

INTRODUCTION

The S1A2271B01 is a monolithic integrated circuit designed for use in Dolby®B-type noise reduction systems.

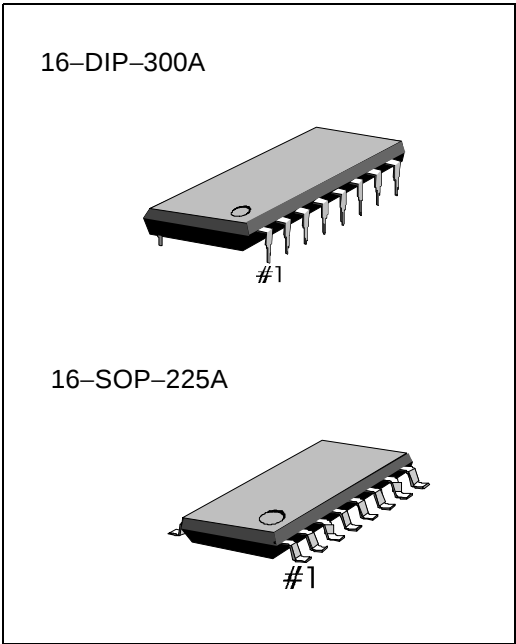
FEATURES

- Few external components
- Low quiescent circuit current (Typ ICCQ = 5.3mA)
- High crosstalk rejection ratio
- Builtin NR-switch, REC/PB-switch
- Recommended supply voltage: VCC = 8V – 16V

