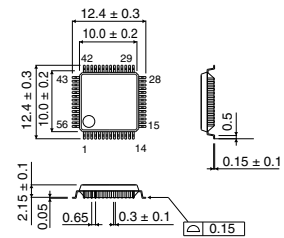


6-channel volume IC for 6.1-channel BD3813KS/BD3815KS

● Description

BD3813KS is a sound processor IC integrating gain amplifier, volume, bass, and treble needed for applications such as AV receiver, and mini component stereo into a single chip. Adoption of BD3812F a 2-channel volume IC enables a 6.1-channel and a 7.1-channel conversion. BiCMOS process has resulted in a wide dynamic range of 129dB.

● Dimension (Units : mm)



SQFP56

● Features

- 1) Dynamic range: 129dB (Tone bypass, VOL=MUTE, IHF-A)
- 2) Independent 6-channel for master volume (0~-95dB, MUTE 1dB/Step)
Utilization of resistor rudder has dramatically reduced residual noise as well as noise generated by switching.
- 3) Low consumption current design by adopting Bi-CMOS process
- 4) Maximum output voltage: 4.2Vrms ($V_{CC}=7V$, $V_{EE}=-7V$, $R_L=10k$)
- 5) Built-in 5-channel independent input gain amplifier convenient to amplify input signal (BD3813KS: 0, 6, 12dB), (BD3815KS: 0, 6, 18dB)
- 6) 2-channel output port
- 7) 2-wire serial control (For both 3.3V and 5V)

● Applications

AV receiver, mini component stereo systems

● Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	15	V
Power dissipation	P_d	1000	mW
Operating temperature range	T_{opr}	-20 ~ +75	°C
Storage temperature range	T_{stg}	-55 ~ +125	°C

Derating : 10mW/°C for operation above Ta=25°C .

● Recommended Operating Conditions (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{CC}	±5	±7	±7.3	V

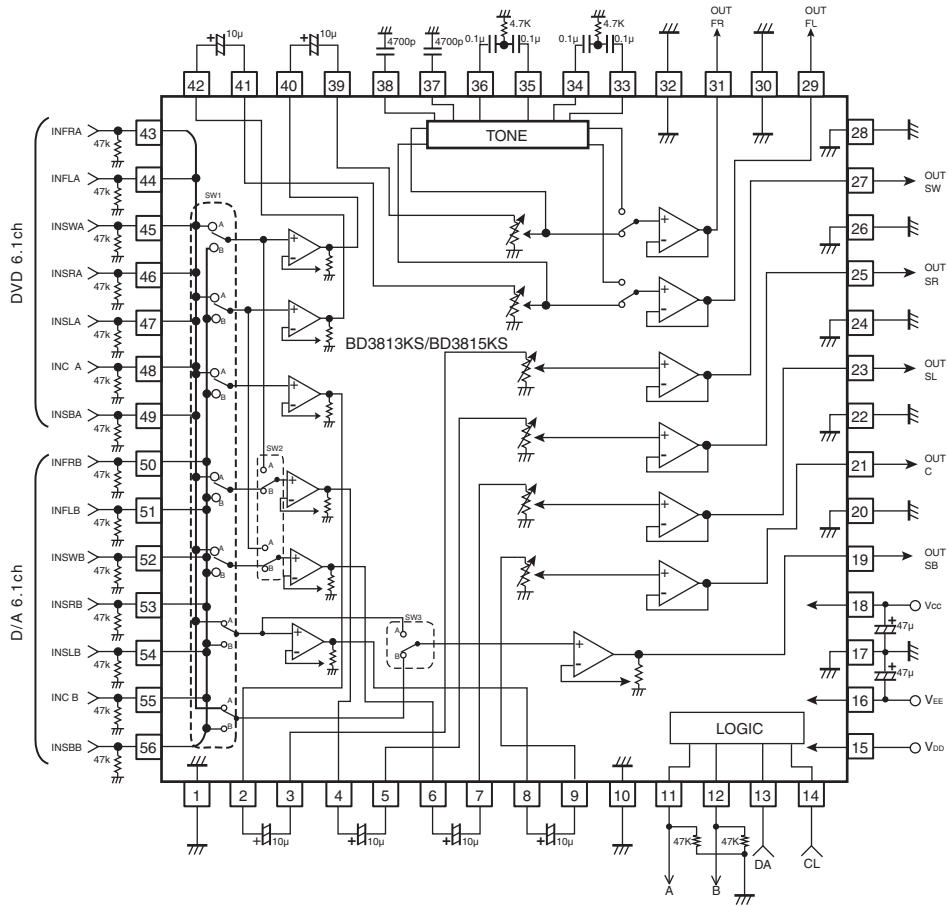
● Electrical characteristics

(Unless otherwise noted:

$T_a=25^{\circ}\text{C}$, $V_{CC}=7\text{V}$, $V_{EE}=-7\text{V}$, $f=1\text{kHz}$, $V_{IN}=1\text{Vrms}$, $R_L=10\text{k}$, $R_G=600$, Input gain=0dB, Master volume=0dB, Bass and Treble=0dB)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current	IQ	—	8	20	mA	No signal
Output voltage gain	Gv	-2	0	2	dB	Measure : Pin31,29,27,25,23,21,19
Total harmonic distortion rate	THD	—	0.004	0.05	%	Measure : Pin31,29,27,25,23,21,19, BW=400~30kHz
Maximum output voltage	Vomax	3.4	4.2	—	Vrms	Measure : Pin31,29,27,25,23,21,19, THD=1%
Output noise voltage	Vno	—	2.0	12	μVrms	Measure : Pin31,29, Rg=0, Tone : ON, BW=IHF-A
		—	1.5	8.0	μVrms	Measure : Pin31,29, Rg=0, Tone : By-pass, BW=IHF-A
Cross talk between channels	CTC	—	-95	-80	dB	Measure : Pin29 (OUTFL), Rg=0, BW=IHF-A, Reference : Pin31 (OUTFR)=1Vrms
Cross talk between selectors	CTS	—	-95	-80	dB	Measure : Pin31,29,27,25,23,21,19, Rg=0, BW=IHF-A
Maximum attenuation	Vmin	—	-115	-105	dB	BW=IHF-A, $V_{IN}=3\text{Vrms}$, Measure : Pin31,29,27,25,23,21
Input gain control range (BD3813KS)	GIG	10	12	14	dB	Measure : Pin31,29,27,25,23,21,19, $V_{IN}=0.4\text{Vrms}$
Input gain control range (BD3815KS)	GIG	16	18	20	dB	Measure : Pin31,29,27,25,23,21,19, $V_{IN}=0.2\text{Vrms}$
Treble maximum boost gain	GTB	12	14	16	dB	Measure : Pin31,29, f=15kHz, $V_{IN}=0.4\text{Vrms}$
Bass maximum boost gain	GBB	12	14	16	dB	Measure : Pin31,29, f=100Hz, $V_{IN}=0.4\text{Vrms}$
Port H output	PH	4.5	4.9	—	V	Measure : Pin11,12 $V_{DD}=5\text{V}$, $R_L=47\text{k}$

● Application Circuit



Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document use silicon as a basic material.
Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.