

INTRODUCTION

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

FEATURES

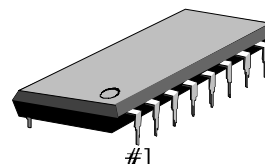
- Few external components
- Low quiescent circuit current (Typ ICCQ = 5.3mA)
- High crosstalk rejection ratio
- Builtin NR-switch, REC/PB-switch
- Recommended supply voltage: $V_{CC} = 8V - 16V$

ORDERING INFORMATION

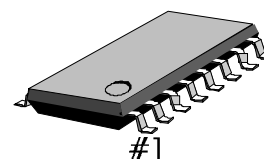
Device	Package	Operating Temperature
S1A2271B01-D0B0	16-DIP-300A	– 30°C – + 85°C
S1A2271B01-S0B0	16-SOP-225A	

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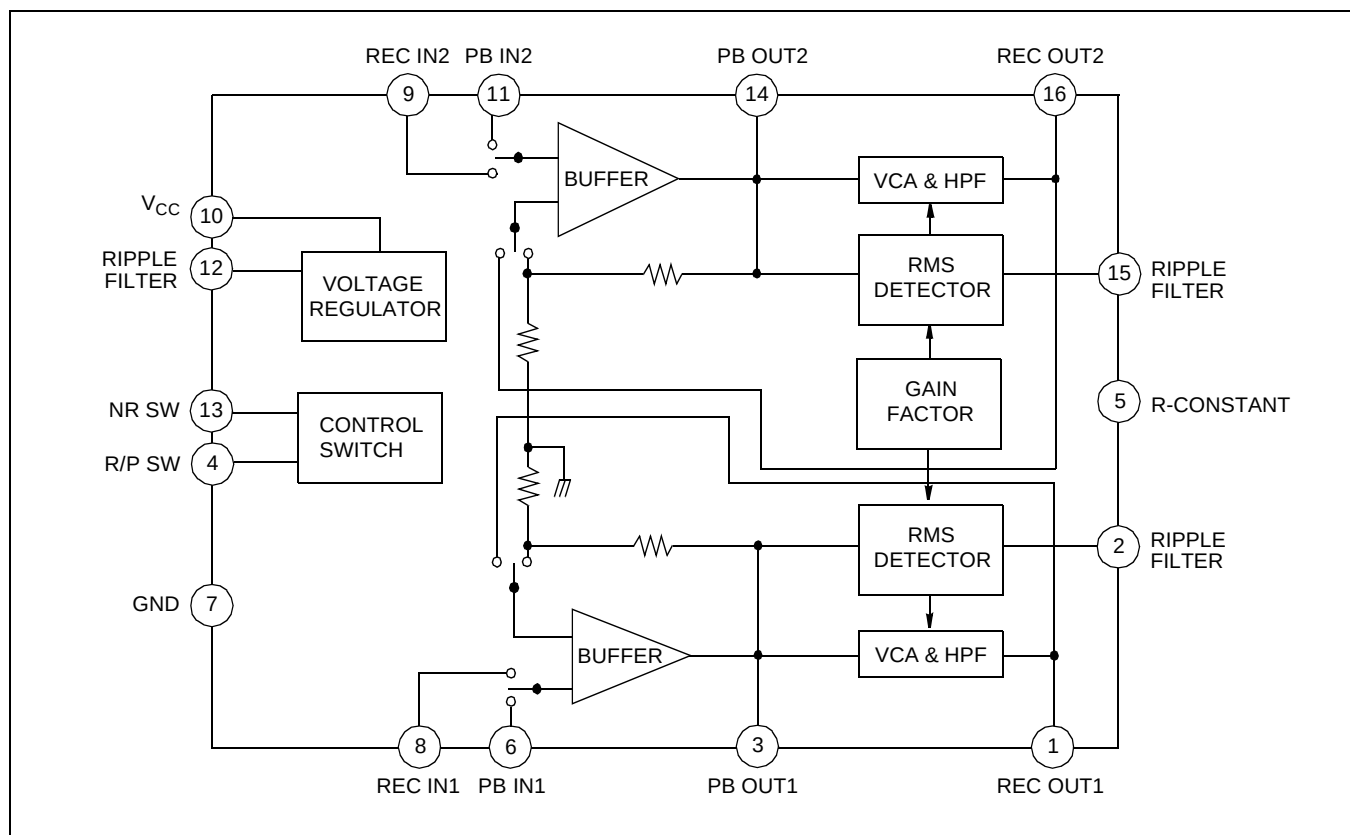
16-DIP-300A



