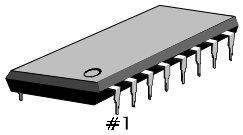
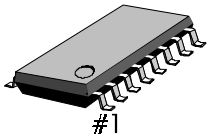
INTRODUCTION

The KA22711B/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 crosstalk rejection ratio
- Builtin NR-switch, REC/PB-switch
- Recommended supply voltage : V_{CC} = 5V ~ 16V

ORDERING INFORMATION

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

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BLOCK DIAGRAM

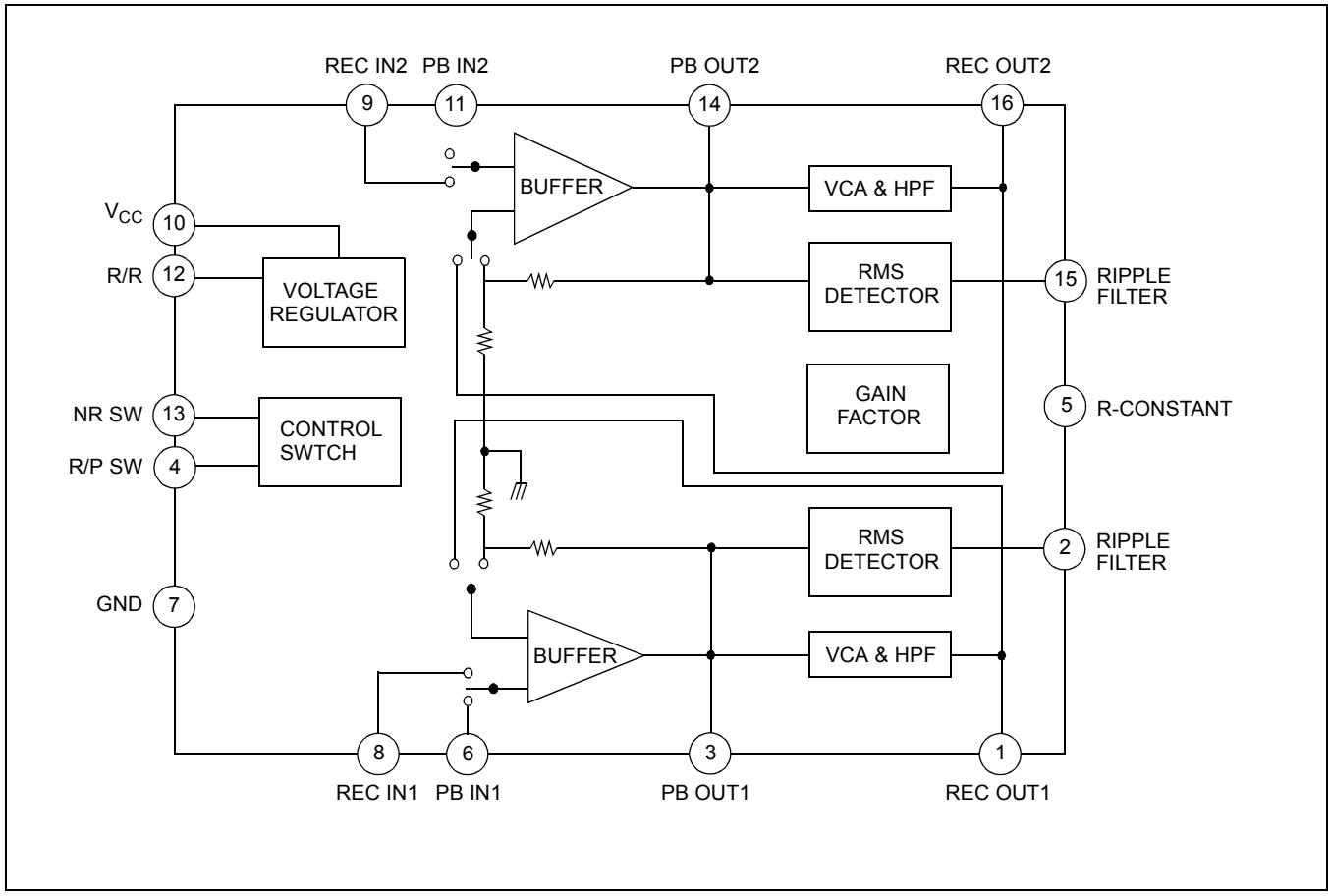


Figure 1.

