

## Sound Processor IC BH3878KS2

### ● Description

BH3878KS2 is a sound controller IC for mini component stereo. 5-channel input selector, vocal fader, volume, surround, 5-band graphic equalizer, dynamic bass, and 5-band spectrum analyzer are all integrated into this single chip. Switching noise is reduced when volume, vocal fader, surround and dynamic bass are changed by soft switch.

### ● Features

- 1) All in one chip IC incorporating functions of volume, tone, and spectrum analyzer.
- 2) Soft switching that can reduce the stepping switching noise when volume, mode selector, surround, dynamic bass and the gain of graphic equalizer are switched.
- 3) 5-channel input selector, mode selector, volume, surround graphic equalizer, dynamic bass, and spectrum analyzer can be controlled by serial control from micro controller.
- 4) Built-in matrix surround, B.P.F for spectrum analyzer.
- 5) Low distortion, low noise by BiCMOS process using resistance ladder type volume.
- 6) Mode of dynamic bass and bi-amplifier can be switched.

### ● Applications

Mini component stereo, micro component stereo, CD radio cassette player, TV

### ● Absolute Maximum Ratings (Ta=25°C)

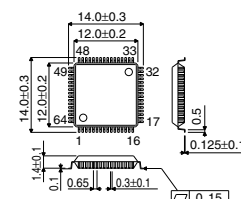
Parameter	Symbol	Limits	Unit
Power supply voltage	Vcc	10.0	V
Power dissipation	Pd	1200 *	mW
Operating temperature range	Topr	-20 ~ +70	°C
Storage temperature range	Tstg	-55 ~ +125	°C

\*Derating : 12.0mW/°C for operation above Ta=25°C

### ● Recommended Operating Conditions (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	Vcc	8.5	9	9.5	V

### ● Dimension (Units : mm)



SQFP-T64

● Electrical characteristics (Unless otherwise noted;  $T_a=25^\circ\text{C}$ ,  $V_{cc}=9\text{V}$ ,  $f=1\text{kHz}$ ,  $R_g=600\Omega$ ,  $R_L=10\text{k}\Omega$ ,  $V_{in}=800\text{mV}_{rms}$ , INPUT SELECTOR=Ach, MODE SELECTOR=through, VOLUME=0dB, SURROUND=0dB, GRAPHIC EQUALIZER=0dB, DYNAMIC BASS=0dB, SPECTRUM ANALYZER=RESET)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current at no signal	IQ	—	40	60	mA	At no signal
Maximum output voltage	VOM	2.0	2.5	—	V <sub>rms</sub>	THD=1%
Voltage gain	GV	0.8	2.8	4.8	dB	
Total harmonic distortion rate	THD	—	0.01	0.05	%	$V_o=1\text{V}_{rms}$ , 400Hz-30kHz BPF
Output noise voltage	VNO	—	35	50	$\mu\text{V}_{rms}$	$R_g=0\Omega$ , $B_{iamp}=0\text{dB}$ , DIN AUDIO
Residual noise voltage	VMNO	—	5	20	$\mu\text{V}_{rms}$	$R_g=0\Omega$ , $\text{Volume}=-\infty$ , $B_{iamp}=0\text{dB}$ , DIN AUDIO
Cross talk	CT	70	80	—	dB	$R_g=0\Omega$ , $B_{iamp}=0\text{dB}$ , DIN AUDIO
Volume maximum attenuation	ATTMAX	86	95	—	dB	DIN AUDIO
Vocal fader suppressed quantity	GVF	25	30	—	dB	
Graphic equalizer gain	VGQB	$\pm 9$	$\pm 12$	$\pm 15$	dB	$V_{in}=200\text{mV}_{rms}$ $f_{in}=100\text{Hz}, 300\text{Hz}, 1\text{kHz}, 3\text{kHz}, \text{ or } 10\text{kHz}$
Surround maximum voltage gain	VSUMAX	5	7	9	dB	$V_{in}=300\text{mV}_{rms}$ , $f_{in}=1\text{kHz}$
Dynamic bass boost gain	VBB	15	18	21	dB	$V_{in}=100\text{mV}_{rms}$ , $f_{in}=75\text{Hz}$ , 23pin=GND
Microphone voltage gain	GMIC	0.6	2.6	4.6	dB	$V_{in}=400\text{mV}_{rms}$
Spectrum analyzer max. output level	VMAX	4.0	4.8	—	V	$V_{in}=-12\text{dBV}$

● Block Diagram

