

Structure : Silicon Monolithic Integrated Circuit

Product : 6.1ch Audio Sound Processor

Type : **BD3815KS**

Function :
 • 6ch Master volume (0 to -95dB, MUTE, 1dB/STEP)
 • Tone (-14dB to +14dB, 2dB/STEP), Input gain

○Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Power Supply voltage	VCC-VEE	15	V
Input voltage	VIN	VCC+0.3 to VEE-0.3	V
Power dissipation	Pd	1000※	mW
Operating temperature	Topr	-20 to +75	°C
Storage temperature	Tastg	-55 to +125	°C

※This value decreases 10mW/°C for Ta=25°C or more.

A standard board, 70 × 70 × 1.6mm, shall be mounted.

○Operating Voltage Range (Basic operation shall be available upon Ta=25°C.)

	Symbol	Range	Unit
Power supply (Positive)	VCC-GND	5 to 7.3	V
Power supply (Negative)	VEE-GND	-5 to -7.3	V
Power supply for port	VDD-GND	4 to 6	V

Status of this document

The Japanese version of this document is the formal specification.

A customer may use this translation version only for a reference to help reading the formal version.

If there are any differences in translation version of this document, formal version takes priority.

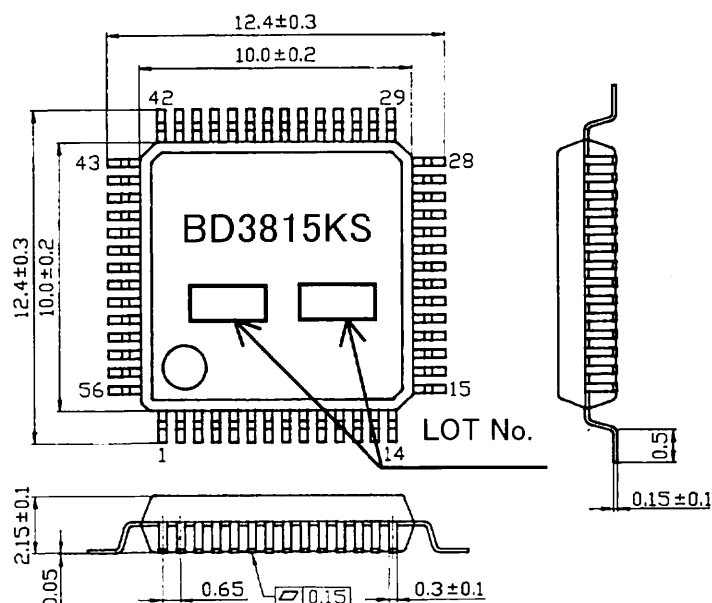
○Electrical Characteristics

Unless specified particularly, $T_a=25^{\circ}\text{C}$, $V_{CC}=7\text{V}$, $V_{EE}=-7\text{V}$, $f=1\text{kHz}$, $V_{IN}=1\text{V}_{rms}$, $R_L=10\text{k}\Omega$, $R_g=600\Omega$
Input gain=0dB, Master volume=0dB, Bass and Treble=0dB.

Parameter	Symbol	Limit			Unit	Conditions
		Min	Typ	Max		
Circuit current	I_Q	—	10	20	mA	No signal
Output voltage gain	G_v	-2	0	2	dB	
Total harmonic distortion ratio	THD	—	0.004	0.05	%	BW=400 to 30kHz
Maximum output voltage	V_{omax}	3.4	4.2	—	V_{rms}	THD=1%
Output noise voltage	V_{no}	—	2.0	12	μV_{rms}	$R_g=0\Omega$, Tone: ON, BW=IHF-A
		—	1.5	8.0	μV_{rms}	$R_g=0\Omega$, Tone: By-pass, BW=IHF-A
Cross-talk between channels	CTC	—	-95	-80	dB	$R_g=0\Omega$, BW=IHF-A
Cross-talk between selectors	CTS	—	-95	-80	dB	$R_g=0\Omega$, BW=IHF-A
Volume control range	GVR	-98	-95	-92	dB	$V_{IN}=3V_{rms}$
Volume set error 1	VE_1	-2	0	2	dB	0 to -53dB $V_{IN}=3V_{rms}$
Volume set error 2	VE_2	-3	0	3	dB	-54 to -95dB $V_{IN}=3V_{rms}$
Maximum attenuation	V_{min}	—	-115	-105	dB	BW=IHF-A $V_{IN}=3V_{rms}$
Input gain control range	GIG	16	18	20	dB	$V_{IN}=0.4V_{rms}$
Treble maximum boost gain	GTB	12	14	16	dB	$f=15\text{kHz}$, $V_{IN}=0.4V_{rms}$
Treble maximum cut gain	GTC	-16	-14	-12	dB	$f=15\text{kHz}$, $V_{IN}=0.4V_{rms}$
Bass maximum boost gain	GBB	12	14	16	dB	$f=100\text{Hz}$, $V_i=0.4V_{rms}$
Bass maximum cut gain	GBC	-16	-14	-12	dB	$f=100\text{Hz}$, $V_{IN}=0.4V_{rms}$
Port H output	PH	4.5	4.9	—	V	$V_{DD}=5\text{V}$, $R_L=47\text{k}\Omega$

