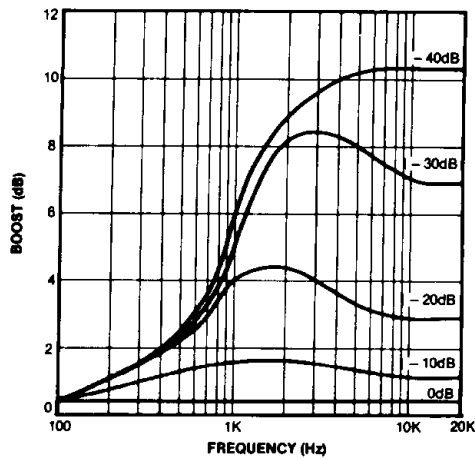
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



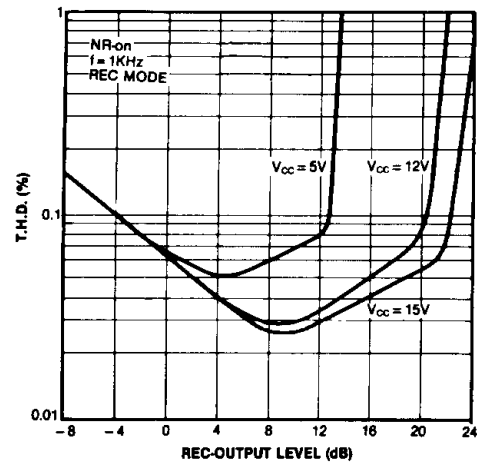
TOTAL HARMONIC DISTORTION (REC)



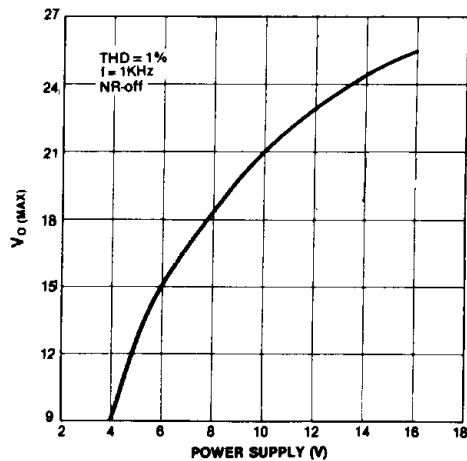
REC (ENCODE) CHARACTERISTIC



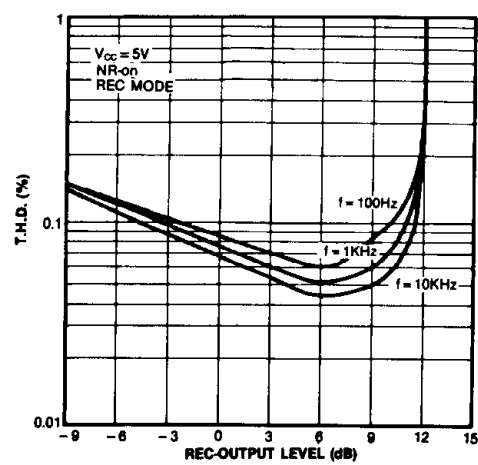
TOTAL HARMONIC DISTORTION (REC)



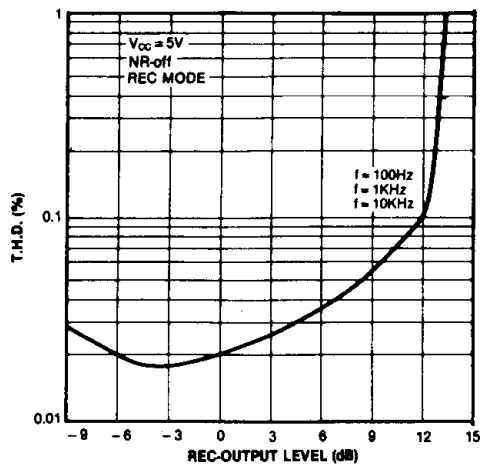
MAX REC-OUTPUT LEVEL



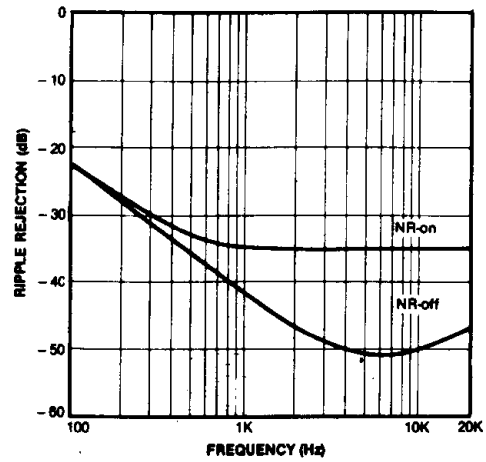
TOTAL HARMONIC DISTORTION (REC)