PIN CONFIGURATION

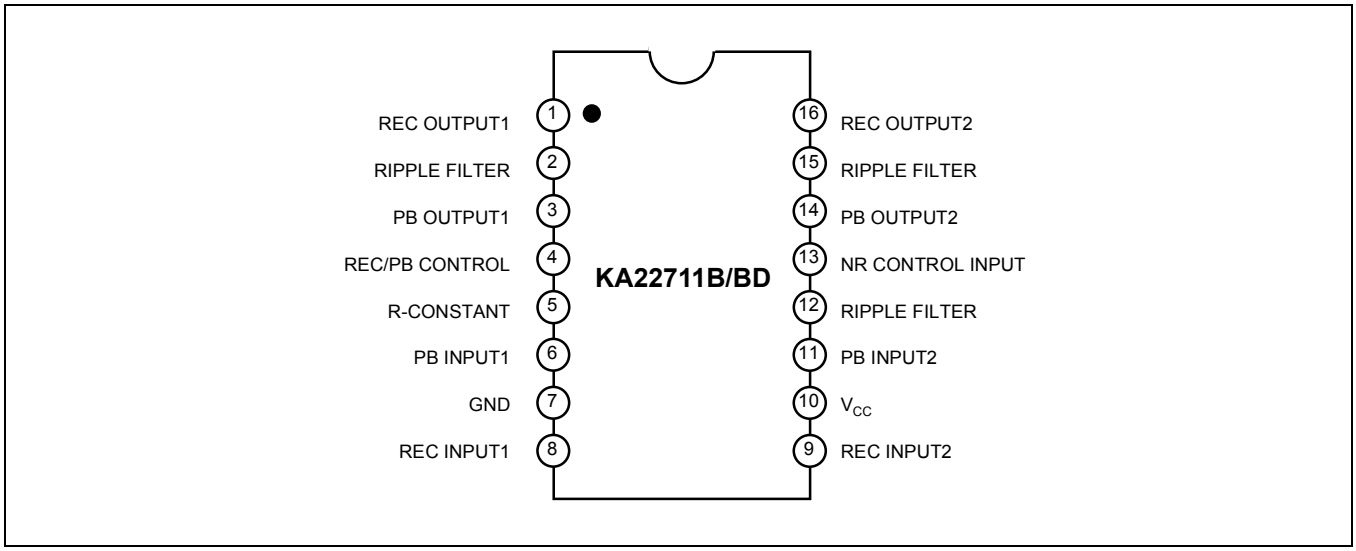


Figure 2.

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_{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	$G_{V(BST)}$	RECout = –25dB, f = 500Hz	1.4	2.9	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	9.1	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 CH ratio	–	0	1	dB
MAX.RECout level	$V_{O\ (MAX)}$	REC mode, NR-off THD = 1%	13	15	v	dB
REC Output Voltage	THD	REC mode, NR-off RECout = 10dB	–	0.04	0.2	%
		REC mode, NR-on RECout = 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 RECout = 0dB	–32	–30	–28	dBm
	PB V_I	PB mode, NR-off RECout = 0dB	–32	–30	–28	dBm
Output Level	V_O	REC mode, NR-off RECout = 0dB Testpoint = PB output	13	15	–	dB