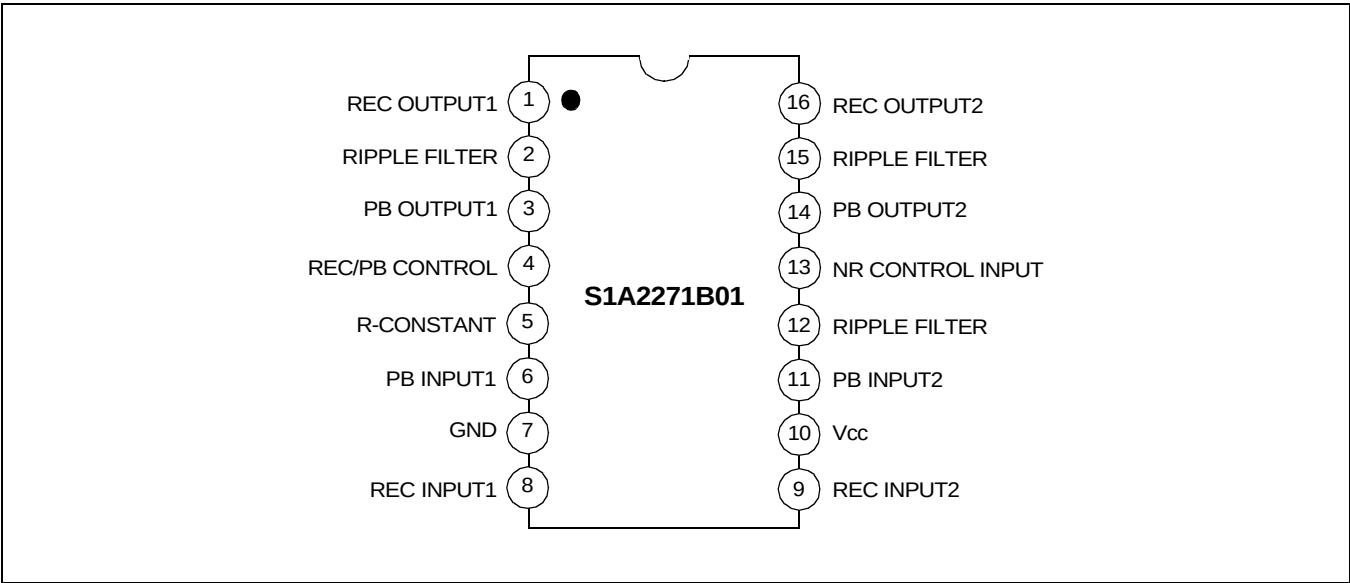
16-SOP-225A



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

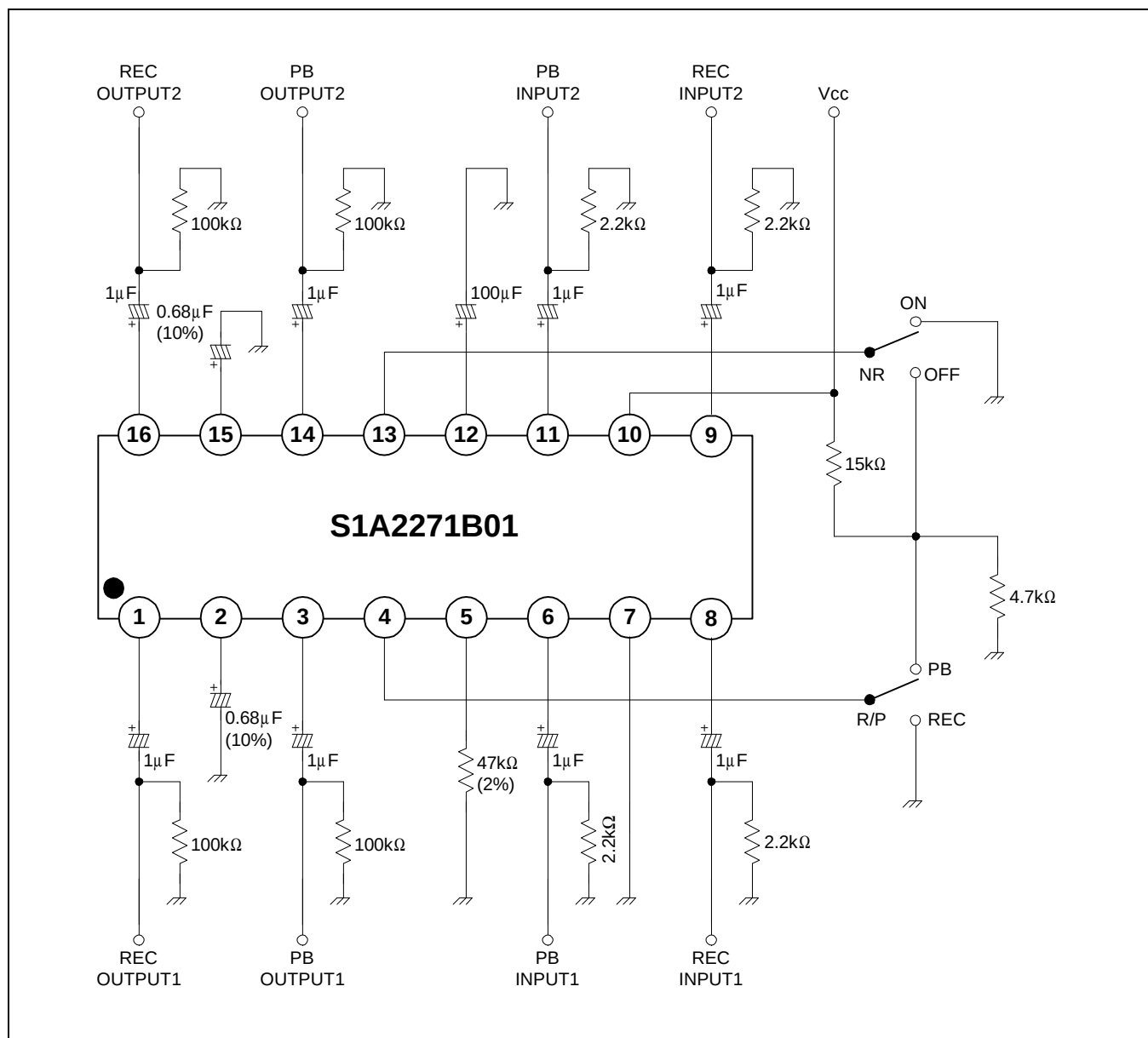
NOTE: Derated above Ta = 25°C in the proportion of 10mW/°C

ELECTRICAL CHARACTERISTICS

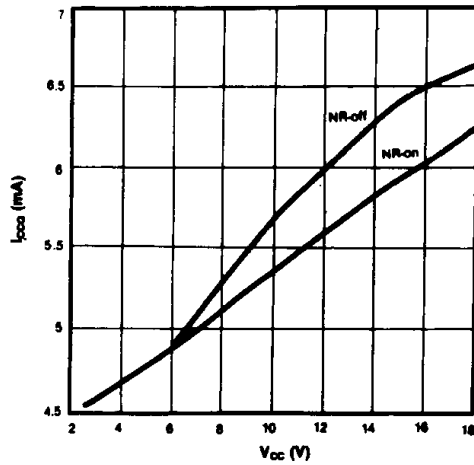