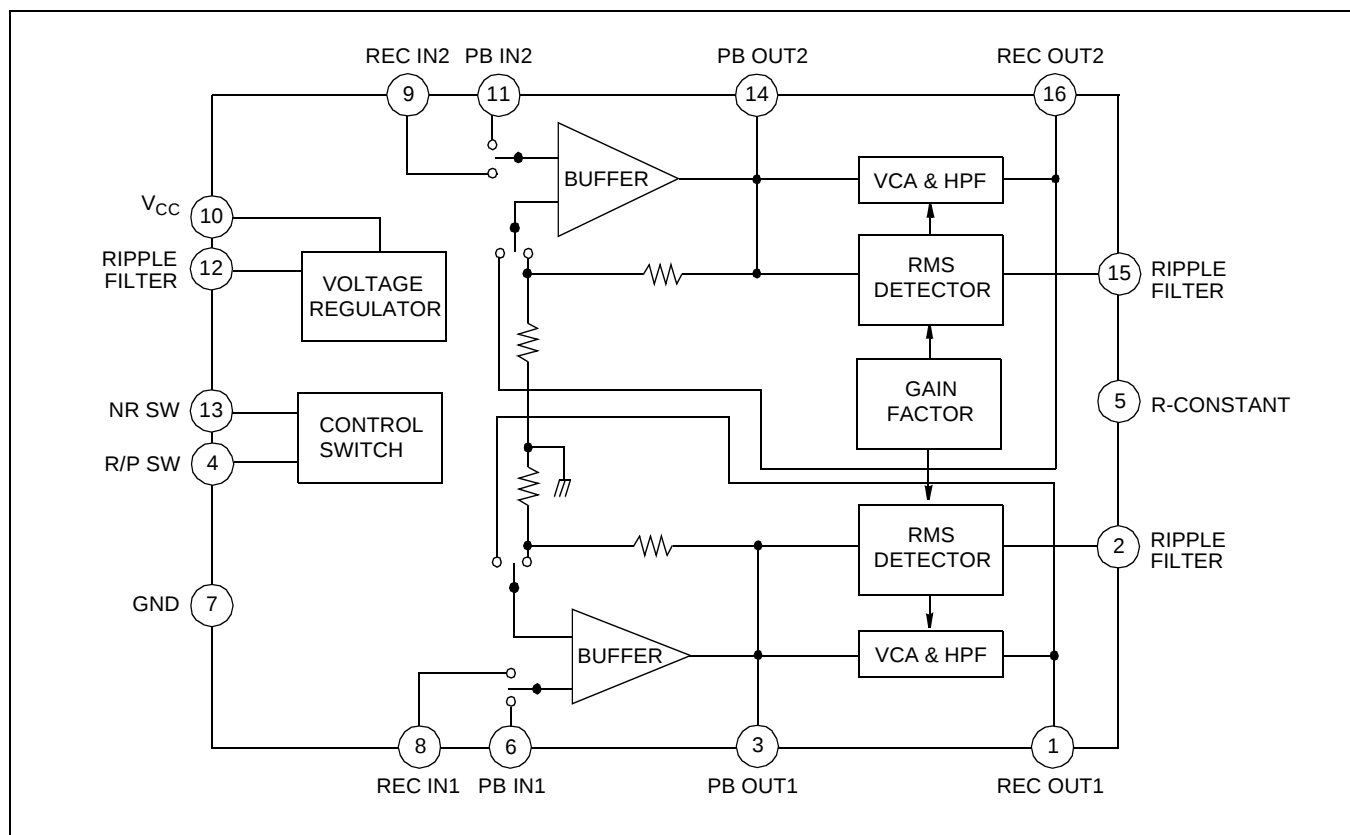
ORDERING INFORMATION

Device	Package	Operating Temperature
S1A2271B01-D0B0	16–DIP–300A	– 30°C – + 85°C
S1A2271B01-S0B0	16–SOP–225A	

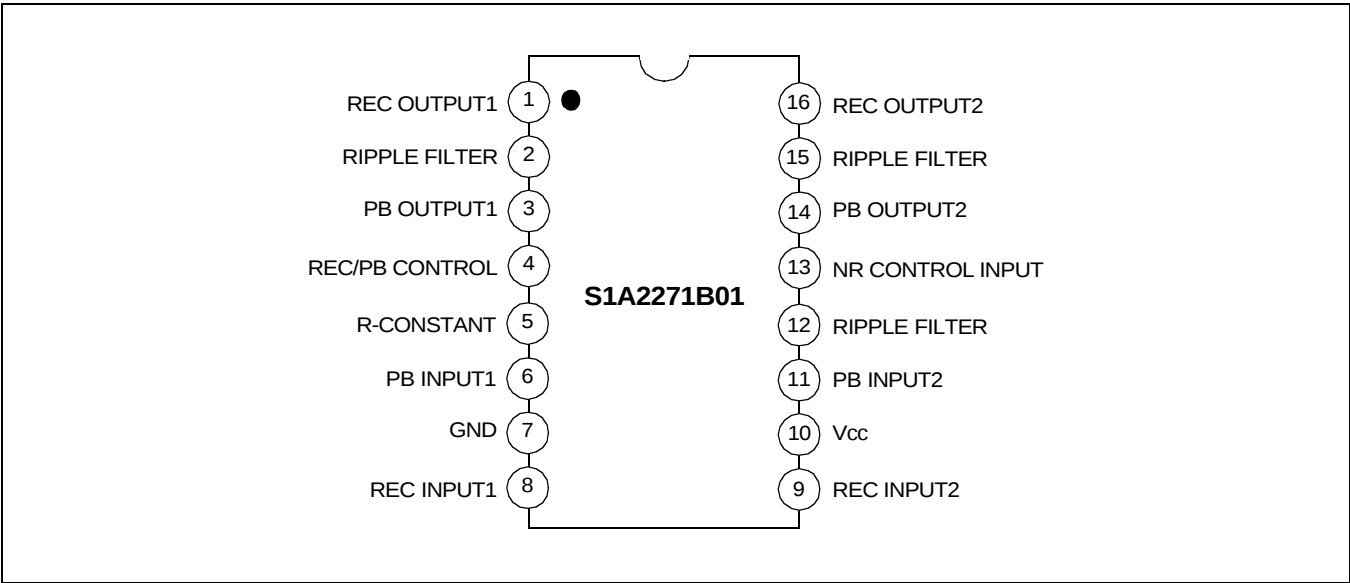
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BLOCK DIAGRAM



