

- Structure : Silicon Monolithic Integrated Circuit
- Product name : Audio Driver (Speaker AMP) for Mobile telephone
- Type : **BH7824FVM**
- Features :
  - 1) BTL monaural speaker amplifier
  - 2) Capable of high power 500mW/8Ω/BTL output
  - 3) Correspond to dynamic speaker(8/12/16Ω)load
  - 4) Wide power supply voltage range
  - 5) Supports active/shutdown modes
  - 6) Built-in softmute circuit (Need outside resistor and capacitor)
  - 7) Built-in anti-pop circuit / thermal shutdown circuit

○Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	VCCMAX	6.0	V
Power dissipation	Pd	470 (*1)	mW
Operating temperature	Topr	-30~+85 (*2)	°C
Storage temperature	Tstg	-55~+125	°C

- \*1 Deratings is done at 4.7mW/°C above Ta=25°C.  
When mounted on a 70mm × 70mm × 1.6mm PCB board.
- \*2 Topr=70°C~85°C is the range for performing basic operations and does not guarantee characteristics or rated output.  
Moreover, TSD (Thermal Shutdown) may operate if input signals occurring in this range are excessive.

○Operating range (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage (V)	Vccs	+2.4~+5.5 (*3)	V

- \*3 Vccs=+3.6~+5.5V is the range for performing basic operations and does not guarantee characteristics or rated output.  
Moreover, TSD (Thermal Shutdown) may operate if input signals occurring in this range are excessive.  
This product is not designed for protection against radioactive rays.

Application example

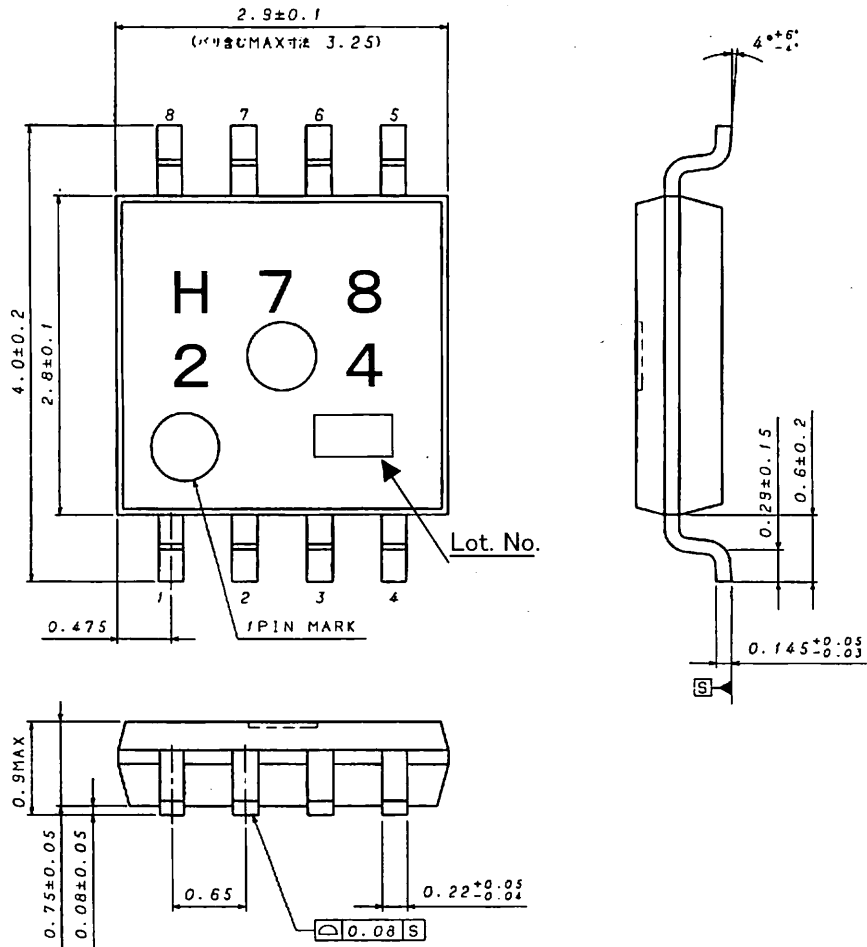
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○Electrical characteristics (Unless otherwise noted, Ta= 27°C, Vcc=3.6V, f=1kHz, RL=8 Ω)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current 1	I <sub>CC1</sub>	-	3.5	7	mA	No signal Active MODE
Circuit current 2	I <sub>CC2</sub>	-	0	2	μA	No signal Suspend MODE
Voltage gain 1	G <sub>V1</sub>	+9.5	+11.5	+13.5	dB	VIN=-20dBV, 1ST OPAMP gain
Voltage gain 2	G <sub>V2</sub>	-2.0	0	+2.0	dB	VIN=-20dBV, 2 ND OPAMP gain
Maximum output voltage	V <sub>OM</sub>	+4.0	+6.0	-	dBV	DSTN=1% BTL *1
Output distortion	D <sub>STN</sub>	-	0.07	0.5	%	VIN=-20dBV SE *1
Output noise level	V <sub>NO</sub>	-	-94	-80	dBV	No signal, SE Active MODE *2
Suspend attenuation	G <sub>S</sub>	-	-107	-80	dBV	VIN=-20dBV BTL *2
Bias setting voltage	V <sub>BIAS</sub>	1.6	1.8	2.0	V	3pin DC voltage
Suspend hold voltage/H	V <sub>SH1</sub>	Vccx0.8	-	Vcc	V	Active MODE, Hold voltage
Suspend hold voltage/L	V <sub>SL</sub>	0	-	0.5	V	Suspend MODE, Hold voltage