(Ta = 25°C, Vcc = 12V, f = 1kHz, 0dB = 245mW (−10dBm) at REC OUT, unless otherwise specified)

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

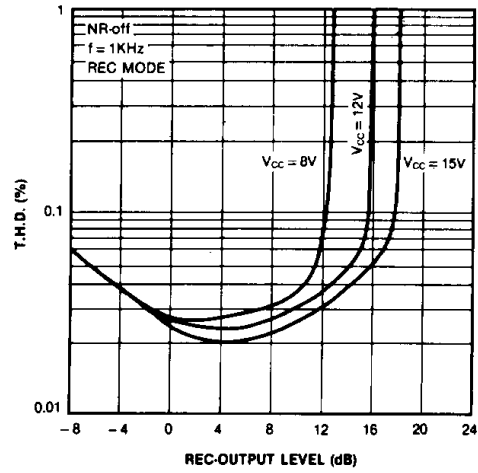
TEST CIRCUIT



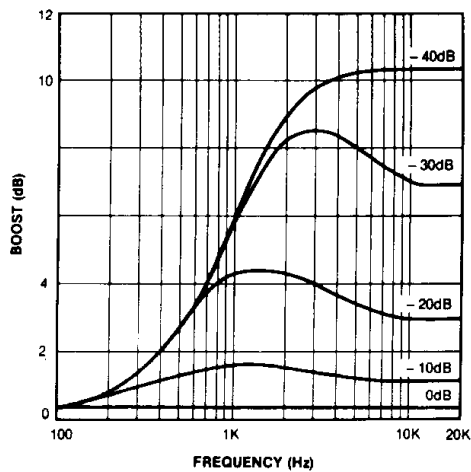
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