PIN CONFIGURATION



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

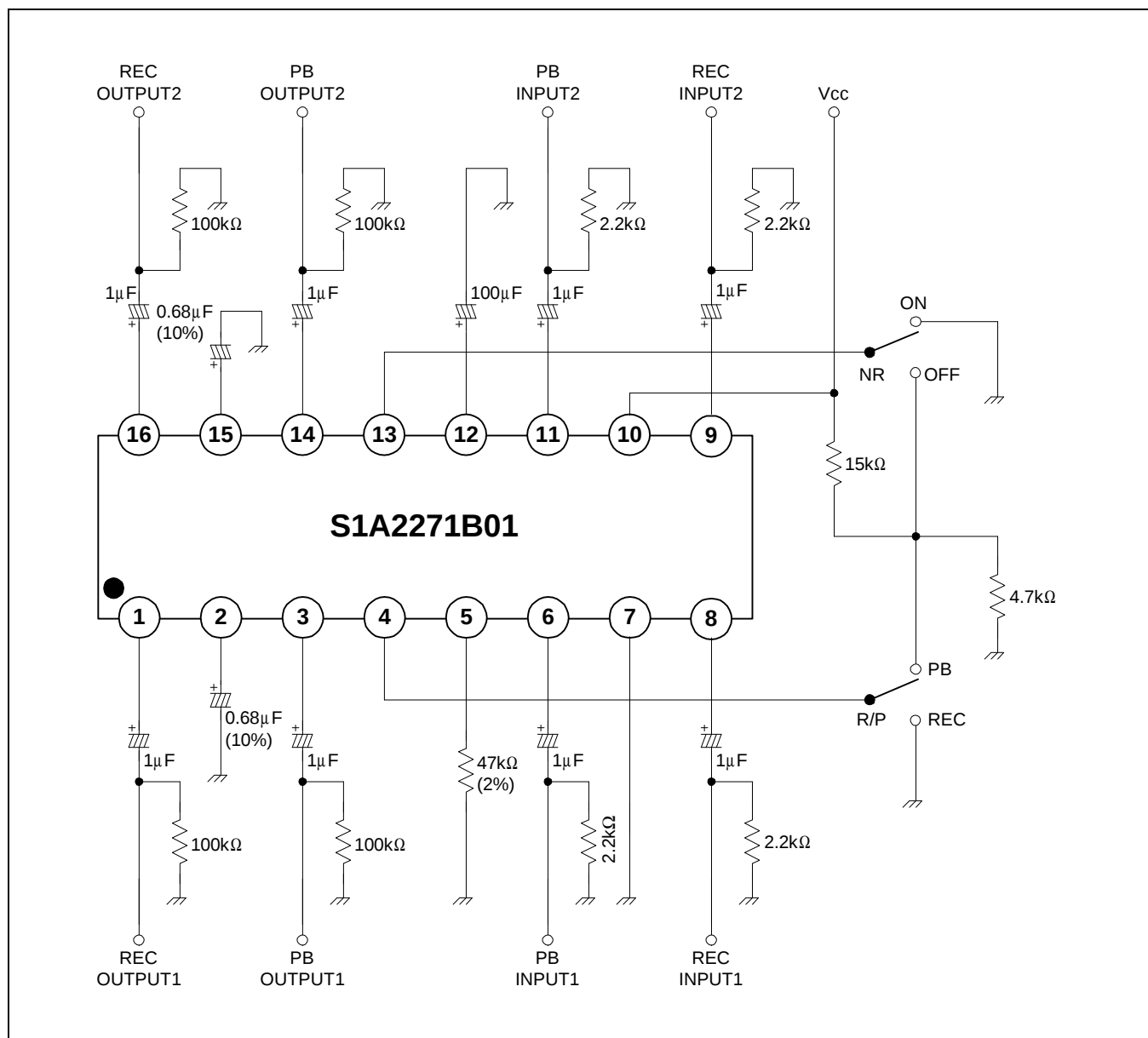
NOTE: Derated above Ta = 25°C in the proportion of 10mW/°C

ELECTRICAL CHARACTERISTICS

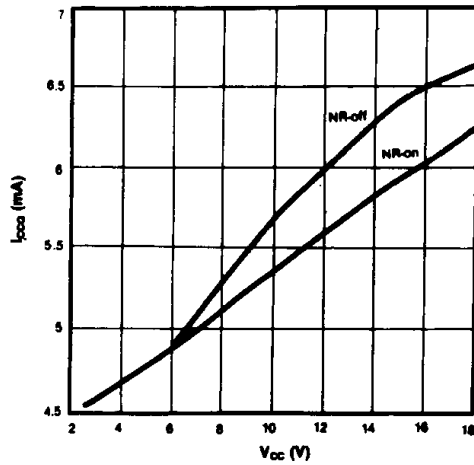
(Ta = 25°C, Vcc = 12V, f = 1kHz, 0dB = 245mW (−10dBm) at REC OUT, unless otherwise specified)