TEST CIRCUIT

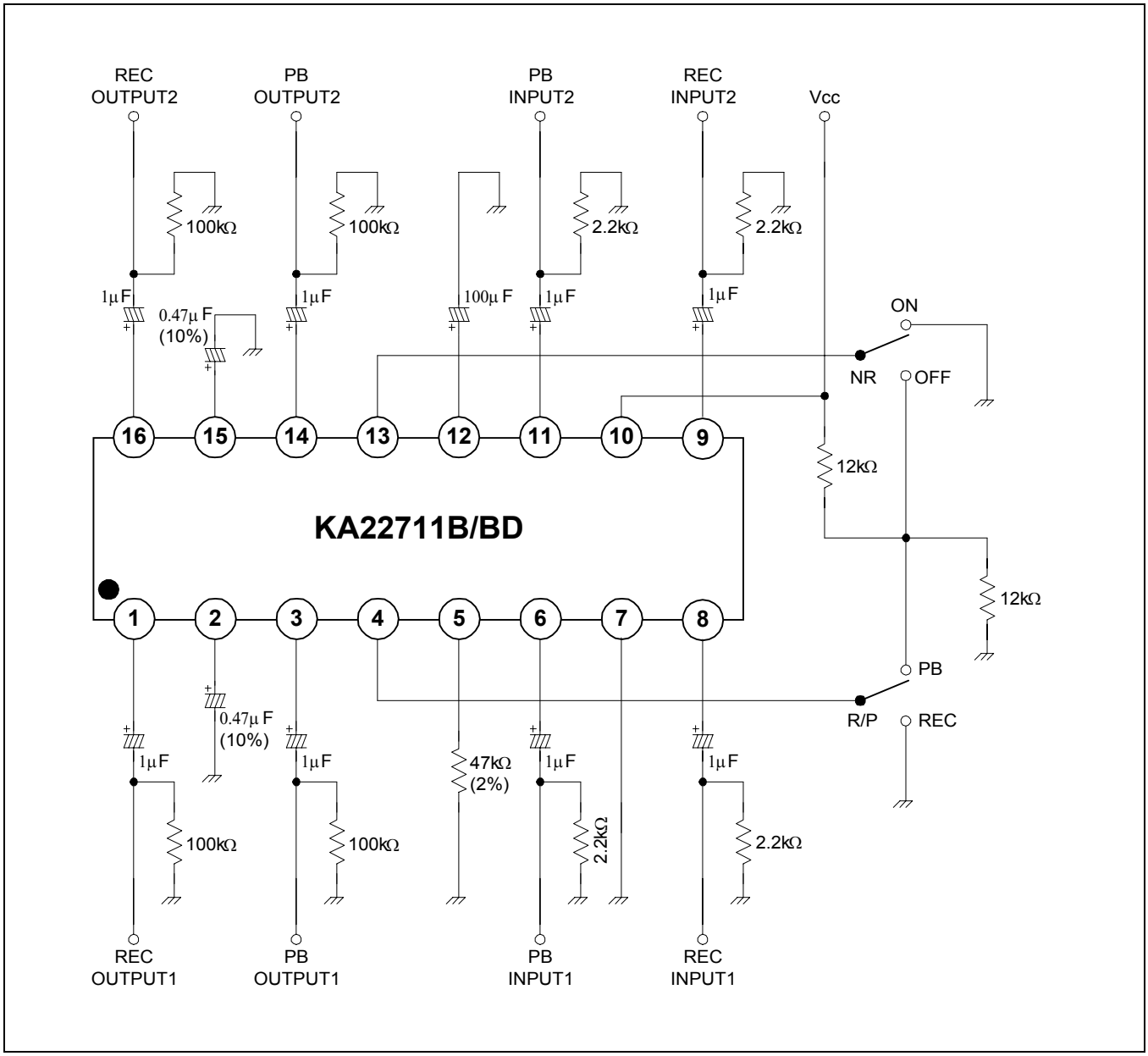
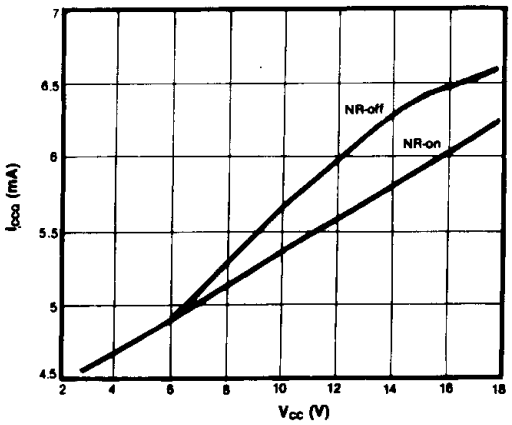
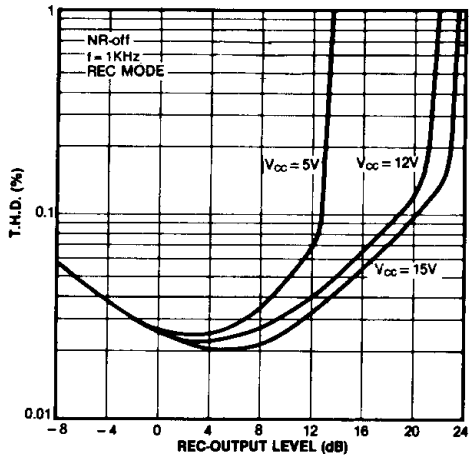


Figure 3.