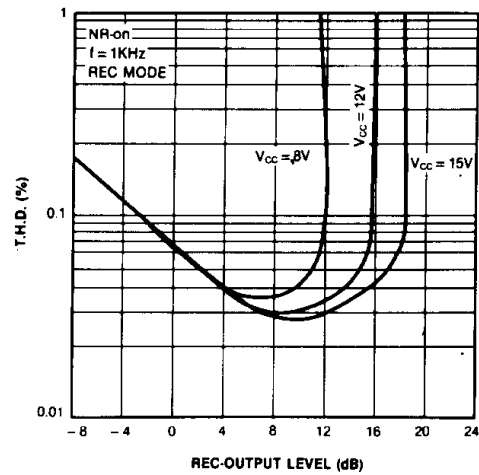
TOTAL HARMONIC DISTORTION (REC)



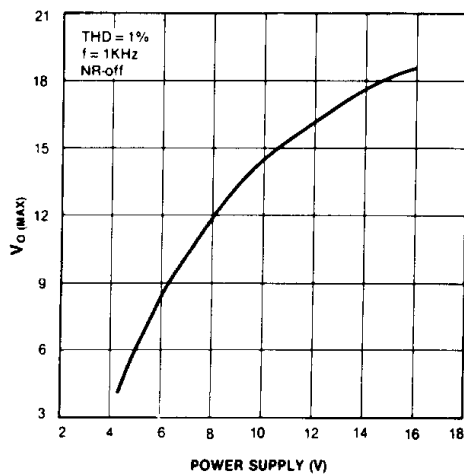
REC (ENCODE) CHARACTERISTIC



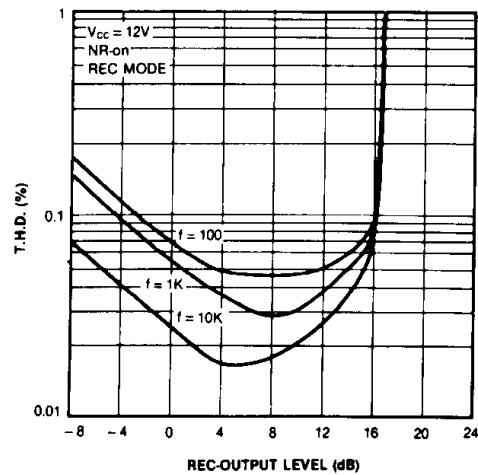
TOTAL HARMONIC DISTORTION (REC)



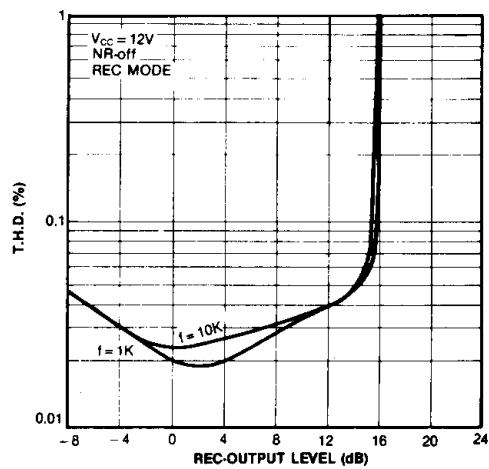
MAX REC-OUTPUT LEVEL



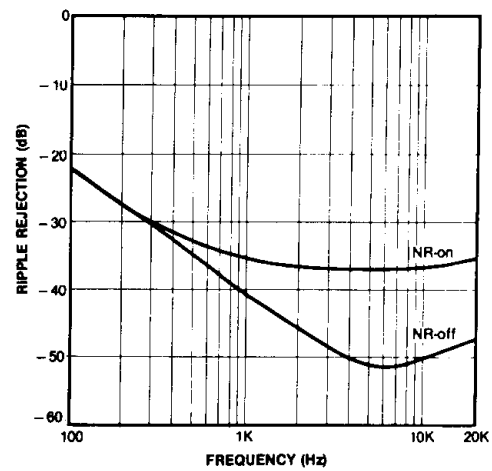
TOTAL HARMONIC DISTORTION (REC)



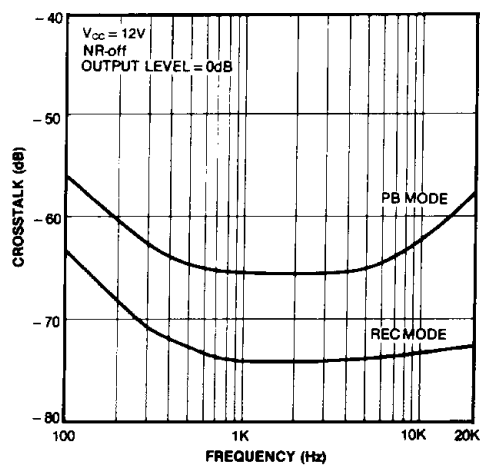
TOTAL HARMONIC DISTORTION (REC)