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	25	27	29	dB
NR-REC Boost	G _{V(BST)}	RECCut = −25dB, f = 500Hz	1.4	2.9	4.4	dB
		RECCut = −25dB, f = 2kHz	5.5	7.0	8.5	dB
		RECCut = −25dB, f = 5kHz	3.9	5.4	6.9	dB
		RECCut = −40dB, f = 10kHz	9.0	10.4	11.9	dB
		RECCut = 0dB, f = 10kHz	−1.1	0.4	1.9	dB
NR-Boost Balance	CB	NR-REC boost CH to ratio	−	0	1	dB
MAX.RECCut level	V _{O (MAX)}	REC mode, NR-off THD = 1%	14	15.9	−	dB
REC Output Voltage	THD	REC mode, NR-off RECCut = 10dB	−	0.04	0.2	%
		REC mode, NR-on RECCut = 10dB	−	0.04	0.3	%
NR-effect S/N	S/N	REC mode, R _G = 2.2K Filter = CCIR/ARM	65	69	−	dB
Crosstalk	CT	NR-off, OUTPUT = 0dB PB to REC	−	−70	−60	dB
		CH to CH, NR-off OUTPUT = 0 dB	−	−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 RECCut = 0dB	−32	−30	−28	dBm
	PB V _I	PB mode, NR-off RECCut = 0dB	−32	−30	−28	dBm
Output Level	V _O	REC mode, NR-off RECCut = 0dB Testpoint = PB output	489	549	616	m V

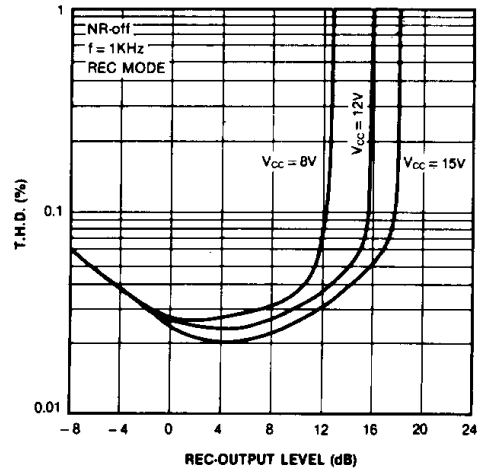
TEST CIRCUIT



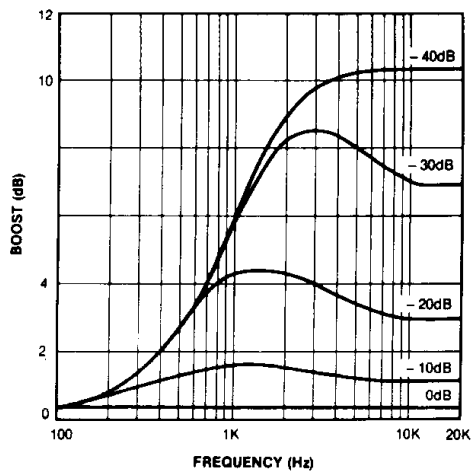
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



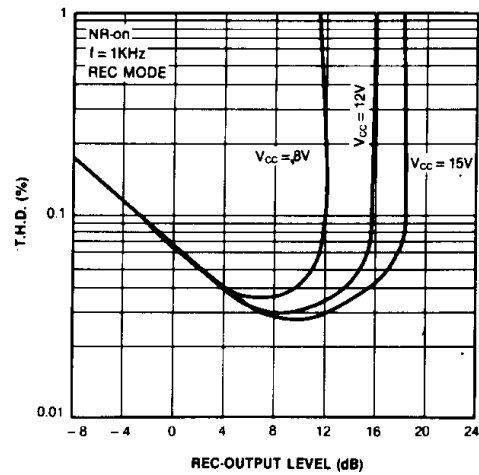
TOTAL HARMONIC DISTORTION (REC)