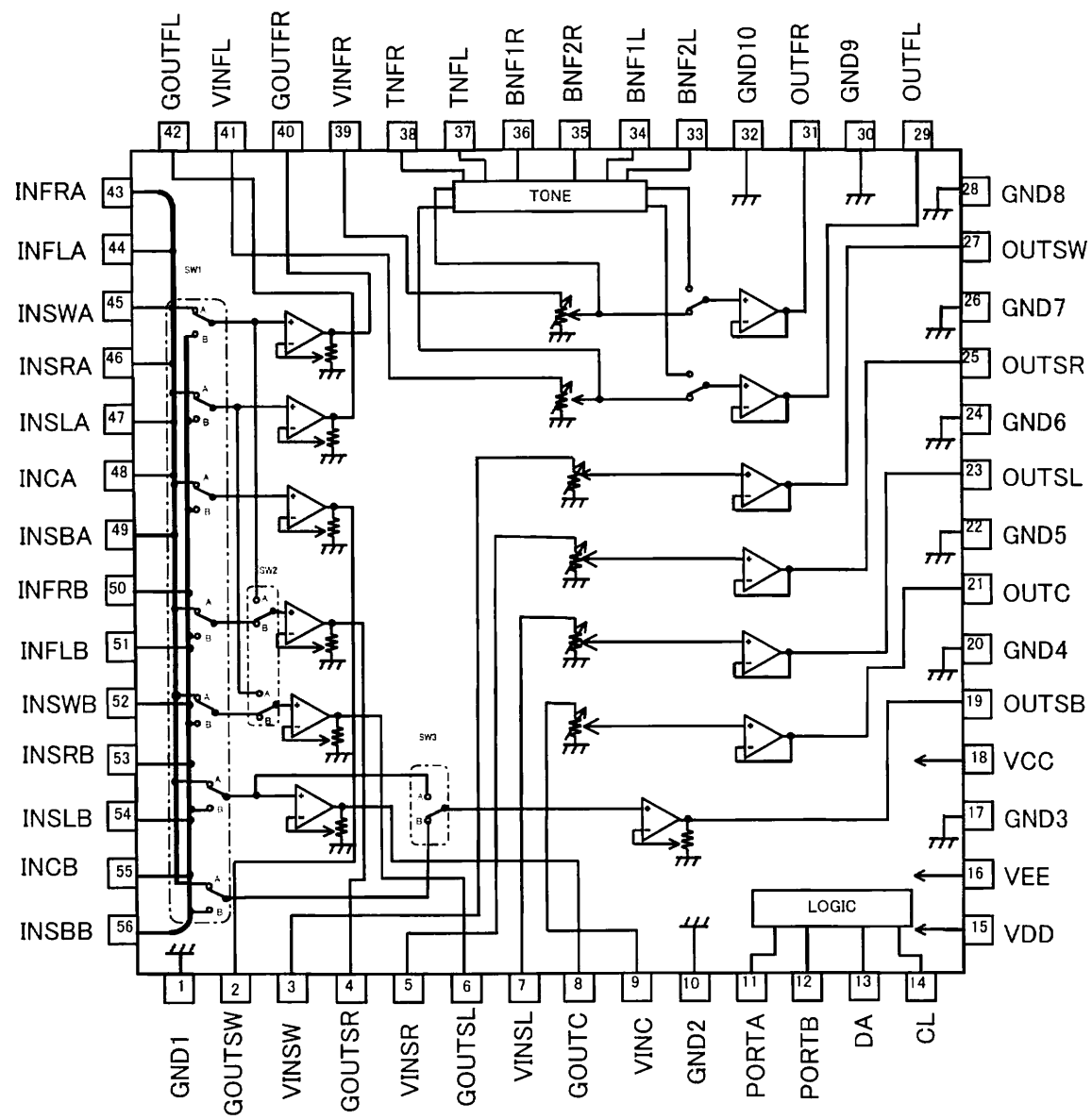
※This product is not of "anti radiation design".

○Outline Dimension



SQFP-56 (Unit:mm)

Block Diagram



○Terminal Number/ Terminal Name

Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name	Terminal Number	Terminal Name
1	GND1	15	VDD	29	OUTFL	43	INFRA
2	GOUTSW	16	VEE	30	GND9	44	INFLA
3	VINSW	17	GND3	31	OUTFR	45	INSWA
4	GOUTSR	18	VCC	32	GND10	46	INSRA
5	VINSR	19	OUTSB	33	BNF2L	47	INSLA
6	GOUTSL	20	GND4	34	BNF1L	48	INCA
7	VINSL	21	OUTC	35	BNF2R	49	INSBA
8	GOUTC	22	GND5	36	BNF1R	50	INFRB
9	VINC	23	OUTSL	37	TNFL	51	INFLB
10	GND2	24	GND6	38	TNFR	52	INSWB
11	PORTA	25	OUTSR	39	VINFR	53	INSRB
12	PORTB	26	GND7	40	GOUTFR	54	INSLB
13	DA	27	OUTSW	41	VINFL	55	INCB
14	CL	28	GND8	42	GOUTFL	56	INSBB

○Cautions of use

(1) Absolute maximum ratings

If applied voltage, operating temperature range, or other absolute maximum ratings are exceeded, the LSI may be damaged. Do not apply voltages or temperatures that exceed the absolute maximum ratings. If you think of a case in which absolute maximum ratings are exceeded, enforce fuses or other physical safety measures and investigate how not to apply the conditions under which absolute maximum ratings are exceeded to the LSI.

(2) VEE potential

Make the VEE pin voltage such that it is the lowest voltage even when operating below it.

(3) Thermal design

Perform thermal design in which there are adequate margins by taking into account the allowable power dissipation (Pd) in actual states of use.

(4) Operation in strong magnetic fields

Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.

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