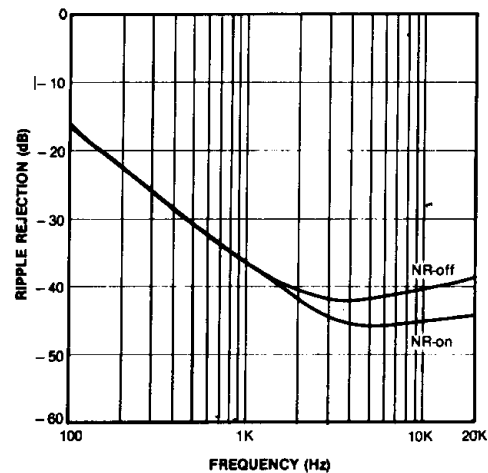
RIPPLE REJECTION (REC)



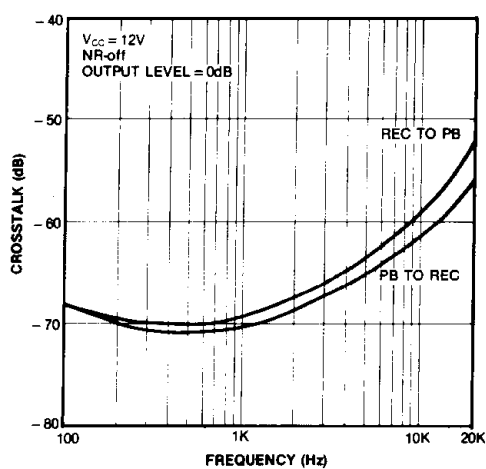
CROSSTALK (CH TO CH)



RIPPLE REJECTION (PB)



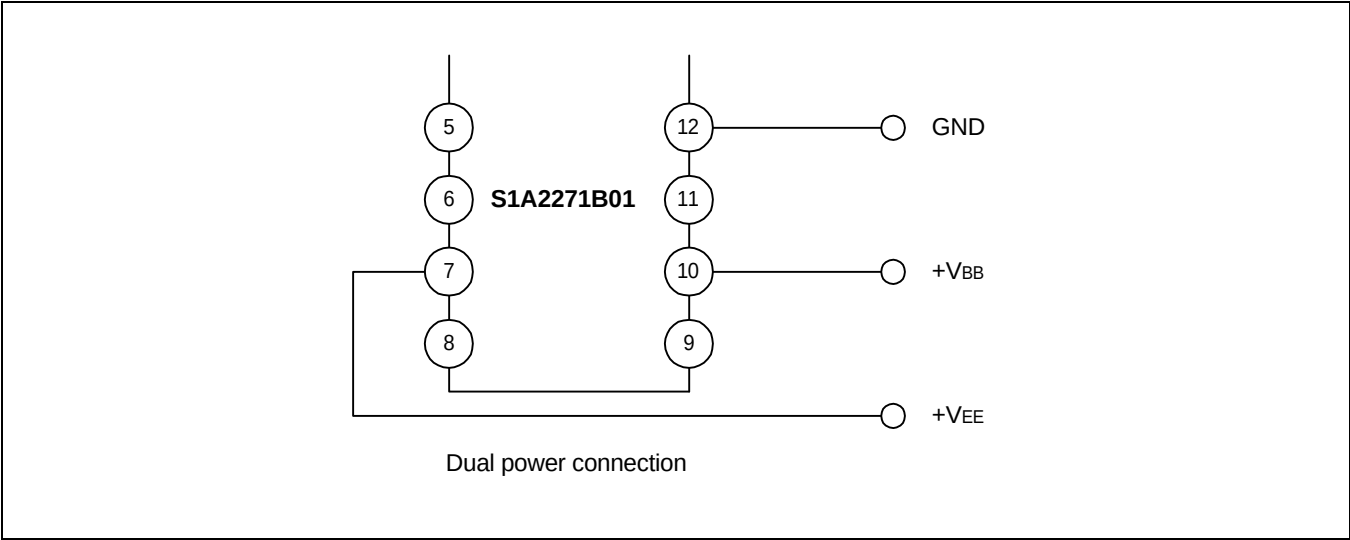
CROSSTALK (BETWEEN REC TO PB)



APPLICATION INFORMATION

Power Supply

The 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.