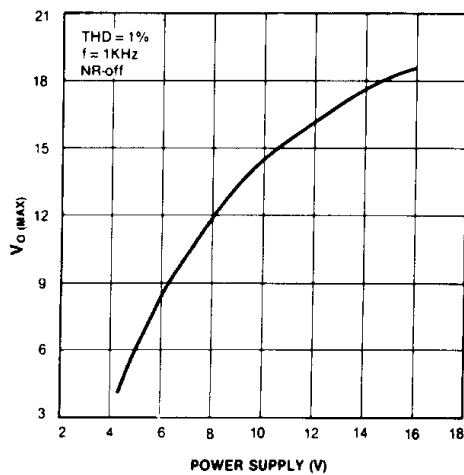
REC (ENCODE) CHARACTERISTIC



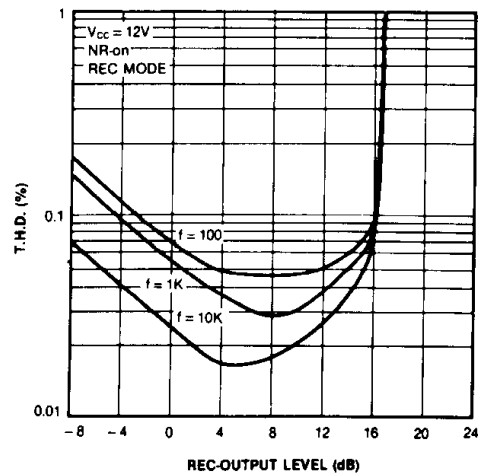
TOTAL HARMONIC DISTORTION (REC)



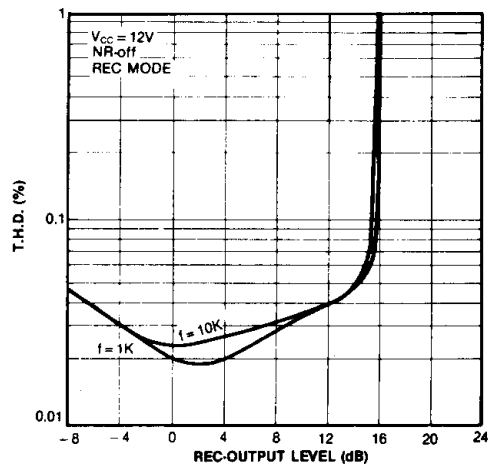
MAX REC-OUTPUT LEVEL



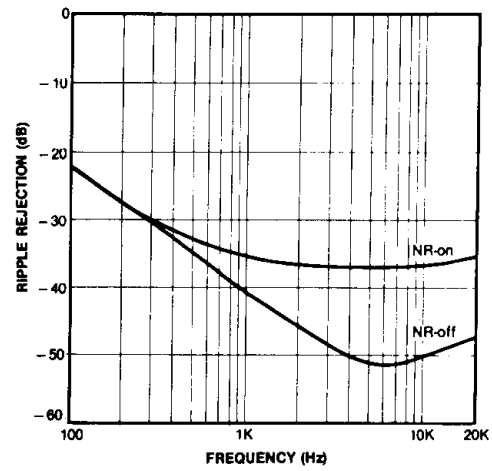
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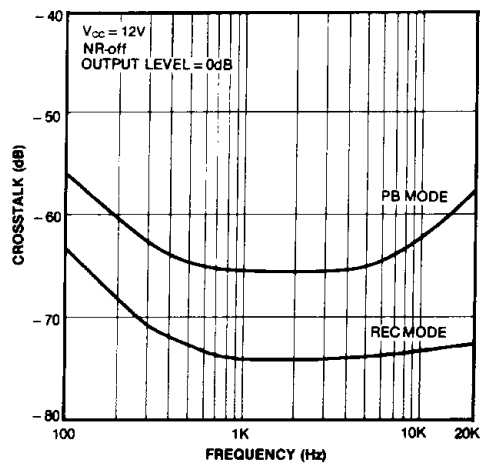
TOTAL HARMONIC DISTORTION (REC)



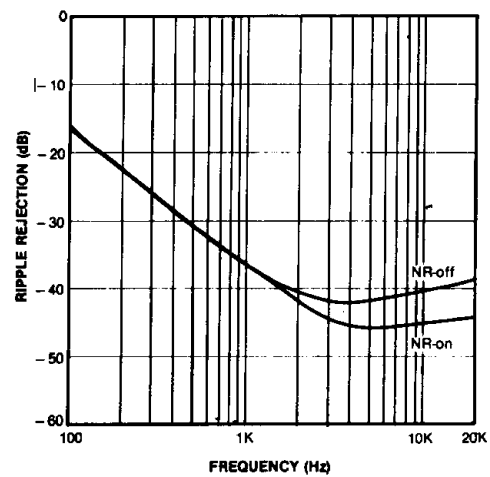
RIPPLE REJECTION (REC)