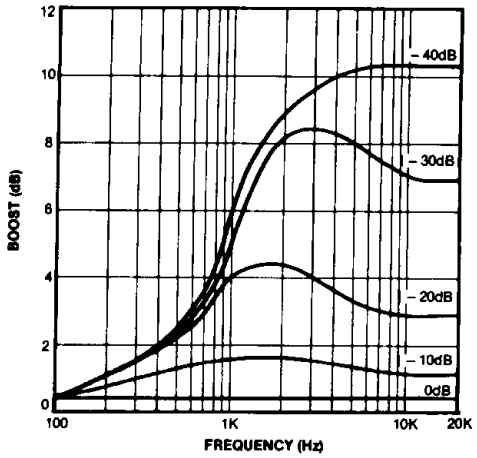
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



TOTAL HARMONIC DISTORTION (REC)



REC (ENCODE) CHARACTERISTIC



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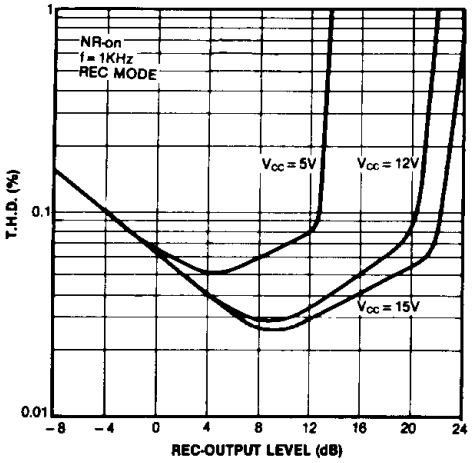
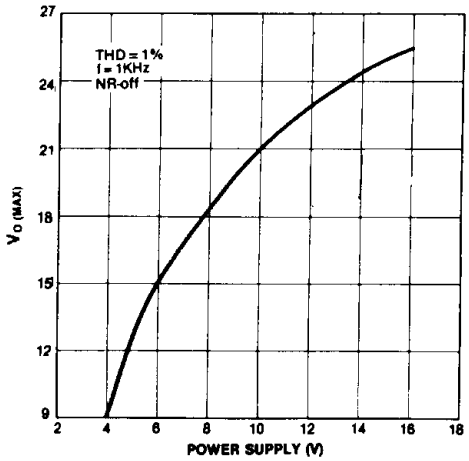


MAX REC-OUTPUT LEVEL



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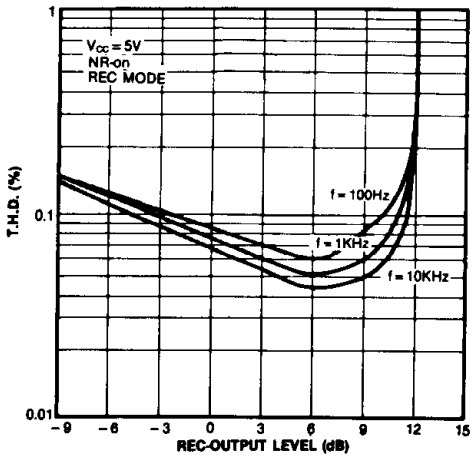

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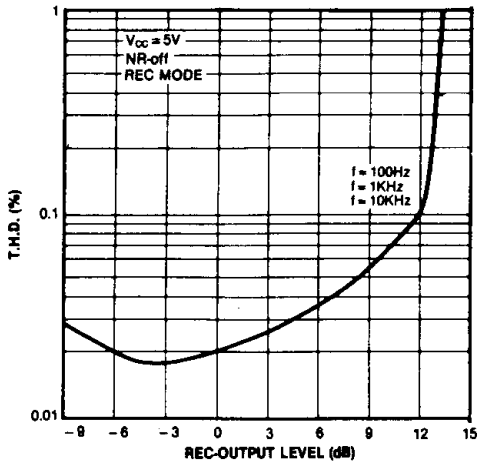
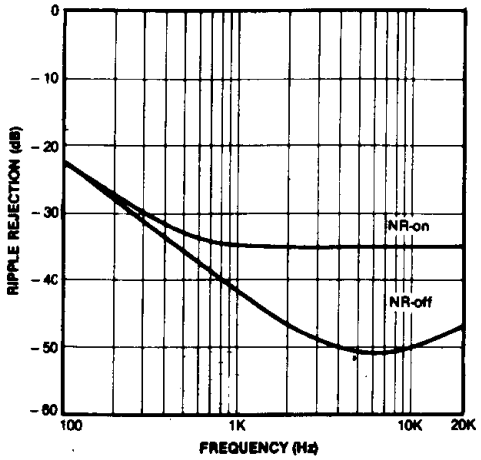
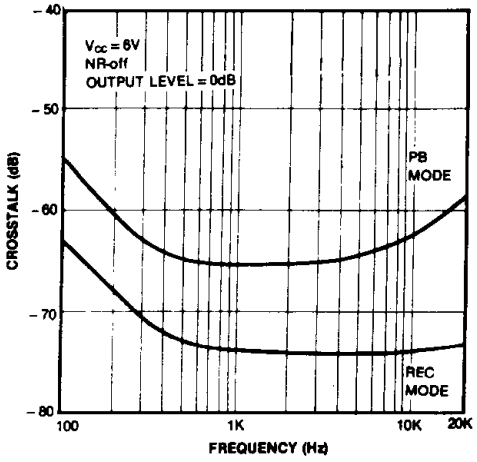