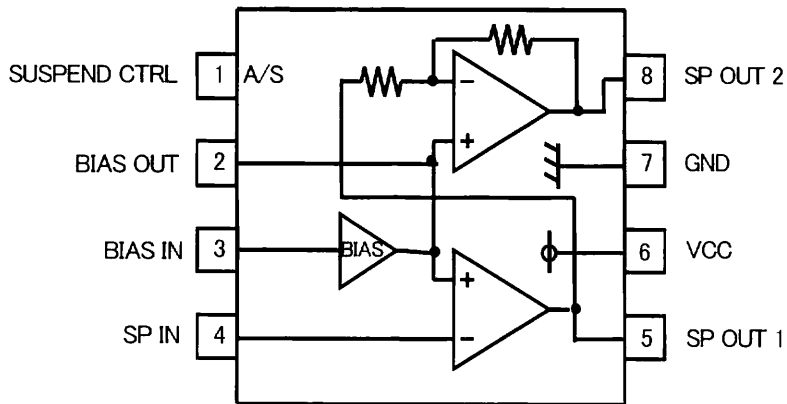
\*1 B.W.=0.4~30kHz, \*2 DIN AUDIO

○Outer dimensions



MSOP-8 (Unit: mm)

○Block diagram



○Pin number and pin name

Pin No.	Pin name
1	SUSPEND CTRL
2	BIAS OUT
3	BIAS IN
4	SP IN
5	SP OUT1
6	VCC
7	GND
8	SP OUT2

○Cautions on 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) GND potential

Make the GND pin voltage such that it is the lowest voltage even when operating below it. Actually confirm that the voltage of each pin does not become a lower voltage than the GND pin, including transient phenomena.

3) Thermal design

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

4) Shorts between pins and miss-installation

When mounting the LSI on a board, pay adequate attention to orientation and placement discrepancies of the LSI. If it is miss-installed and the power is turned on, the LSI may be damaged. It also may be damaged if it is shorted by a foreign substance coming between pins of the LSI or between a pin and a power supply or a pin and a GND.

5) Operation in strong magnetic fields

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

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Tokyo	2-1-1, Yaesu, Chuo-ku, Tokyo 104-0082	TEL : +81(3)5203-0321	FAX : +81(3)5203-0300
Yokohama	2-4-8, Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa 222-8575	TEL : +81(45)476-2131	FAX : +81(45)476-2128
Nagoya	Dainagayo Building 9F 3-28-12, Meieki, Nakamura-ku, Nagoya, Aichi 450-0002	TEL : +81(52)581-8521	FAX : +81(52)561-2173
Kyoto	579-32 Higashi Shiokouji-cho, Karasuma Nishi-iru, Shiokoujidori, Shimogyo-ku, Kyoto 600-8216	TEL : +81(75)311-2121	FAX : +81(75)314-6559

(Contact address for overseas customers in Japan)

Yokohama	TEL : +81(45)476-9270	FAX : +81(045)476-9271
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