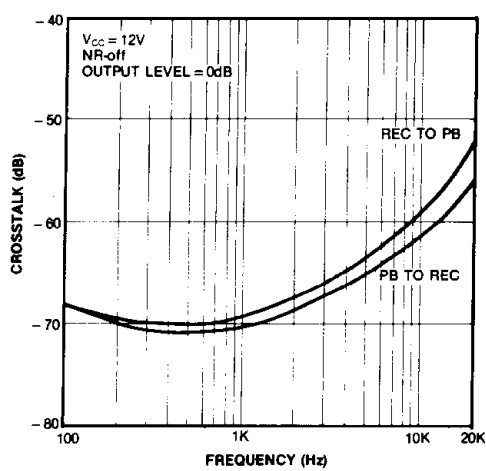
CROSSTALK (CH TO CH)



RIPPLE REJECTION (PB)



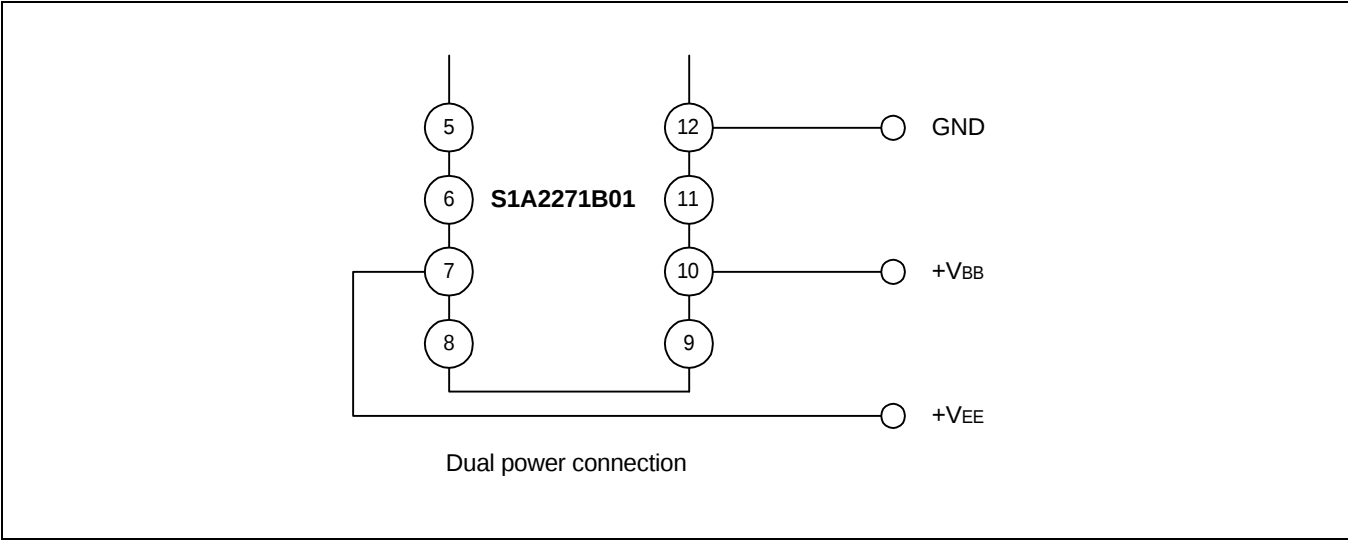
CROSSTALK (BETWEEN REC TO PB)



APPLICATION INFORMATION

Power Supply

The S1A2271B01 can be operated at 8V - 16V with a single power supply, and 4V - 8V with a dual power supply.



Switch Control Voltage

All functions of S1A2271B01 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 ≥ 2.4V	V _H ≥ V _{EE} + 2.4V
V _L ≤ 0.4V	V _L ≤ V _{EE} + 0.4V

Reference Level

The reference output level of the Dolby noise reduction system is defined as Dolby level. The Dolby level of S1A2271B01 is 245mV (−10dBm) at f = 400Hz.