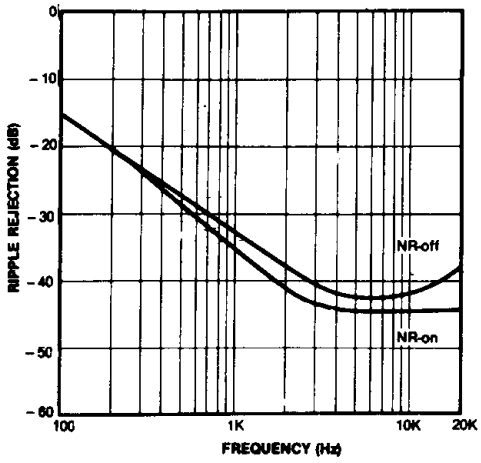
RIPPLE REJECTION (REC)



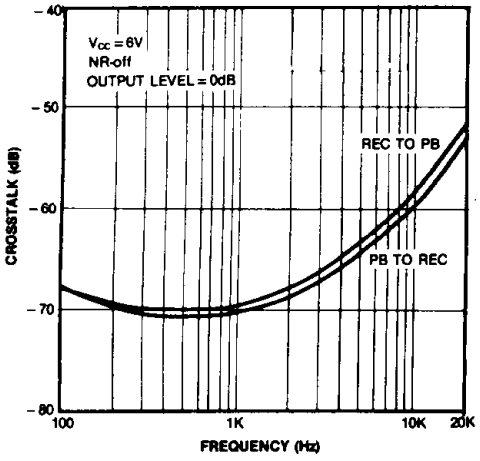
CROSSTALK (CH TO CH)



RIPPLE REJECTION (PB)



CROSSTALK (BETWEEN REC TO PB)



APPLICATION INFORMATION

Power Supply

The KA2271B/BD can be operated at 8V ~ 16V with a single power supply and 4V - 8V with a dual power supply.

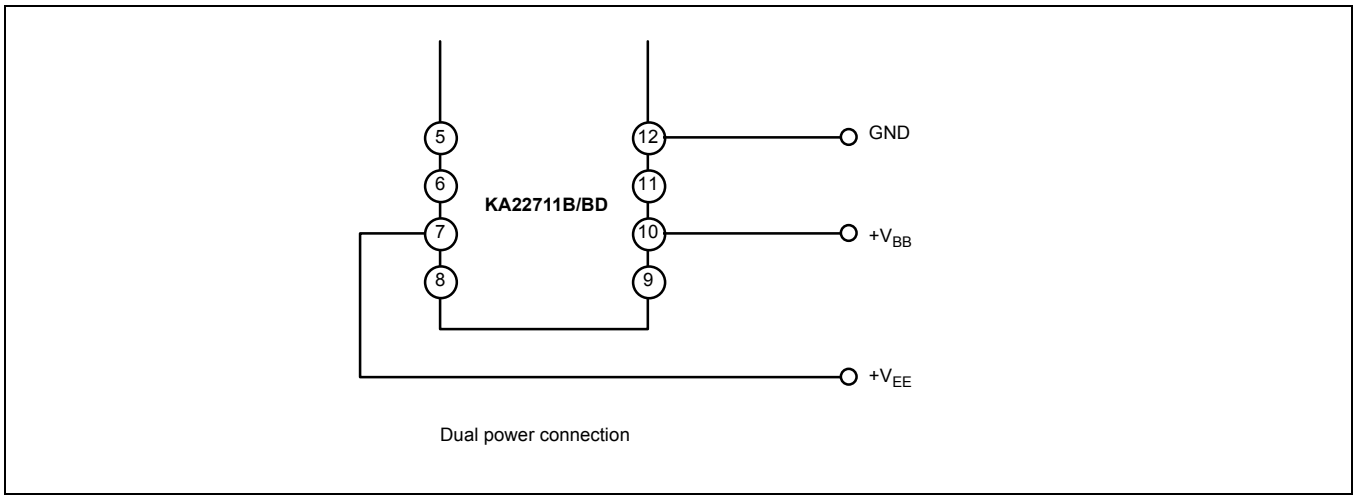


Figure 4.

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
$V_H \geq 2.4V$ $V_L \leq 0.4V$	$V_H \geq V_{EE} + 2.4V$ $V_L \leq V_{EE} + 0.4V$

Reference Level

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