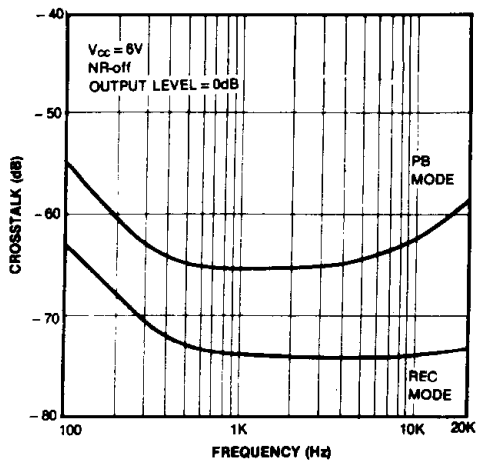
TOTAL HARMONIC DISTORTION (REC)



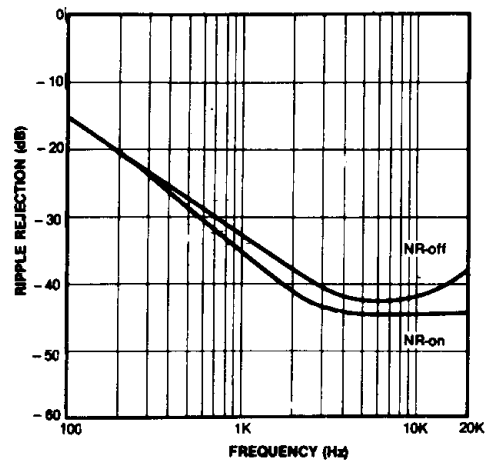
RIPPLE REJECTION (REC)



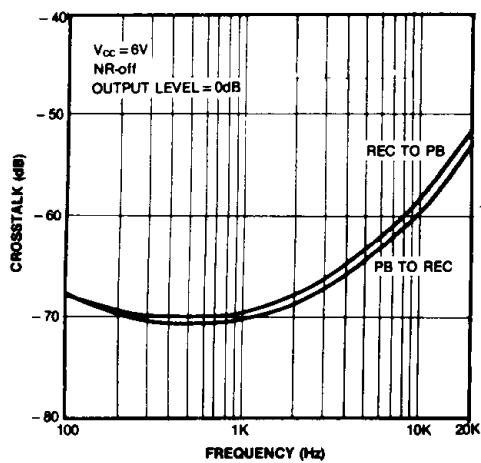
CROSSTALK (CH TO CH)



RIPPLE REJECTION (PB)



CROSSTALK (BETWEEN REC TO PB)



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.

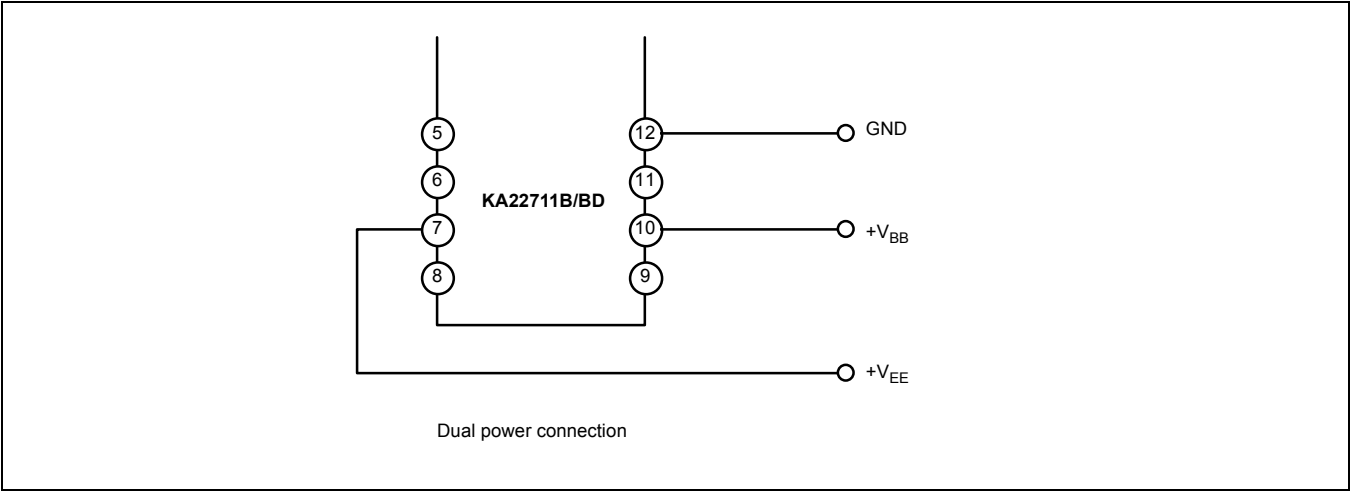


Figure 4.

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 ≥ 2.4V V _L ≤ 0.4V	V _H ≥ V _{EE} + 2.4V V _L ≤ 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 = 400Hz.100