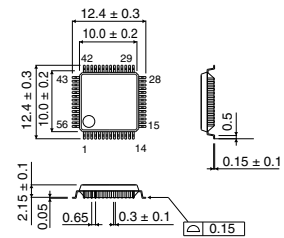


6-channel volume IC for 6.1-channel BD3813KS/BD3815KS

● 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

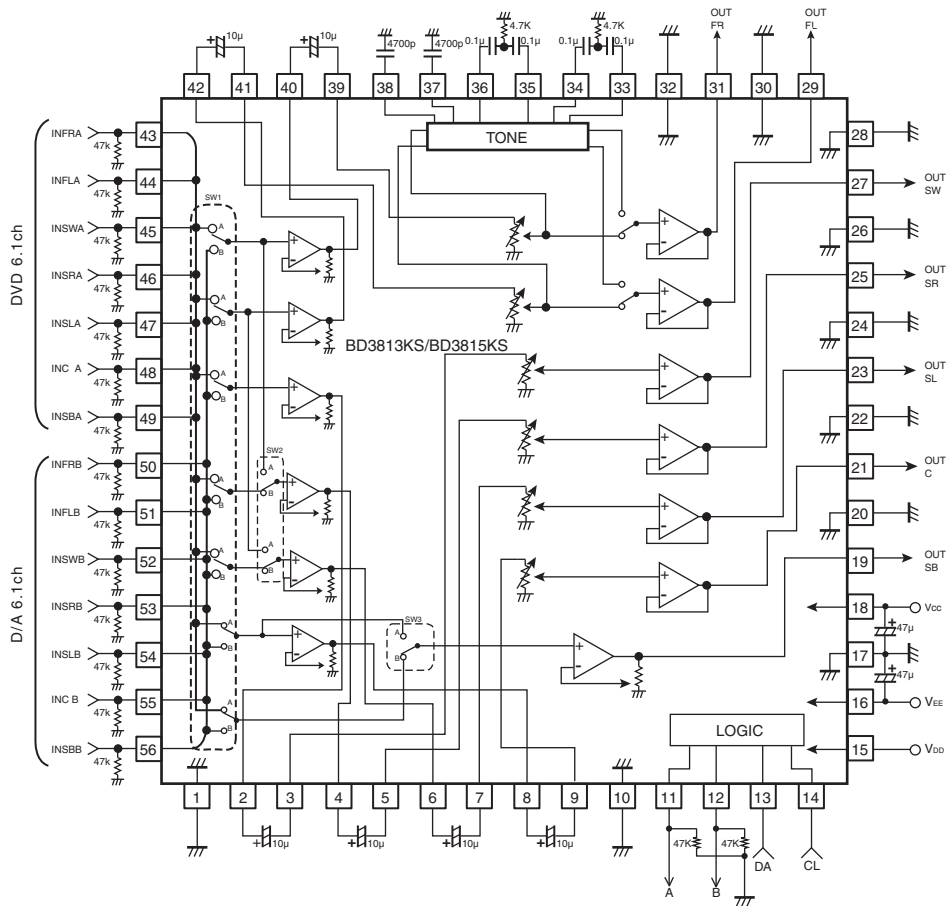
● Electrical characteristics

(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



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